Directorate of Distance Education

UNIVERSITY OF JAMMU

JAMMU

SELF LEARNING MATERIAL

PGDBM - I[st] SEMESTER

PAPER - II | **Subject : BUSINESS ECONOMICS** | **Unit: I-V** | **Lesson No.: 1-25**

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PGDBM - BUSINESS ECONOMICS

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PGDBM SEMESTER - I

SYLLABUS

Course Title : Business Economics | **Total Marks : 100**

Paper : II | **Internal Assessment : 20**

Duration of Examination : 3 hours | **Semester Examination : 80**

Objective :

The course has been outlined with a purpose to provide conceptual foundation of economics and to explain the application laws in business environment.

UNIT - I (INTRODUCTORY)

Introduction to Economics-Micro and Macro Economics Meaning, Nature and Scope; Demand Analysis: Law of Demand, Elasticity of Demand: Types and Factors affecting Elasticity, Demand Forecasting.

UNIT - II (THEORY OF CONSUMER'S DEMAND)

Utility Analysis Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility; Indifference Curve Analysis: Meaning, Properties and Equilibrium of Consumer Indifference Curve Analysis, Application of Indifference Curve, Indifference Curve v/s Utility Analysis.

UNIT - III (PRODUCTION AND COST ANALYSIS)

Factors of Production, Law of Variable Proportions; Law of Return to Scale; Law of Supply; Producer's Equilibrium; Internal and External Economies of Scale; Cost Concepts: Cost Curves, Cost function in the short run and long run.

UNIT - IV (THEORY OF MARKET STRUCTURES)

Perfect Competition: Short run and Long run equilibrium of the firm, Shut-down point; Simple Monopoly and Discriminating Monopoly, Pricing under Monopolistic Competition; Emergence of Oligopoly; Pricing Analysis: the Kinked Demand Curve, Pricing Strategy and Methods.

UNIT - V (MACRO-ECONOMICS AND BUSINESS)

Business Cycles and Business Policies; Economic Indicators: Input-Output Analysis; National Income: Aggregates related to National Income (GDP, NDP, GNP, NNP); Social Accounting, Monetary and Fiscal Policy.

Note for Paper Setter:

The question Paper shall contain two questions from each Unit (Total 10 Questions) and the candidates shall be required to answer one question from each unit (total number of questions to be attempted shall be five, i.e. there shall be internal choice within each unit)

Suggested Readings:

1.	H. L. Ahuja	:	Advanced Economic Theory; S. Chand
2.	M. L. Seth	:	Economic Theory: Himalaya Publishing House
3.	K. K. Dewett	:	Modern Economic Theory; S.Chand Publishing
4.	P. N. Chopra	:	Principles of Economics; Kalyani Publishers
5.	Samluelson, Paul	:	Principles of Economics; Blackwell Publishing
6.	Mithani, D. M.	:	Economics Theory; Himalaya Publishing House
7.	M. L. Jaighan	:	Micro-Economics Theory; Vrinda Publications Limited
8.	A. Koutsonias	:	Micro-Economics; Palgrave Macmillan U.K.

INTRODUCTION

STRUCTURE

1.1 INTRODUCTION

The term 'Economics' owes its origin to the Greek word 'Oikonomia' meaning 'household'. Economics is, thus, the study of how we work together to transform scarce resources into goods and services to satisfy the most pressing of our infinite wants and how we distribute these goods and services among ourselves. This definition of Economics, in terms of using scarce resources to satisfy human wants, is correct but it is incomplete. It brings to our mind the picture of a society with fixed resources, skills and productive capacity, deciding what specific kinds of goods it ought to produce and how they ought to be distributed. Economics, therefore, concerns itself not just with how a nation allocates to various uses its scarce productive resources, important as that may be. It also deals with the process by which the productive capacity of these resources is increased and with the factors

which in the past have led to sharp fluctuations in the rate of utilization of resources.

1.2 OBJECTIVES

At the end of this chapter students will be able to -

1. Understand what economics is about.
2. Get an insight into the meaning of economics.
3. Discuss the nature and scope of economics.

1.3 DEFINITION OF ECONOMICS

Several definitions of Economics have been given by different authors. The various definitions can be classified into four groups:

1. Science of wealth

2. Science of material well-being

3. Science of choice making and

4. Science of dynamic growth and development

We shall examine each one of these briefly.

1.3.1 Science of wealth. Although the activity of acquiring and increasing material wealth is as old as civilization, a disciplined study of the wealth producing activities commenced about 235 years back (in 1776) when Adam Smith, the father of Economics, published **"The Nature and Causes of Wealth of Nations".**

"An inquiry into the nature and causes of wealth of nations" **Adam Smith**

He insisted that Economics deals with the acquisition, accumulation and expenditure of wealth. Since his definition gives prominence to the wealth aspect, it is called 'wealth definition'. Many other classical economists also defined Economics in terms of wealth. For example, According to J B Say, Economics is a "Science which deals with wealth" The definition of Economics, as a science of wealth, has some merits. The important ones are:

(i) Stress on Wealth: It highlighted an important problem faced by each and every nation of the world, namely creation of wealth.

(ii) Addressing the Problems of Economic Growth: Since the problems of poverty, unemployment etc. can be solved to a greater extent when wealth is

produced and is distributed equitably; it goes to the credit of Adam Smith and his followers to have addressed to the problems of economic growth and increase in the production of wealth.

(iii) Attention to important Economic issues: By considering the problems of production, distribution and exchange of wealth, classical economists focused attention on the important issues with which Economics is concerned.

The study of Economics as a 'Science of Wealth' has been criticized on several grounds. The main criticisms leveled against this definition are;

(i) It is too materialistic: Adam Smith and other classical economists concentrated only on material wealth. They totally ignored creation of immaterial wealth like services of doctors, chartered accountants etc.

(ii) Neglect of Welfare: The advocates of Economics as a 'science of wealth' concentrated too much on the production of wealth and ignored social welfare. This makes their definition incomplete and inadequate.

1.3.2 Science of material well-being. Under this group of definitions, the emphasis is on welfare as compared with wealth in the earlier group. The two important definitions are as under: "Economics is a study of mankind in the ordinary business of life. It examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of well-being. Thus, it is on the one side a study of wealth and on the other and more important side a part of the study of man." – **Alfred Marshall**

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

In the first definition, Economics has been indicated to be a study of mankind in the ordinary business of life. 'By ordinary business' we mean those activities which occupy a considerable part of human effort. The fulfillment of economic needs is a very important business which every man ordinarily does. Professor Marshall has clearly pointed out that Economics is the study of wealth, but more importantly it is the study of man. Thus, man gets precedence over wealth. There is also emphasis on material requisites of well-being. Obviously, the material things like food, clothing and shelter, are very important economic objectives.

The second definition by Pigou emphasizes social welfare but restricts it to only that

part of it which can be related with the measuring rod of money. Money is a general measure of purchasing power by the use of which the science of Economics can be rendered more precise. Marshall's and Pigou's definitions of Economics are wider and more comprehensive as they take into account the aspect of social welfare. However, their definitions are criticized on the following grounds.

(I) Neglect of Immaterial things: Economics is concerned with not only material things but also with immaterial things like services of singers, teachers, actors etc. Marshall and Pigou chose to ignore them.

(ii) The concept of welfare is very vague: Robbins criticized the welfare definition on the ground that it is very difficult to state which things would lead to welfare and which will not. He is of the view that we would study in Economics all those goods and services which carry a price, whether they promote welfare or not.

1.3.3 Science of choice making. Prof. Lionel Robbins gave a new definition to Economics in his famous book "Nature and Significance of Economics" which he brought out in 1931.Robbins gave a more scientific definition of Economics. His definition is as follows :

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

The definition deals with the following four aspects:

(i) **Economics is a science:** Economics studies economic human behavior scientifically. It studies how humans try to optimize (maximize or minimize) certain objectives under given constraints. For example, it studies how consumers, with given income and prices of the commodities, try to maximize their satisfaction.

(ii) **Unlimited ends:** Ends refer to wants. Human wants are unlimited. When one want is satisfied, other wants crop up. If man's wants were limited, then there would be no economic problem.

(iii) **Scarce means:** Means refer to resources. Since resources (natural productive resources, man-made capital goods, consumer goods, money and time etc.) are limited, the economic problem arises. If the resources were unlimited, people would be able to satisfy all their wants and there would be no problem.

(iv) **Alternative uses:** Not only resources are scarce, they have alternative uses. For example, coal can be used as a fuel for the production of industrial goods, it can be used for running trains, it can also be used for domestic cooking purposes and for so many other purposes. Similarly, financial resources can be used for many purposes. The man or society has, therefore, to choose the uses for which the resources would be used. If there was only a single use of the resource, then the economic problem would not arise.

It follows from the definition of Robbins that Economics is a science of choice. An important thing about Robbin's definition is that it does not distinguish between material and non-material, and between welfare and non-welfare. Anything which satisfies the wants of the people would be studied in Economics. Even if a good is harmful to a person, it would be the subject matter of Economics if it satisfies his wants.

No doubt, Robbins has made Economics a scientific study and his definition has become popular among some economists. But his definition has also been criticised on several grounds, important ones are:

(i) Impersonal and colorless: Robbins has made Economics quite impersonal and colorless. By making it a complete positive science and excluding normative aspects, he has narrowed down its scope.

(ii) Ignored Macro-Economic concepts: Robbins' definition is totally silent about certain macro-economic aspects, such as determination of national income and employment.

(iii) No focus on Economic growth and development: His definition does not cover the theory of economic growth and development. While Robbins takes resources as given and talks about their allocation, it is totally silent about the measures to be taken to raise these resources i.e. national income and wealth.

(iv) Problem of abundance: Some critics are of the opinion that economic problem can also arise due to other reasons like abundance. For example, abundance of human resource (i.e. over population) is a major problem for many economies.

1.3.4 Science of dynamic growth and development. Although the fundamental economic problem of scarcity in relation to needs is undisputed, it would not be proper to think that economic resources - physical, human, financial-are fixed and

cannot be increased by human ingenuity, exploration, exploitation and development. A modern and somewhat modified definition is as follows :

> "Economics is the study of how men and society choose, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities over time and distribute them for consumption now and in the future amongst various people and groups of society" **Paul A. Samuelson**

The above definition is very comprehensive because it does not restrict to material well-being or money measure as a limiting factor. But it considers economic growth over time.

Prof Henry Smith also gave an all inclusive definition of Economics. According to him, Economics, is the "the study of how in a civilized society one obtains the share of what other people have produced and of how the total product of society changes and is determined". By civilized society it is meant that there are some legal institutions as well as rights of property and other established norms in the society.

1.4 NATURE AND SCOPE OF ECONOMICS

Under this, we generally discuss whether Economics is science or art or both and if it is a science, whether it is a positive science or a normative science or both.

Economics – As a science and as an art :

Often a question arises whether Economics is a science or an art or both.

1.4.1 ***Economics as a Science:*** A science is commonly defined as a systematized body of knowledge about a particular branch of the universe. A subject is considered science if: - it is a systematized body of knowledge which studies the relationship between cause and effect.

- it is capable of measurement,
- it has its own methodological apparatus, and
- has the ability to forecast.

If we analyze Economics, we find that it has all the features of science. Like science, it studies cause and effect relationship between economic phenomena. To make it clear, let us take the law of demand. It explains the

cause and effect relationship between price and demand for a commodity. It says, given other things constant, as price rises, the demand for a commodity falls and vice versa. Here, the cause is price and the effect is fall in quantity demanded. Similarly, like science, it is capable of being measured, the measurement is in terms of money. It has its own methodology of study (induction and deduction) and it forecasts the future market condition with the help of various statistical and non-statistical tools.

However it is to be noted that Economics is not a perfect science. This is because

- Economists do not have uniform opinion about a particular event.

- The subject matter of Economics is the economic behavior of man which is highly unpredictable.

- Money, which is used to measure outcomes in Economics, is itself a dependent variable.

- It is not possible to make correct predictions about the behavior of economic variables.

1.4.2 ***Economics as an art:*** According to J.M. Keynes an art is "a system of rules for the attainment of a given end". Art is nothing but practice of knowledge. Whereas science teaches us to know, art teaches us to do. Unlike science which is theoretical, art is practical. If we analyze Economics, we find that it has the features of an art also. Its various branches, consumption, production and public finance etc. provide practical solutions to various economic problems. It helps in solving various economic problems which we face in our day-to-day life.

Thus, Economics is both a science and an art. It is science in its methodology and art in its application. Study of unemployment problem is science but framing suitable policies for reducing the extent of unemployment is an art. According to Cossa "Science requires art; art requires science, each being complementary to the other."

1.4.3 Economics As Positive Science And Economics As Normative Science

(i) Positive Science: As stated above, Economics is a science. But the question arises whether it is a positive science or a normative science. A positive or pure science analyses cause and effect relationship between variables, but it does not pass value judgment. In other words, it states what is and not what ought to be. Professor Robbins emphasized the positive aspects of science but Marshall and Pigou have considered the ethical aspects of science which obviously are normative. Positive Economics is the one that

simply states facts and uses empirical evidence. An example of positive statement is: "According to the law of demand, a lower price will yield more quantity sold".

According to Robbins, Economics is concerned only with the study of the economic decisions of individuals and the society as positive facts but not with the ethics of these decisions. Economics should be neutral between ends. It is not for economists to pass value judgments and make pronouncements on the goodness or otherwise of human decisions. An individual with a limited amount of money may use it for buying liquor and not milk, but that is entirely his business. A community may use its limited resources for making guns rather than butter, but it is no concern of the economists to condemn or appreciate this policy. Economics only studies facts and makes generalizations from them.

It is a pure and positive science, which excludes from its scope the normative aspects of human behavior.

Complete neutrality between ends is, however, neither feasible nor desirable. It is because in many matters, the economist has to suggest measures for achieving certain socially desirable ends. For example, when he suggests the adoption of certain policies for increasing employment and raising the rates of wages, he is making value judgments. The same would be the case when he states that exploitation of labor and the state of unemployment are bad and steps should be taken to remove them. Similarly, when he states that the limited resources of the economy should not be used in the way they are being used and should be used in a different way; that the choice between ends is wrong and should be altered, etc. he is making value judgments.

(ii) Normative Science: As a normative science, Economics involves value judgments. It is prescriptive in nature and describes 'what should be the things'. Normative Economics is the one that takes values into account, and results in statements like: "This tax should be reduced." For example, the questions like what should be the level of national income, what should be the wage rate, how the fruits of national product be distributed among people - all fall within the scope of normative science. Thus, normative economics is concerned with welfare propositions. Some economists are of the view that value judgments by different individuals will be different and thus for deriving laws or theories, it should not be used.

To conclude, we may say that while laying down laws or theories, Economics may be treated as pure and positive Economics, but as a tool of practical application, it must have some normative goals in view.

1.5 SUMMARY

An economy exists because of two facts, i.e. human wants are unlimited and the resources are scarce. The basic problem of scarcity gives rise to many of the economic problems. The subject-matter and scope of Economics are defined in terms of Wealth by Adam Smith, Welfare by Alfred Marshall, Scarcity by Lionel Robinson and Growth by Paul Samuelson. But, each definition is incomplete and inadequate and created confusion about the nature and scope of economics. The subject matter of economics is divided into two parts – Micro and Macro Economics where micro means small and macro means aggregate. Economics is a science as well an art.

1.6 GLOSSARY

Economics: The term 'Economics' owes its origin to the Greek word 'Oikonomia' meaning 'household'.

Positive Science: A positive science analyses cause and effect relationship between variables, but it does not pass value judgment.

Normative Science: It involves value judgments. It is prescriptive in nature and describes 'what should be the things'.

1.7 SELF ASSESSMENT QUESTIONS

1. "Economics is a Science of Wealth." Comment.
2. Discuss Economics as a Positive as well as a Normative Science.

1.8 LESSON AND EXERCISE

1. Explain economics as a science of dynamic growth and development.
2. "Economics is a Science as well as an Art." Elaborate it.

1.9 FURTHER READINGS

Chopra, P. N., " Principles of Economics", 2000, Kalyani Publishers, New Delhi.

Ahuja, H. L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

Jhingan, M. L., "Micro –Economic Theory", 2002, Vrinda Publishets (P) Ltd., Delhi.

Seth, M. L., Advanced Economic Theory.

MICRO ECONOMICS AND MACRO ECONOMICS

STRUCTURE

2.1 INTRODUCTION

The subject matter of economics is divided into two parts – Micro and Macro Economics. The terms Micro Economics and Macro Economics were first coined and used by Ragnar Frisch of Oslo University in 1933 and since then they have been adopted by the economist all over the world.

The term Micro Economics is derived from the Greek word 'mikros' which means a small-a millionth part. Thus, in Micro Economics we analyze the economic behavior of small individual economic units such as individual consumer, individual producers etc.

The term Macro Economics is derived from the Greek word 'makras' which means large. Thus, in Macro Economics we analyze the behavior of the economy as a whole

and we study the large aggregates of the economy, such as total national income, total national output, total consumption, aggregate investment etc. In other words, Micro Economic analysis is individualistic while Macro Economic analysis is aggregative.

Knowledge of both the approaches is essential for complete understanding of the working of the economic system. But in the beginning, it is necessary to know the precise meaning, scope & subject matter of these two branches.

2.2 OBJECTIVES

After going through this chapter you will be able to-

i. Understand the meaning, nature and scope of Micro and Macro Economics.

ii. Explain the importance and limitations of Micro and Macro Economics.

iii. Discuss the interdependence of Micro and Macro Economics.

2.3 MEANING OF MICRO-ECONOMICS

Micro means a small part of a thing. Micro Economics thus deals with a small part of the national economy. It studies the economic actions and behavior of individual units such as individual consumer, individual producer or firm, the price of a particular commodity or factor etc.

According to Kenneth Boulding "Micro Economics is the study of particular firms, particular households, individual prices, wages, incomes, individual industries, particular commodities."

It means Micro Economics is a study of economic activity of households as a consumption unit, individual firms & industries as production unit and individual prices, wages, incomes and their determination.

In the words of Maurice Dobb, "Micro Economics is in fact a microscopic study of the economy".

It means in Micro Economic analysis of each individual unit is examined separately in detail.

2.4 SCOPE OF MICRO-ECONOMICS

Micro Economics basically deals with

i) Theory of product pricing

ii) Theory, of factor pricing (Microtheory of distribution).

iii) Theory of economic welfare

1. **Theory of Product Pricing:** The theory of product pricing explains how the relative prices of cotton cloth, rice, car and thousands of other commodities are determined. Price of a commodity depends upon the forces of demand and supply. Therefore, analysis of demand and supply side is necessary in order to explain the process of determination of price.

Study of demand side covers the analysis of consumer's behavior and study of supply side, covers the analysis of conditions of production, cost and behaviour of firm & industry.

So, theory of product pricing is subdivided into theory of demand & theory of production & cost.

2. Factor Pricing: Theory of factor pricing i.e. Theory of distribution explains how wages (price for the use of labour) rent (payment for the use of land), interest (Price for the use of capital), profits (the reward for the entrepreneur are determined.

3. Theory of welfare: Theory of welfare basically deals with efficiency in the allocaton of resources. Efficiency in the allocation of resources is attained when it results in maximization of satisfaction of people. Economic efficiency involves three efficiencies :

I) Efficiency in production - Efficiency in production means producing maximum possible amount of goods, from the given amount of resources.

ii) Efficiency in consumption - Efficiency in consumption means distribution of produced goods & services among the people for, consumption, in such away as to maximize total satisfaction of society.

iii) Efficiency in the direction of production i.e. overall economic efficiency - Efficiency in the direction of production means production of those goods which are most desired by the people.

Micro economic theory shows under what conditions these efficiencies are achieved.

We may conclude that Micro Economics is mainly concerned with price theory and allocation of resources. It seeks, to examine the following basic economic questions:

a) What goods are produced with and in what quantities?

b) Who will produce them & how?

c) To whom & how the wealth so produced shall be distributed?

d) How shall resources be allocated to production & consumption inefficient manner?

All these questions are in the domain of Micro Economics. Above discussion on subject matter of Micro Economics explains the scope of it.

The study of Micro Economics is mainly confined to price, theory, and resource allocation. It does not study the aggregates relating to whole economy. This approach does not study national economic problems such as unemployment, poverty, inequality of income etc. Theory of growth, theory of business fluctuation, monetary and fiscal policies etc. are beyond the limit of Micro Economics, so it's scope is limited.

2.5 IMPORTANCE AND USES OF MICRO-ECONOMICS

1. **To understand the working of free market economy:** Micro economic theory helps in understanding the working of free market economy.

2. **Explains price determination & allocation of resources:** It explains how the relative prices of various products & factors are determined and further explains why prices of these various products & factors are found different. Also it explains the process of allocation of resources for the production of various goods & allocation of total production among the various consumers.

3. **It helps businessman in decision making:** The knowledge of price theory is useful to businessman in deciding policies regarding the prices, cost of production, investment, attainment of maximum productivity etc. Also, with the-help of Micro Economics the businessman can estimate demand for his product.

4. **Useful to government:** It is useful to government in framing economic policies Micro Economic analysis is useful in determining tax policy, public expenditure policy, price policy, efficient allocation of resources etc.

5. **Helpful in international trade & public finance:** Many aspects of international trade like effects of tariff determination of exchange rate, gains from international trade etc. can be explained with the help of micro economic analysis. It is useful in public finance to analyze incidence and effect of particular tax.

6. **Model Building:** Micro Economics builds simple model which helps us in understanding complex economic situations. Development of various terms, concepts, terminologies, tools of economic analysis is valuable contribution of Micro Economics to the science of economics.

7. **Basis of welfare economics:** Micro Economics examines the conditions of economic welfare. It explains how best results can be obtained through avoidance of wastage of resources.

Thus, micro economic analysis has great theoretical and practical importance.

2.6 LIMITATIONS OF MICRO-ECONOMICS

Some of the important limitations of microeconomics are listed below:

1. **Excessive Generalization:** Despite the immense importance of macroeconomics, there is the danger of excessive generalization from individual experience to the system as a whole. If an individual withdraws his deposits from the bank, there is no-harm in it, but if all the persons rushed to withdraw deposits, the bank would perhaps collapse.

2. **Excessive Thinking in terms of Aggregates:** Again, macroeconomics suffers from excessive thinking in terms of aggregates, as it may not be always possible to have the homogeneous constituents. Prof. Boulding has pointed out that 2 apples + 3 apples = 5 apples is a meaningful aggregate ; 2 apples + 3 oranges = 5 fruits may be described as a fairly meaningful aggregate ; but 2 apples + 3 sky scrapers constitute a meaningless aggregate ; it is the last aggregate which brings forth the fallacy of excessive aggregative thinking.

3. **Heterogeneous Elements:** It may, however, be remembered that macroeconomics deals with such aggregates as aggregate consumption, saving, investment and income, all composed of heterogeneous quantities. Money is the only measuring rod. But the value of money itself keeps on changing, rendering economic aggregates immeasurable and incomparable in real terms. As such, the sum or average of heterogeneous individual quantities loses their significance for accurate economic analysis and economic policy.

4. **Differences within Aggregates:** Under this approach one is likely to overlook the differences within aggregates. For example, during the first decade of planning in India (from 1951-1961) the national income increased by 42% ; this, however, doesn't mean that the income of all the constituents, i.e., the wage earners or salaried persons increased by as much as that of entrepreneurs or businessmen. Hence, it takes no account of differences within aggregates.

5. **Aggregates must be functionally related:** The aggregates forming the main body of macroeconomic theory must be significant and mutually consistent. In other words, these should be functionally related. For example, aggregate consumption and investment expenditures—which form part of the macroeconomic theory ($Y = C + I$) would have no importance, if they were not functionally related to the levels of income, interest and employment. If these composing aggregates are mutually inconsistent or are not functionally related, the study of macroeconomic theory will be of little use.

6. **Limited Application:** Macroeconomics deals with positive economics in

the sense of an analysis or how the aggregate theoretical models work—these are far removed from policy applications. These models explain the functioning of an economy and working of things in abstract and precise terms. Their abstraction and precision make such models unsuitable for use due to changes in significant variables from time to time and from one situation to another. But these limitations may be taken more in the nature of practical difficulties in formulating meaningful aggregates rather than factors invalidating the immense importance of macroeconomic analysis.

2.7 MEANING OF MACRO-ECONOMICS

The term 'macro' was first used in economics by Ragner Frisch in 1933. But as a methodological approach to economic problems, it originated with the Mercantilists in the 16th and 17th centuries. They were concerned with the economic system as a whole.

In the 18th century, the Physiocrats adopted it in their Table Economies to show the 'circulation of wealth' (i.e., the net product) among the three classes represented by farmers, landowners and the sterile class. Multhus, Sismondi and Marx in the 19th century dealt with macroeconomic problems. Walras, Wicksell and Fisher were the modern contributors to the development of macroeconomic analysis before Keynes.

Certain economists, like Cassel, Marshall, Pigou, Robertson, Hayek and Hawtrey, developed a theory of money and general prices in the decade following the First World War. But credit goes to Keynes who finally developed a general theory of income, output and employment in the wake of the Great Depression.

2.8 SCOPE OF MACRO-ECONOMICS

Macroeconomics is the study of aggregates or averages covering the entire economy, such as total employment, national income, national output, total investment, total consumption, total savings, aggregate supply, aggregate demand, and general price level, wage level, and cost structure.

In other words, it is aggregative economics which examines the interrelations among the various aggregates, their determination and causes of fluctuations in them. Thus in the words of Professor Ackley, "Macroeconomics deals with economic affairs in the large; it concerns the overall dimensions of economic life. It looks at the total size and shape and functioning of the "elephant" of economic experience, rather than working of articulation or dimensions of the individual parts. It studies the character of the forest, independently of the trees which compose it."

Macroeconomics is also known as the theory of income and employment, or simply income analysis. It is concerned with the problems of unemployment, economic fluctuations, inflation or deflation, international trade and economic growth. It is the study of the causes of unemployment, and the various determinants of employment. In the field of business cycles, it concerns itself with the effect of investment on total output, total income, and aggregate employment. In the monetary sphere, it studies the effect of the total quantity of money on the general price level.

In international trade, the problems of balance of payments and foreign aid fall within the purview of macroeconomic analysis. Above all, macroeconomic theory discusses the problems of determination of the total income of a country and causes of its fluctuations. Finally, it studies the factors that retard growth and those which bring the economy on the path of economic development.

Macroeconomics, on the other hand, "concerns itself 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 the national income, with the 'general price level'."

Thus the scope of microeconomics to aggregates relates to the economy as a whole, , and uses aggregates which relate them to the "economy wide total".

2.9 IMPORTANCE AND USES OF MACRO-ECONOMICS

1. To Understand the Working of the Economy: The study of macroeconomic variables is indispensable for understanding the working of the economy. Our main economic problems are related to the behaviour of total income, output, employment and the general price level in the economy.

These variables are statistically measurable, thereby facilitating the possibilities of analyzing the effects on the functioning of the economy. As Tinbergen observes, macroeconomic concepts help in "making the elimination process understandable and transparent". For instance, one may not agree on the best method of measuring different prices, but the general price level is helpful in understanding the nature of the economy.

2. In Economic Policies: Macroeconomics is extremely useful from the point of view of economic policy. Modern governments, especially of the underdeveloped economies, are confronted with innumerable national problems. They are the problems of overpopulation, inflation, balance of payments, general under production, etc. The main responsibility of these governments rests in the regulation and control of over population, general prices, general volume of trade, general outputs, etc. Tinbergen says: "Working with macroeconomic concepts is a bare necessity in order to contribute to the solutions of the great problems of our times."

No government can solve these problems in terms of individual behavior. Let us analyze the use of macroeconomic study in the solution of certain complex economic problems.

(i) In General Unemployment: The Keynesian theory of employment is an exercise in macroeconomics. The general level of employment in an economy depends upon effective demand which in turn depends on aggregate demand and aggregate supply functions. Unemployment is thus caused by deficiency of effective demand. In order to eliminate it, effective demand should be raised by increasing total investment, total output, total income and total consumption. Thus, macroeconomics has special significance in studying the causes, effects and remedies of general unemployment.

(ii) In National Income: The study of macroeconomics is very important for evaluating the overall performance of the economy in terms of national income. With the advent of the Great Depression of the 1930s, it became necessary to analyze the causes of general overproduction and general unemployment. This led to the construction of the data on national income. National income data help in forecasting the level of economic activity and to understand the distribution of income among different groups of people in the economy.

(iii) In Economic Growth: The economics of growth is also a study in macroeconomics. It is on the basis of macroeconomics that the resources and capabilities of an economy are evaluated. Plans for the overall increase in national income, output, and employment are framed and implemented so as to raise the level of economic development of the economy as a whole.

(iv)In Monetary Problems: It is in terms of macroeconomics that monetary problems can be analyzed and understood properly. Frequent changes in the value of money, inflation or deflation, affect the economy adversely. They can be counteracted by adopting monetary, fiscal and direct control measures for the economy as a whole.

(v) In Business Cycles: Further macroeconomics as an approach to economic problems started after the Great Depression. Thus its importance lies in analyzing the causes of economic fluctuations and in providing remedies.

(3) For Understanding the Behavior of Individual Units: For understanding the behavior of individual units, the study of macroeconomics is imperative. Demand for individual products depends upon aggregate demand in the economy. Unless the causes of deficiency in aggregate demand are analyzed, it is not possible to understand fully the reasons for a fall in the demand of individual products. The reasons for increase in costs of a particular firm or industry cannot be analyzed without knowing the average cost conditions of the whole economy. Thus, the study

of individual units is not possible without macroeconomics.

Conclusion:

We may conclude that macroeconomics enriches our knowledge of the functioning of an economy by studying the behavior of national income, output, investment, saving and consumption. Moreover, it throws much light in solving the problems of unemployment, inflation, economic instability and economic growth.

2.10 LIMITATIONS OF MACRO-ECONOMICS

There are, however, certain limitations of macroeconomic analysis. Mostly, these stem from attempts to yield macroeconomic generalizations from individual experiences.

1. **Fallacy of Composition:** In Macroeconomic analysis the "fallacy of composition" is involved, i.e., aggregate economic behavior is the sum total of individual activities. But what is true of individuals is not necessarily true of the economy as a whole.

For instance, savings are a private virtue but a public vice. If total savings in the economy increase, they may initiate a depression unless they are invested. Again, if an individual depositor withdraws his money from the bank there is no ganger. But if all depositors do this simultaneously, there will be a run on the banks and the banking system will be adversely affected.

2. **To Regard the Aggregates as Homogeneous:** The main defect in macro analysis is that it regards the aggregates as homogeneous without caring about their internal composition and structure. The average wage in a country is the sum total of wages in all occupations, i.e., wages of clerks, typists, teachers, nurses, etc. But the volume of aggregate employment depends on the relative structure of wages rather than on the average wage. If, for instance, wages of nurse's increase but of typists fall, the average may remain unchanged. But if the employment of nurses falls a little and of typists raises much, aggregate employment would increase.

3. **Aggregate Variables may not be important necessarily:** The aggregate variables which form the economic system may not be of much significance. For instance, the national income of a country is the total of all individual incomes. A rise in national income does not mean that individual incomes have risen. The increase in national income might be the result of the increase in the incomes of a few rich people in the country. Thus a rise in the national income of this type has little significance from the point of view of the community. Prof. Boulding calls these three difficulties as "macroeconomic paradoxes" which are true when applied to a single individual but which are untrue when applied to the economic system as a whole.

4. **Indiscriminate Use of Macroeconomics Misleading:** An indiscriminate and uncritical use of macroeconomics in analyzing the problems of the real world can often be misleading. For instance, if the policy measures needed to achieve and maintain full employment in the economy are applied to structural unemployment in individual firms and industries, they become irrelevant. Similarly, measures aimed at controlling general prices cannot be applied with much advantage for controlling prices of individual products.

5. **Statistical and Conceptual Difficulties:** The measurement of macroeconomic concepts involves a number of statistical and conceptual difficulties. These problems relate to the aggregation of microeconomic variables. If individual units are almost similar, aggregation does not present much difficulty. But if microeconomic variables relate to dissimilar individual units, their aggregation into one macroeconomic variable may be wrong and dangerous.

2.11 DIFFERENCE BETWEEN MICRO AND MACRO ECONOMICS

1. The difference between microeconomics and macroeconomics can be made on the following counts. The word micro has been derived from the Greek word mikros which means small. Microeconomics is the study of economic actions of individuals and small groups of individuals. It includes particular households, particular firms, particular industries, particular commodities and individual prices.

2. Macroeconomics is also derived from the Greek word makros which means large. It "deals with aggregates of these quantities, not with individual incomes but with the national income, not with individual prices but with the price levels, not with individual output but with the national output."

3. The objective of microeconomics on demand side is to maximize utility whereas on the supply side is to minimize profits at minimum cost. On the other hand, the main objectives of macroeconomics are full employment, price stability, economic growth and favorable balance of payments.

4. The basis of microeconomics is the price mechanism which operates with the help of demand and supply forces. These forces help to determine the equilibrium price in the market. On the other hand, the basis of macroeconomics is national income, output and employment which are determined by aggregate demand and aggregate supply.

5. Microeconomics is based on different assumptions concerned with rational behavior of individuals. Moreover the phrase ceteris paribus is used to explain the economic laws. On the other hand, macroeconomics bases its assumptions on such variables as the aggregate volume of output of an economy, with the extent to which

its resources are employed, with the size of the national income and with the general price level.

6. Microeconomics is based on partial equilibrium analysis which helps to explain the equilibrium conditions of an individual, a firm, an industry and a factor. On the other hand, macroeconomics is based on general equilibrium analysis which is an extensive study of a number of economic variables, their interrelations and interdependences for understanding the working of the economic system as a whole.

7. In microeconomics, the study of equilibrium conditions is analyzed at a particular period. But it does not explain the time element. Therefore, microeconomics is considered as a static analysis. On the other hand, macroeconomics is based on time-lags, rates of change, and past and expected values of the variables. This rough division between micro and macroeconomics is not rigid, for the parts affect the whole and the whole affects the parts.

2.12 INTERDEPENDENCE OF MICRO AND MACRO ECONOMICS

Take for instance, when aggregate demand rises during a period of prosperity, the demand for individual products also rises. If this increase in demand is due to a reduction in the rate of interest, the demand for different types of capital goods will go up. This will lead to an increase in the demand for the particular types of labour needed for the capital goods industry. If the supply of such labour is less elastic, its wage rate will rise.

The rise in wage rate is made possible by increase in profits as a consequence of increased demand for capital goods. Thus, a macroeconomic change brings about changes in the values of microeconomic variables in the demands for particular goods, in the wage rates of particular industries, in the profits of particular firms and industries, and in the employment position of different groups of workers.

Similarly, the overall size of income, output, employment, costs, etc. in the economy affects the composition of individual incomes, outputs, employment, and costs of individual firms and industries. To take another instance, when total output falls in a period of depression, the output of capital goods falls more than that of consumer goods. Profits, wages employment decline more rapidly in capital goods industries than in the consumer goods industries.

On the other hand, macroeconomic theory is also dependent on microeconomic analysis. The total is made up of the parts. National income is the sum of the incomes of individuals, households, firms and industries. Total savings, total investment and total consumption are the result of the saving, investment and consumption decisions of individual industries, firms, households and persons.

The general price level is the average of all prices of individual goods and services. Similarly, the output of the economy is the sum of the output of all the individual producing units. Thus, "the aggregates and averages that are studied in macroeconomics are nothing but aggregates and averages of the individual quantities which are studied in microeconomics."

Let us take a few concrete examples of this macro dependence on microeconomics. If the economy concentrates all its resources in producing only agricultural commodities, the total output of the economy will decline because the other sectors of the economy will be neglected.

The total level of output, income and employment in the economy also depends upon income distribution. If there is unequal distribution of income so that income is concentrated in the hands of a few rich, it will tend to reduce the demand for consumer goods.

Profits, investment and output will decline, unemployment will spread and ultimately the economy will be faced with depression. Thus, both macro and micro approaches to economic problems are interrelated and interdependent.

2.13 SUMMARY

Microeconomics: is the study of the behavior of individual economic agents. Microeconomics asks how individuals allocate their time, income and wealth among various opportunities for labor, leisure, consumption, and savings. Macroeconomics, on the other hand, is concerned with the economic issues that involve the overall economic performance of the nation, rather than that of particular individuals or firms. Macroeconomics does implicitly deal with the behavior of individual economic agents in the sense that national outcomes are the sum of individual actions. But macroeconomics deals with totals, or aggregate measures of the economy, like national income or average unemployment rates, rather than differences among individuals. Macroeconomics asks how economic aggregates are determined, why problems related to aggregate economic performance occur, and what government can and should do about such problems

2.14 GLOSSARY

Microeconomics - analysis of the behavior of an individual decision-making units (individuals, households, firms)

Macroeconomics - analysis of the behavior of an economy as a whole.

2.15 SELFASSESSMENT QUESTIONS

1. Do you agree that Micro Economics studies behavior of individual economic unit

whereas Macro economics studies economy as a whole.

2. What are the basic economic questions dealt with by Micro Economics?

3. Distinguish between Micro-Economics and Macro-Economics.

2.16 LESSON END EXERCISES

1. Explain the scope and limitations of Micro- Economics.

2. State the importance and applications of Macro-Economics.

3. Micro and Macro economics are interdependent on each other. Elucidate this statement.

2.17 FURTHER READINGS

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LAW OF DEMAND

STRUCTURE

3.1 INTRODUCTION

Have you ever wondered why diamonds are very expensive although basically inessential, while water is important but cheap? Or why does land in Delhi or Mumbai command very high prices, while desert land in Rajasthan is virtually worthless? The answers to these and a thousand other questions can be found in the theory of demand and supply. This theory shows how consumer preferences determine consumer demand for commodities while business costs determine the supply of commodities. We shall take up the topic of demand in this Unit while supply will be discussed in Lesson.

3.2 OBJECTIVES

At the end of this unit, you will be able to:

i. Understand the meaning of demand.

ii. Understand what determines demand.

iii. Get an insight into the law of demand.

iv. Understand the rationale of law of demand.

v. Know about the exceptions to the law of demand.

vi. Understand the significance of law of demand.

3.3 MEANING OF DEMAND

The concept 'demand' refers to the quantity of a good or service that consumers are willing and able to purchase at various prices during a given period of time. It is to be noted that demand, in Economics, is something more than desire to purchase though desire is one element of it. A beggar, for instance, may desire food, but due to lack of means to purchase it, his demand is not effective. Thus, effective demand for a thing depends on (i) desire (ii) means to purchase and (iii) willingness to use those means for that purchase. Unless demand is backed by purchasing power or ability to pay, it does not constitute demand. Two things are to be noted about quantity demanded. One is that quantity demanded is always expressed at a given price. At different prices different quantities of a commodity are generally demanded. The second thing is that quantity demanded is a flow

In short "By demand, we mean the various quantities of a given commodity or service which consumers would buy in one market in a given period of time, at various prices, or at various incomes, or at various prices of related goods".

3.4 DETERMINANTS OF DEMAND

There are various factors affecting the demand for a commodity. They are:

1. **Price of the commodity:** The price of a commodity is an important determinant of demand. Ceteris paribus i.e. other things being equal, the demand for a commodity is inversely related to its price. It implies that a rise in price of a commodity brings about a fall in its purchase and vice-versa. This happens because of income and substitution effects.

2. **Price of related goods:** The price of related goods like substitutes and complementary goods also affect the demand. In the case of substitutes, rise in price of one commodity lead to increase in demand for its substitute. When goods are substitutes, a fall in the price of one (ceteris paribus) leads to a fall in the quantity demanded of its substitutes. For example, if the price of tea falls, people will try to substitute it for coffee and demand more of it and less

of coffee i.e. the demand for tea will rise and that of coffee will fall. When commodities are complements, a fall in the price of one (other things being equal) will cause the demand of the other to rise. For example, a fall in the price of petrol-driven cars would lead to a rise in the demand for petrol. Similarly, a fall in the price of pens, will cause a rise in the demand for ink.

3. **Income of the consumer:** This is directly related to demand. A change in the income of the consumer significantly influences his demand for most commodities. If the disposable income increases, demand will be more.

4. **Taste and preference of consumer:** These are very effective factors affecting demand for a commodity. When there is a change in taste, habits or preferences of the consumer, his demand will change. Fashions and customs in society determine many of our demands.

5. **Population:** If the size of the population is more, demand for goods will be more. The market demand for a commodity substantially changes when there is change in the total population.

6. **Money Circulation:** More the money in circulation, higher the demand and vice versa.

7. **Value of money:** The value of money determines the demand for a commodity in the market. When there is a rise or fall in the value of money there may be changes in the relative prices of different goods and their demand.

8. **Taxation Policy:** High taxes will increase the price and reduce demand, while low taxes will reduce the price and extend the demand.

9. **Credit facilities:** Depending on the availability of credit facilities the demand for commodities will change. More the facilities higher the demand.

10. **Multiplicity of uses of goods:** If the commodity has multiple uses then the demand will be more than if the commodity is used for a single purpose.

Apart from above, factors such as class, group, education, marital status, consumer's expectations with regard to future price and weather conditions, also play an important role in influencing household demand.

3.5 LAW OF DEMAND

There is an inverse relationship between quantity demanded and its price. The people know that when price of a commodity goes up its demand comes down. When there is decrease in price the demand for a commodity goes up. There is inverse relation between price and demand. The law refers to the direction in which quantity

demanded changes due to change in price.

A consumer may demand one dozen oranges at $5 per dozen . He may demand two dozen when the price is $4 per dozen. A person generally buys more at a lower price. He buys less at higher price. It is not the case with one person but all people liken to buy more due to fall in price and vice versa. This is true for all commodities and under all conditions. The economists call it as law of demand. In simple words the law of demand states that other things being equal more will be demanded at lower price and lower will be demanded at higher price.

3.5.1 Statement of the Law of Demand

Prof. Alfred Marshall defined the law thus: "The greater the amount to be sold, the smaller must be the price at which it is offered in order that it may find purchasers or in other words the amount demanded increases with a fall in price and diminishes with a rise in price".

The law of demand may be illustrated with the help of a demand schedule and a demand curve.

3.5.2 Explanation of the Law

The relationship between price of a commodity and its demand depends upon many factors. The most important factor is nature of commodity. The demand schedule shows response of quantity demanded to change in price of that commodity. This is the table that shows prices per unit of commodity ands amount demanded per period of time. The demand of one person is called individual demand. The demand of many persons is known as market demand. The experts are concerned with market demand schedule. The market demand schedule means 'quantities of given commodity which all consumers want to buy at all possible prices at a given moment of time'. The demand schedules of all individuals can be added up to find out market demand schedule.

Demand schedule: To illustrate the relation between the quantity of a commodity demanded and its price, we may take a hypothetical data for prices and quantities of commodity X. A demand schedule is drawn upon the assumption that all the other influences remain unchanged. It thus attempts to isolate the influence exerted by the price of the good upon the amount sold.

Table 1: Demand schedule of an individual consumer

	Price (Rs.)	Quantity demanded (Units)
A	5	10

B	4	15
C	3	20
D	2	35
E	1	60

When price of commodity X is Rs.5 per unit, a consumer purchases 10 units of the commodity. When the price falls to Rs. 4, he purchases 15 units of the commodity. Similarly, when the price further falls, the quantity demanded by him goes on rising until at price Rs. 1, the quantity demanded by him rises to 60 units. The above table depicts an inverse relationship between price and quantity demanded; as the price of the commodity X goes on rising, its demand goes on falling.

3.5.3 Demand Curve: We can now plot the data from Table 1 on a graph with price on the vertical axis and quantity on the horizontal axis. In Fig. 1, we have shown such a graph and plotted the five points corresponding to each price-quantity combination shown in Table 1. Point A shows the same information as the first row of Table 1 that at Rs 5 per unit; only 10 units of X will be demanded. Point E shows the same information as does the last row of the table, when the price is Rs. 1, the quantity demanded will be 60 units.

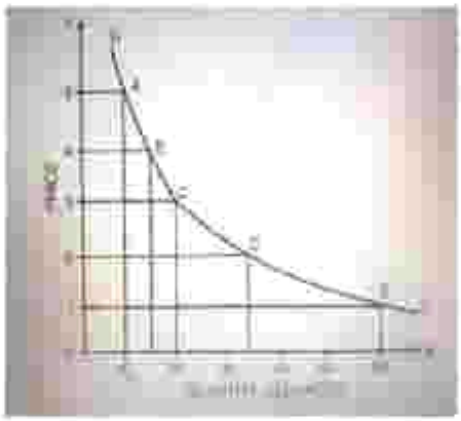

Fig1: Demand Curve

We now draw a smooth curve through these points. The curve is called the demand curve for commodity 'X'. The curve shows the quantity of 'X' that a consumer would like to buy at each price; its downward slope indicates that the quantity of 'X' demanded increases as its price falls. Thus the downward sloping demand curve is in accordance with the law of demand which, as stated above, describes an inverse price-demand relationship.

3.5.4 Rationale of the Law of Demand: Why does demand curve slope downwards? Different economists have given different explanations for the operation of law of demand.

These are given below.

(1) Law of diminishing marginal utility: According to Marshall people will buy more quantity at lower price because they want to equalize the marginal utility of the commodity and its price. So a rational consumer will not pay more for lesser satisfaction. He is induced to buy additional units in order to maximize his satisfaction or utility. The diminishing marginal utility and equalizing it with the price is the cause for the downward sloping demand curve.

(2) Substitution effect: Hicks and Allen have explained the law in terms of substitution effect and income effect. When the price of a commodity falls, it becomes relatively cheaper than other commodities. It induces consumers to substitute the commodity whose price has fallen for other commodities which have now become relatively expensive. The result is that the total demand for the commodity whose price has fallen increases. This is called substitution effect.

(3) Income effect: When the price of a commodity falls, the consumer can buy the same quantity of the commodity with lesser money or he can buy more of the same commodity with the same amount of money. In other words, as a result of fall in the price of the commodity, consumer's real income or purchasing power increases. This increase in the real income induces him to buy more of that commodity. Thus, demand for that commodity (whose price has fallen) increases. This is called income effect. Due to the operation of income effect and substitution effect, price effect operates or law of demand holds.

(4) Arrival of new consumers: When the price of a commodity falls, more consumers start buying it because some of those who could not afford to buy it previously may now afford to buy it. This raises the number of consumers of a commodity at a lower price and hence the demand for the commodity in question.

(5) Different uses: Certain commodities have multiple uses. If their prices fall they will be used for varied purposes and demand for such commodities will increase. When the price of such commodities are high, rises they will be put to limited uses only. Thus, different uses of a commodity make the demand curve slope downwards reacting to changes in price.

3.5.5 Exceptions to the Law of Demand: According to the law of demand, more of a commodity will be demanded at lower prices than at higher prices, other things being equal. The law of demand is valid in most cases; however there are certain

cases where this law does not hold good. The following are the important exceptions to the law of demand.

(i) Conspicuous goods: Articles of prestige value or snob appeal or articles of conspicuous consumption are demanded only by the rich people and these articles become more attractive if their prices go up. Such articles will not conform to the usual law of demand.

This was found out by Veblen in his doctrine of "Conspicuous Consumption" and hence this effect is called Veblen effect or prestige goods effect. Veblen effect takes place as some consumers measure the utility of a commodity by its price i.e., if the commodity is expensive they think that it has got more utility. As such, they buy less of this commodity at low price and more of it at high price. Diamonds are often given as example of this case. Higher the price of diamonds, higher is the prestige value attached to them and hence higher is the demand for them.

(ii) Giffen goods: Sir Robert Giffen, an economist, was surprised to find out that as the price of bread increased, the British workers purchased more bread and not less of it. This was something against the law of demand. Why did this happen? The reason given for this is that when the price of bread went up, it caused such a large decline in the purchasing power of the poor people that they were forced to cut down the consumption of meat and other more expensive foods. Since bread, even when its price was higher than before, was still the cheapest food article, people consumed more of it and not less when its price went up. Such goods which exhibit direct price-demand relationship are called 'Giffen goods'. Generally those goods which are considered inferior by the consumers and which occupy a substantial place in consumer's budget are called 'Giffen goods'. Examples of such goods are coarse grains like bajra, low quality rice and wheat etc.

(iii) Conspicuous necessities: The demand for certain goods is affected by the demonstration effect of the consumption pattern of a social group to which an individual belongs. These goods, due to their constant usage, have become necessities of life. For example, in spite of the fact that the prices of television sets, refrigerators, coolers, cooking gas etc. have been continuously rising, their demand does not show any tendency to fall.

(iv) Future expectations about prices: It has been observed that when the prices are rising, households expecting that the prices in the future will be still higher, tend to buy larger quantities of the commodities. For example, when there is wide-spread drought, people expect that prices of food grains would rise in future. They demand greater quantities of food grains as their price rise. But it is to be noted that here it is not the law of demand which is invalidated but there is a change in one of the factors

which was held constant while deriving the law of demand, namely change in the price expectations of the people.

(v) The law has been derived assuming consumers to be rational and knowledgeable about market-conditions. However, at times consumers tend to be irrational and make impulsive purchases without any rational calculations about price and usefulness of the product and in such contexts the law of demand fails.

(vi) Demand for necessaries: The law of demand does not apply much in the case of necessaries of life. Irrespective of price changes, people have to consume the minimum quantities of necessary commodities. Similarly, in practice, a household may demand larger quantity of a commodity even at a higher price because it may be ignorant of the ruling price of the commodity. Under such circumstances, the law will not remain valid.

(vii) Speculative goods: In the speculative market, particularly in the market for stocks and shares, more will be demanded when the prices are rising and less will be demanded when prices decline. The law of demand will also fail if there is any significant change in other factors on which demand of a commodity depends. If there is a change in income of the household, or in prices of the related commodities or in tastes and fashion etc., the inverse demand and price relation may not hold good.

3.6 SIGNIFICANCE OF LAW OF DEMAND

1. Price determination

A monopolist can determine price of a commodity on the basis of such law. He can know the effect on demand due to increase or decrease in price. The demand schedule can help him to determine the most suitable price level.

2. Tax on commodities

The law of demand is important for tax authorities. The effect of tax on different commodities is checked. The commodity must be taxed if its demand is relatively inelastic. A commodity cannot be taxed if its sales fall to great extent.

3. Agricultural prices

The law of demand is useful to determine agricultural prices. When there are good crops, the prices come down due to change in demand. In case of bad crops, the prices go up if demand remains the same. The poverty of farmers can be determined.

4. Planning

Individual demand schedule is used in planning for individual goods and industries. There is need to know the effect of change in price on the demand of commodity at

national and world level. The nature of demand schedule helps to know such effect.

3.7 SUMMARY

The chapter presents the economic concept of demand. Demand means desire or wish to buy and consume a commodity or service backed by adequate willingness and ability to buy. The law of demand states that people will buy more at lower prices and less at higher prices, other things being equal and the main determinants of demand are price of the commodity, price of related goods, level of the income, taste and preference, size of population, distribution of income etc. According to Marshall, the demand curve slopes downwards due to the operation of the law of diminishing marginal utility. However, according to Hicks and Allen it is due to income effect and substitution effect. The demand curve usually slopes downwards; but exceptionally slopes upwards under certain circumstances as in the case of conspicuous goods, Giffen goods, conspicuous necessities, future expectations about prices, demand for necessaries and speculative goods.

3.8 GLOSSARY

Demand: means desire or wish to buy and consume a commodity or service backed by adequate willingness and ability to buy.

Market demand: Summation of demand for a good by all individual buyers in the market.

Demand function: A comprehensive formulation which specifies the factors that influence the demand for a product.

Demand schedule: schedule is a list that shows various prices and the corresponding quantities of demanded.

Law of demand: The law of demand states that people will buy more at lower prices and less at higher prices, other things being equal.

Law of equi-marginal utility: consumer would maximize his utility if he allocates his expenditure on various goods he consumes such that the utility of the last rupee spent on each good is equal.

3.9 SELF ASSESSMENT QUESTIONS

1. Analyze your demand for a certain brand of watch. Explain each determinant in detail.

2. Give the effect on demand of butter in each of the following cases.

a. The price of tea rises.

b. The price of coffee falls

c. An increase in family income

d. Exception of sudden scarcity of demand

3. The law of demand is based on the law of diminishing marginal utility. Give an example of a commodity where the law of diminishing marginal utility does not stand true, and hence consumers buy more of the commodity as its price rises.

4. Comment whether you agree or disagree with these statements and give reasons in support of your answer.

a. Demand of petrol is dependent on demand of automobile.

b. An individual is concerned with his demand while a firm's sale depends on market demand.

c. The demand for perishable goods is generally more stable than the demand for durable goods.

3.10 LESSON END EXERCISES

1. State and explain the law of demand with the help of table and diagram.

2. What are the reasons for the downward sloping of the demand curve? Also give exceptions to the law of demand.

3. Explain the various determinants affecting Law of Demand.

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ELASTICITY OF DEMAND

STRUCTURE

4.1 INTRODUCTION

Till now we were concerned with the direction of the changes in prices and quantities demanded.

Now we will try to measure these changes, or to say, we will try to answer the question "by how much"?

Consider the following situations:

(1) As a result of a fall in the price of radio from Rs 500 to Rs 400, the quantity demanded increases from 100 radios to 150 radios.

(2) As a result of fall in the price of wheat from Rs 20 per kilogram to Rs 18 per kilogram, the quantity demanded increases from 500 kilograms to 520 kilograms.

(3) As a result of fall in the price of salt from Rs 9 per kilogram to Rs 7.50, the quantity demanded increases from 1000 kilogram to 1005 kilograms.

What do you notice? You notice that as a result of a fall in the price of radios, the quantity demanded of radios increases. Same is the case with wheat and salt. Thus, we can say that demand for radios, wheat and salt all respond to price changes. Then, where is the difference? The difference lies in the degree of response of demand which can be found out by comparing percentage changes in prices and quantities demanded. Here lies the concept of elasticity.

4.2 OBJECTIVES

After reading this chapter you will able to:

1. Understand the meaning of Elasticity of demand.
2. Have an insight into different types of elasticity of demand.
3. Know about the factors affecting the Price elasticity of demand.
4. Understand the importance of elasticity of demand.

4.3 MEANING OF ELASTICITY OF DEMAND

In economics, the term elasticity means a proportionate (percentage) change in one variable relative to a proportionate (percentage) change in another variable. The quantity demanded of a good is affected by changes in the price of the good, changes in price of other goods, changes in income and changes in other factors. Elasticity is a measure of just how much of the quantity demanded will be affected due to a change in price or income. Elasticity of Demand is a technical term used by economists to describe the degree of responsiveness of the demand for a commodity due to a fall in its price. A fall in price leads to an increase in quantity demanded and vice versa.

4.4 TYPES OF ELASTICITY OF DEMAND

The elasticity of demand may be as follows:

- **Price Elasticity**
- **Income Elasticity and**
- **Cross Elasticity**

4.4.1 Price Elasticity

The response of the consumers to a change in the price of a commodity is measured by the price elasticity of the commodity demand. The responsiveness of changes in

quantity demanded due to changes in price is referred to as price elasticity of demand. The price elasticity of demand is measured by dividing the percentage change in quantity demanded by the percentage change in price.

$$\textbf{Price Elasticity} = \frac{\text{Proportionate change in the Quantity Demanded}}{\text{Proportionate change in price}}$$

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

$$= \frac{\Delta Q / Q}{\Delta P / P} \qquad = \frac{10}{20} \qquad = 0.5$$

ΔQ = change in quantity demanded
ΔP = change in price
P = price
Q = quantity demanded

For example: Quantity demanded is 20 units at a price of Rs.500. When there is a fall in price to Rs. 400 it results in a rise in demand to 32 units. Therefore, the change in quantity demanded is12 units resulting from the change in price of Rs.100.

The Price Elasticity of Demand is = 500 / 20 x 12/100 = 3

4.4.2 Income Elasticity

Income elasticity of demand measures the responsiveness of quantity demanded to a change in income. It is measured by dividing the percentage change in quantity demanded by the percentage change in income. If the demand for a commodity increases by 20% when income increases by 10% then the income elasticity of that commodity is said to be positive and relatively high. If the demand for food were unchanged when income increases, the income elasticity would be zero. A fall in demand for a commodity when income raises results in a negative income elasticity of demand.

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

Income elasticity of goods reveals a few very important features of demand for the

goods in question. If income elasticity is zero, it signifies that the quantity demanded of the good is quite unresponsive to changes in income. When income elasticity is greater than zero or positive then an increase in income leads to an increase in quantity demanded of the good. This happens in case of most of the goods and such goods are called normal goods. On the other hand, goods having negative income elasticity are known as inferior goods and their demand falls as income increases. Another significant value of income elasticity is that of unity. When income elasticity of demand is equal to one, the proportion of income spent on goods remains the same as consumer's income increases. This represents a useful dividing line. If the income elasticity for a good is greater than one, it shows that the good bulks larger in consumer's expenditure as he becomes richer. Such goods are called luxury goods. On the other hand, if the income elasticity is less than one, it shows that the good is either relatively less important in consumer's eye or, it is a necessity.

The following examples will make the above concepts clear :

(a) The income of a household rises by 10%, the demand for wheat rises by 5%.

(b) The income of a household rises by 10%, the demand for T.V. rises by 20%.

(c) The incomes of a household rises by 5%, the demand for bajra falls by 2%.

(d) The income of a household rises by 7%, the demand for commodity X rises by 7%.

(e) The income of a household rises by 5%, the demand for buttons does not change at all.

Using formula for income elasticity.

$$\text{i.e.} \quad Ei = \frac{\text{Percentage change in demand}}{\text{Percentage change on income}}$$

We will find income-elasticity for various goods. The results are as follows:

S. No.	*Commodity*	*Income-elasticity for the household*	*Remarks*
a	Wheat	$\frac{5\%}{10\%} = .5\ (Ei < 1)$	since $0 < .5 < 1$, wheat is a normal good and fulfills a necessity
b	T.V	$\frac{10\%}{20\%} = 2\ (Ei > 1)$	since $2 > 1$, T.V. is a luxurious commodity
c	Bajra	$\frac{5\%}{-2\%} = -.4 (Ei < 0)$	Bajra is an inferior commodity in the eyes of the household
d	X	$\frac{7\%}{7\%} = 1\ (Ei = 1)$	since income elasticity is 1, X has unitary income elasticity.

e Buttons $\frac{0\%}{5\%}$ =0%(Ei=0) buttons have zero income-elasticity

4.4.3 Cross Elasticity

The quantity demanded of a particular commodity varies according to the price of other commodities. Cross elasticity measures the responsiveness of the quantity demanded of a commodity due to changes in the price of another commodity. For example the demand for tea increases when the price of coffee goes up. Here the cross elasticity of demand for tea is high. If two goods are substitutes then they will have a positive cross elasticity of demand. In other words if two goods are complementary to each other then negative income elasticity may arise.

The responsiveness of the quantity of one commodity demanded to a change in the price of another good is calculated with the following formula.

$$Ec = \frac{\text{\% change in demand for commodity A}}{\text{\% change in price of commodity B}}$$

A change in the demand for one good in response to a change in the price of another good represents cross elasticity of demand of the former good for the latter good.

If two commodities are unrelated goods, the increase in the price of one good does not result in any change in the demand for the other goods. For example the price fall in Tata salt does not make any change in the demand for Tata Nano.

If two goods are perfect substitutes for each other, the cross elasticity between them is infinite and if two goods are totally unrelated, cross elasticity between them is zero.

4.5 DETERMINANTS OF PRICE ELASTICITY OF DEMAND

The exact value of price elasticity for a commodity is determined by a wide variety of factors. The two factors considered by economists are the **availability of substitutes** and **time**. The better the substitutes for a product, the higher the price elasticity of demand. The longer the period of time, the more the price elasticity of demand for that product. The price elasticity of necessary goods will have lower elasticity than luxuries.

The elasticity of demand depends on the following factors:

1. **Nature of the commodity:** The demand for necessities is inelastic because the demand does not change much with a change in price. But the demand for luxuries is elastic in nature.

2. **Extent of use:** A commodity having a variety of uses has a comparatively elastic demand.

3. **Range of substitutes:** The commodity which has more number of substitutes has relatively elastic demand. A commodity with fewer substitutes has relatively inelastic demand.

4. **Income level:** People with high incomes are less affected by price changes than people with low incomes.

5. **Proportion of income spent on the commodity:** When a small part of income is spent on the commodity, the price change does not affect the demand therefore the demand is inelastic in nature.

6. **Urgency of demand / postponement of purchase:** The demand for certain commodities are highly inelastic because you cannot postpone its purchase. For example medicines for any sickness should be purchased and consumed immediately.

7. **Durability of a commodity:** If the commodity is durable then it is used it for a long period. Therefore elasticity of demand is high. Price changes highly influences the demand for durables in the market.

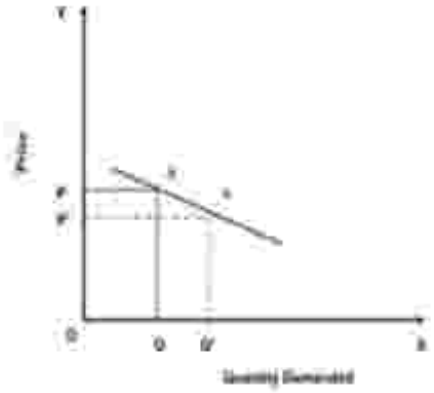
8. **Purchase frequency of a product/ recurrence of demand:** The demand for frequently purchased goods are highly elastic than rarely purchased goods.

9. **Time:** In the short run demand will be less elastic but in the long run the demand for commodities are more elastic.

4.6 DEGREES OF PRICE ELASTICITY OF DEMAND

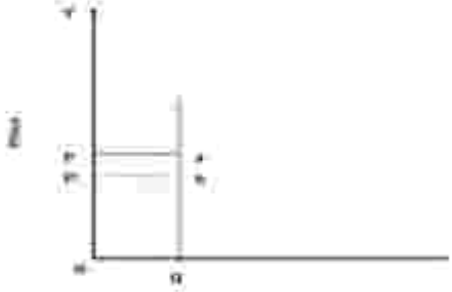
The following are the possible combination of changes in Price and Quantity demanded. The slope of each combination is depicted in the following graphs.

1. **Relatively Elastic Demand (Ed >1):** A small percentage change in price leading to a larger change in Quantity demanded.

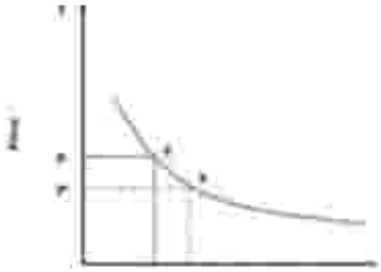


2. **Perfectly Elastic Demand (Ed = ∞):** a small change in price will change the quantity demanded by an infinite amount.

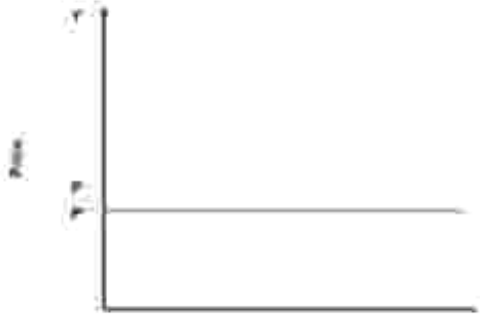
3. **Relatively Inelastic Demand (Ed < 1):** a change in price leads to a smaller percentage change in quantity demanded.



4. **Perfectly Inelastic Demand (Ed = 0):** the quantity demanded does not change regardless of the percentage change in price.



5. **Unit Elasticity of Demand (Ed =1):** the percentage change in quantity demanded is the same as the percentage change in price that caused it.



4.7 TYPES OF INCOME ELASTICITY OF DEMAND

The following are the various types of income elasticity:

1. **Zero Income Elasticity:** The increase in income of the individual does not make any difference in the demand for that commodity. (Ei = 0)

2. **Negative Income Elasticity:** The increase in the income of consumers leads to less purchase of those goods. (Ei < 0).

3. **Unitary Income Elasticity:** The change in income leads to the same percentage of change in the demand for the good. (Ei = 1).

4. **Income Elasticity is Greater than 1:** The change in income increases the demand for that commodity more than the change in the income. (Ei > 1).

5. **Income Elasticity is Less than 1:** The change in income increases the demand for the commodity but at a lesser percentage than the change in the Income. (Ei < 1).

With a rise in consumer's income, the demand increases for superior goods and decreases for inferior goods and vice versa. The income elasticity of demand is positive for superior goods or normal goods and negative for inferior goods since a person may shift from inferior to superior goods with a rise in income.

4.8 SIGNIFICANCE OF ELASTICITY OF DEMAND:

The concept of elasticity is useful for the managers for the following decision making activities:

1. In production i.e. in deciding the quantity of goods to be produced

2. Price fixation i.e. in fixing the prices not only on the cost basis but also on the basis of prices of related goods.

3. In distribution i.e. to decide as to where, when, and how much etc.

4. In international trade i.e. what to export, where to export.

5. In foreign exchange.

6. For nationalizing an industry.

7. In public finance.

4.9 SUMMARY

Elasticity of demand refers to the degree of sensitiveness or responsiveness of demand to a change in any one of its determinants. Elasticity of demand is classified mainly into three kinds. They are price elasticity of demand, income elasticity of demand and cross elasticity of demand. Price elasticity of demand refers to the percentage change in quantity demanded of a commodity as a result of a percentage change in price of that commodity where as Income elasticity of demand is the percentage change in quantity demanded of a commodity as a result of a percentage change in income of the consumer and the cross elasticity of demand is the percentage change in the quantity demanded of commodity X as a result of a percentage change in the price of some related commodity Y.

4.10 GLOSSARY

Elasticity of Demand: is the degree of sensitiveness or responsiveness of demand to a change in any one of its determinants.

Price Elasticity: is the percentage change in quantity demanded of a commodity as a result of a percentage change in price of that commodity.

Income Elasticity of Demand: is the percentage change in quantity demanded of a commodity as a result of a percentage change in income of the consumer.

Cross Elasticity of Demand: is the percentage change in the quantity demanded of commodity X as a result of a percentage change in the price of some related commodity Y.

Substitute goods: goods that can be used in place of another are substitute goods. For e.g. Tea and coffee, Coke and Pepsi etc.

Complementary goods: goods that are consumed simultaneously. For e.g. Tea and Sugar, Car and Petrol etc.

Superior goods: are those goods whose demand increases as income increases and also which are scarce and have high price.

Inferior goods: are those goods whose demand falls due to rise in income of the consumer.

Normal goods: also known as necessary goods are those goods whose demand increases due to rise in income but at a slower rate.

Luxury good: are costly goods and bought by the consumers that have high disposable income.

4.11 SELF ASSESSMENT QUESTIONS

1. State what will be your reaction in each case, and comment whether the demand elasticity is likely to be high or low.

   a) You have been consuming a certain brand of biscuits for many years. Its prices rise by Rs. 2.

   b) A Rs. 5 increase in the price of a notebook, which you bought last time.

   c) A Re. 1 increase in the price of the brand of salt used in your house.

   d) A Rs. 15 increase in the price of the brand of the detergent you use.

2. On the basis of following table, calculate demand elasticity when

   a) The price of pen falls from Rs. 8 to Rs. 6.

   b) The price of pen rises from Rs 6 to Rs.8.

   Explain why elasticity is different in both the cases.

3. When an individual's income was Rs.2000, the demand for rice was 10 kg. An increase of Rs.500 in the individual's income leads to a fall in the demand of rice by 2 kg. Assuming that the price of rice remained constant, what is the income elasticity of demand for rice?

4. The price for coke rises from Rs.30 to Rs.35 per 500ml. Also, the consumers demand for Pepsi rises from 500ml to 1000 ml. Calculate cross elasticity of demand of coke for Pepsi.

4.12 LESSONS END EXERCISE

1. What do you mean by elasticity of demand? What are the different types of elasticity of demand and also state the significance of elasticity of demand.

2. Discuss price elasticity of demand and the various determinants affecting price elasticity of demand.

3. Explain income elasticity of demand and also the degrees of income elasticity of demand.

4.13 FURTHER READINGS

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DEMAND FORECASTING

STRUCTURE

5.1 INTRODUCTION

An organization faces several internal and external risks, such as high competition, failure of technology, labor unrest, inflation, recession, and change in government laws. Therefore, most of the business decisions of an organization are made under the conditions of risk and uncertainty. An organization can lessen the adverse effects of risks by determining the demand or sales prospects for its products and services in future. Demand forecasting is a systematic process that involves anticipating the demand for the product and services of an organization in future under a set of uncontrollable and competitive forces.

5.2 OBJECTIVES

At the end of this chapter you will be able to:

i. Understand the meaning of demand forecasting.

ii. Understand the objectives of demand forecasting..

iii. Understand the factors influencing the demand forecasting.

iv. Get an insight into steps of demand forecasting.

v. Understand methods of demand forecasting.

5.3 MEANING OF DEMAND FORECASTING

Demand forecasting enables an organization to take various business decisions, such as planning the production process, purchasing raw materials, managing funds, and deciding the price of the product. An organization can forecast demand by making own estimates called guess estimate or taking the help of specialized consultants or market research agencies.

Some of the popular definitions of demand forecasting are as follows:

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

In the words of Cundiff and Still, "Demand forecasting is an estimate of sales during a specified future period based on proposed marketing plan and a set of particular uncontrollable and competitive forces."

5.4 OBJECTIVES OF DEMAND FORECASTING

Demand forecasting constitutes an important part in making crucial business decisions.

The objectives of demand forecasting are divided into short and long-term objectives, which are shown in Figure-1:

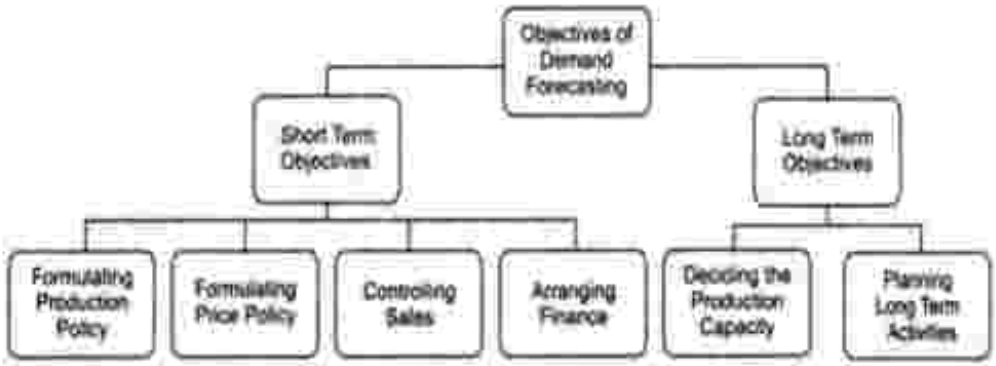


Figure-1: Objectives of Demand Forecasting

The objectives of demand forecasting (as shown in Figure-1) are discussed as follows:

I. Short-term Objectives: Include the following:

a. Formulating production policy: Helps in covering the gap between the demand and supply of the product. The demand forecasting helps in estimating the requirement of raw material in future, so that the regular supply of raw material can be maintained. It further helps in maximum utilization of resources as operations are planned according to forecasts. Similarly, human resource requirements are easily met with the help of demand forecasting.

b. Formulating price policy: Refers to one of the most important objectives of demand forecasting. An organization sets prices of its products according to their demand. For example, if an economy enters into depression or recession phase, the demand for products fall. In such a case, the organization sets low prices of its products.

c. Controlling sales: Helps in setting sales targets, which act as a basis for evaluating sales performance. An organization makes demand forecasts for different regions and fixes sales targets for each region accordingly.

d. Arranging finance: Implies that the financial requirements of the enterprise are estimated with the help of demand forecasting. This helps in ensuring proper liquidity within the organization.

ii. Long-term Objectives: Include the following:

a. Deciding the production capacity: Implies that with the help of demand forecasting, an organization can determine the size of the plant required for production. The size of the plant should conform to the sales requirement of the organization.

b. Planning long-term activities: Implies that demand forecasting helps in planning for long term. For example, if the forecasted demand for the organization's products is high, then it may plan to invest in various expansion and development projects in the long term.

5.5 FACTORS INFLUENCING DEMAND FORECASTING

Demand forecasting is a proactive process that helps in determining what products are needed where, when, and in what quantities. There are a number of factors that affect demand forecasting.

Some of the factors that influence demand forecasting are shown in Figure-2:

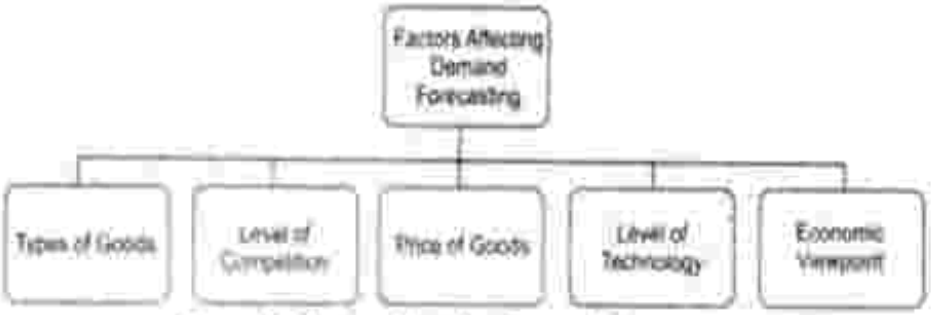


Figure-2: Factors Affecting Demand Forecasting

The various factors that influence demand forecasting ("as shown in Figure-2) are explained as follows:

i. Types of Goods: Affect the demand forecasting process to a larger extent. Goods can be producer's goods, consumer goods, or services. Apart from this, goods can be established and new goods. Established goods are those goods which already exist in the market, whereas new goods are those which are yet to be introduced in the market. Information regarding the demand, substitutes and level of competition of goods is known only in case of established goods. On the other hand, it is difficult to forecast demand for the new goods. Therefore, forecasting is different for different types of goods.

ii. Competition Level: Influence the process of demand forecasting. In a highly competitive market, demand for products also depends on the number of competitors existing in the market. Moreover, in a highly competitive market, there is always a risk of new entrants. In such a case, demand forecasting becomes difficult and challenging.

iii. Price of Goods: Acts as a major factor that influences the demand forecasting process. The demand forecasts of organizations are highly affected by change in their pricing policies. In such a scenario, it is difficult to estimate the exact demand of products.

iv. Level of Technology: Constitutes an important factor in obtaining reliable demand forecasts. If there is a rapid change in technology, the existing technology or products may become obsolete. For example, there is a high decline in the demand of floppy disks with the introduction of compact disks (CDs) and pen drives for saving data in computer. In such a case, it is difficult to forecast demand for existing products in future.

v. Economic Viewpoint: Play a crucial role in obtaining demand forecasts. For example, if there is a positive development in an economy, such as globalization and high level of investment, the demand forecasts of organizations would also be positive.

Apart from aforementioned factors, following are some of the other important factors that influence demand forecasting:

a. Time Period of Forecasts: Act as a crucial factor that affect demand forecasting. The accuracy of demand forecasting depends on its time period.

Forecasts can be of three types, which are explained as follows:

1. Short Period Forecasts: Refer to the forecasts that are generally for one year and based upon the judgment of the experienced staff. Short period forecasts are important for deciding the production policy, price policy, credit policy, and distribution policy of the organization.

2. Long Period Forecasts: Refer to the forecasts that are for a period of 5-10 years and based on scientific analysis and statistical methods. The forecasts help in deciding about the introduction of a new product, expansion of the business, or requirement of extra funds.

3. Very Long Period Forecasts: Refer to the forecasts that are for a period of more than 10 years. These forecasts are carried to determine the growth of population, development of the economy, political situation in a country, and changes in international trade in future.

Among the aforementioned forecasts, short period forecast deals with deviation in long period forecast. Therefore, short period forecasts are more accurate than long period forecasts.

4. Level of Forecasts: Influences demand forecasting to a larger extent. A demand forecast can be carried at three levels, namely, macro level, industry level, and firm level. **At macro level**, forecasts are undertaken for general economic conditions, such as industrial production and allocation of national income.

At the industry level, forecasts are prepared by trade associations and based on the statistical data. Moreover, at the industry level, forecasts deal with products whose sales are dependent on the specific policy of a particular industry. On the other hand, **at the firm level**, forecasts are done to estimate the demand of those products whose sales depends on the specific policy of a particular firm. A firm considers various factors, such as changes in income, consumer's tastes and preferences, technology, and competitive strategies, while forecasting demand for its products.

5. Nature of Forecasts: Constitutes an important factor that affects demand forecasting. A forecast can be specific or general. A general forecast provides a global picture of business environment, while a specific forecast provides an insight into the business environment in which an organization operates. Generally, organizations opt for both the forecasts together because over-generalization restricts accurate estimation of demand and too specific information provides an inadequate basis for planning and execution.

5.6 STEPS OF DEMAND FORECASTING:

The Demand forecasting process of an organization can be effective only when it is conducted systematically and scientifically.

It involves a number of steps, which are shown in Figure-3:

Figure-3: Process of Demand Forecasting

The steps involved in demand forecasting (as shown in Figure-3) are explained as follows:

1. Setting the Objective: Refers to first and foremost step of the demand forecasting process. An organization needs to clearly state the purpose of demand forecasting before initiating it.

Setting objective of demand forecasting involves the following:

a. Deciding the time period of forecasting whether an organization should opt for short-term forecasting or long-term forecasting

b. Deciding whether to forecast the overall demand for a product in the market or only for the organizations own products

c. Deciding whether to forecast the demand for the whole market or for the segment of the market

d. Deciding whether to forecast the market share of the organization

2. Determining Time Period: Involves deciding the time perspective for demand forecasting. Demand can be forecasted for a long period or short period. In the short run, determinants of demand may not change significantly or may remain constant, whereas in the long run, there is a significant change in the determinants of demand. Therefore, an organization determines the time period on the basis of its set objectives.

3. Selecting a Method for Demand Forecasting: Constitutes one of the most important steps of the demand forecasting process. Demand can be forecasted by using various methods. The method of demand forecasting differs from organization to organization depending on the purpose of forecasting, time frame, and data requirement and its availability. Selecting the suitable method is necessary for saving time and cost and ensuring the reliability of the data.

4. Collecting Data: Requires gathering primary or secondary data. Primary data refers to the data that is collected by researchers through observation, interviews, and questionnaires for a particular research. On the other hand, secondary data refers to the data that is collected in the past; but can be utilized in the present scenario/research work.

5. Estimating Results: Involves making an estimate of the forecasted demand for predetermined years. The results should be easily interpreted and presented in a usable form. The results should be easy to understand by the readers or management of the organization.

5.7 METHODS OF DEMAND FORECASTING

Demand forecasting is a difficult exercise. Making estimates for future under the changing conditions is a Herculean task. Consumers' behavior is the most unpredictable one because it is motivated and influenced by a multiplicity of forces. There is no easy method or a simple formula which enables the manager to predict the future.

Economists and statisticians have developed several methods of demand forecasting. Each of these methods has its relative advantages and disadvantages. Selection of the right method is essential to make demand forecasting accurate. In demand forecasting, a judicious combination of statistical skill and rational judgment is needed.

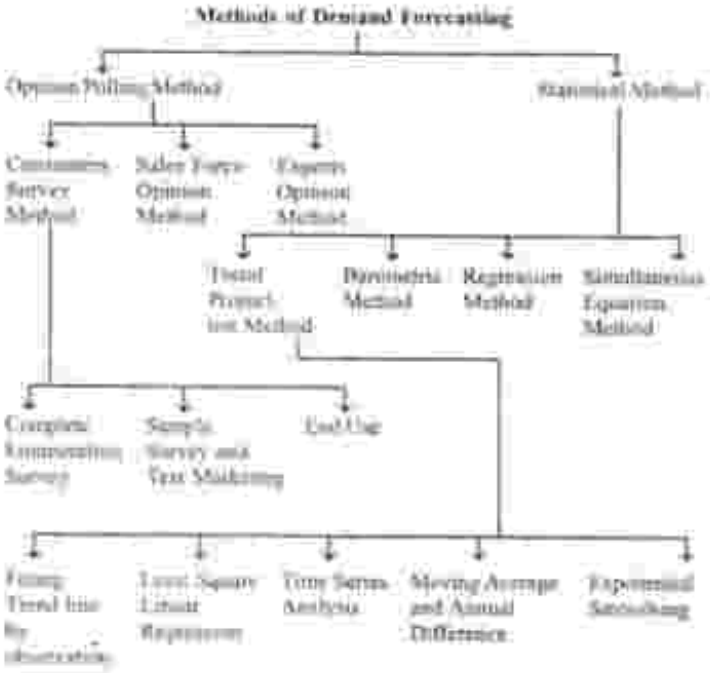
Mathematical and statistical techniques are essential in classifying relationships and providing techniques of analysis, but they are in no way an alternative for sound judgment. Sound judgment is a prime requisite for good forecast.

The judgment should be based upon facts and the personal bias of the forecaster should not prevail upon the facts. Therefore, a mid way should be followed between mathematical techniques and sound judgment or pure guess work.

The more commonly used methods of demand forecasting are discussed below:

The various methods of demand forecasting can be summarized in the form of a chart as shown in Table 1.

Table 1.



1. Opinion Polling Method: In this method, the opinion of the buyers, sales force and experts could be gathered to determine the emerging trend in the market.

The opinion polling methods of demand forecasting are of three kinds:

(a) Consumer's Survey Method or Survey of Buyer's Intentions: In this method, the consumers are directly approached to disclose their future purchase plans. This is done by interviewing all consumers or a selected group of consumers out of the relevant population. This is the direct method of estimating demand in the short run. Here the burden of forecasting is shifted to the buyer. The firm may go in for complete enumeration or for sample surveys. If the commodity under consideration is an intermediate product then the industries using it as an end product are surveyed.

(i) Complete Enumeration Survey: Under the Complete Enumeration Survey, the firm has to go for a door to door survey for the forecast period by contacting all the households in the area. This method has an advantage of first hand, unbiased information, yet it has its share of disadvantages also. The major limitation of this method is that it requires lot of resources, manpower and time. In this method, consumers may be reluctant to reveal their purchase plans due to personal privacy or

commercial secrecy. Moreover, at times the consumers may not express their opinion properly or may deliberately misguide the investigators.

(ii) Sample Survey and Test Marketing: Under this method some representative households are selected on random basis as samples and their opinion is taken as the generalised opinion. This method is based on the basic assumption that the sample truly represents the population. If the sample is the true representative, there is likely to be no significant difference in the results obtained by the survey. Apart from that, this method is less tedious and less costly.

A variant of sample survey technique is test marketing. Product testing essentially involves placing the product with a number of users for a set period. Their reactions to the product are noted after a period of time and an estimate of likely demand is made from the result. These are suitable for new products or for radically modified old products for which no prior data exists. It is a more scientific method of estimating likely demand because it stimulates a national launch in a closely defined geographical area.

(iii) End Use Method or Input-Output Method: This method is quite useful for industries which are mainly producer's goods. In this method, the sale of the product under consideration is projected as the basis of demand survey of the industries using this product as an intermediate product, that is, the demand for the final product is the end user demand of the intermediate product used in the production of this final product.

The end user demand estimation of an intermediate product may involve many final good industries using this product at home and abroad. It helps us to understand inter-industry' relations. In input-output accounting two matrices used are the transaction matrix and the input co-efficient matrix. The major efforts required by this type are not in its operation but in the collection and presentation of data.

(b) Sales Force Opinion Method: This is also known as collective opinion method. In this method, instead of consumers, the opinion of the salesmen is sought. It is sometimes referred as the "grass roots approach" as it is a bottom-up method that requires each sales person in the company to make an individual forecast for his or her particular sales territory.

These individual forecasts are discussed and agreed with the sales manager. The composite of all forecasts then constitutes the sales forecast for the organization. The advantages of this method are that it is easy and cheap. It does not involve any elaborate statistical treatment. The main merit of this method lies in the collective wisdom of salesmen. This method is more useful in forecasting sales of new

products.

(c) Experts Opinion Method: This method is also known as "Delphi Technique" of investigation. The Delphi method requires a panel of experts, who are interrogated through a sequence of questionnaires in which the responses to one questionnaire are used to produce the next questionnaire. Thus any information available to some experts and not to others is passed on, enabling all the experts to have access to all the information for forecasting.

The method is used for long term forecasting to estimate potential sales for new products. This method presumes two conditions: Firstly, the panelists must be rich in their expertise, possess wide range of knowledge and experience. Secondly, its conductors are objective in their job. This method has some exclusive advantages of saving time and other resources.

2. Statistical Method: Statistical methods have proved to be immensely useful in demand forecasting. In order to maintain objectivity, that is, by consideration of all implications and viewing the problem from an external point of view, the statistical methods are used.

The important statistical methods are:

(i) Trend Projection Method: A firm existing for a long time will have its own data regarding sales for past years. Such data when arranged chronologically yield what is referred to as 'time series'. Time series shows the past sales with effective demand for a particular product under normal conditions. Such data can be given in a tabular or graphic form for further analysis. This is the most popular method among business firms, partly because it is simple and inexpensive and partly because time series data often exhibit a persistent growth trend.

Time series has got four types of components namely, Secular Trend (T), Secular Variation (S), Cyclical Element (C), and an Irregular or Random Variation (I). These elements are expressed by the equation O = TSCI. Secular trend refers to the long run changes that occur as a result of general tendency.

Seasonal variations refer to changes in the short run weather pattern or social habits. Cyclical variations refer to the changes that occur in industry during depression and boom. Random variation refers to the factors which are generally able such as wars, strikes, flood, and famine and so on.

When a forecast is made the seasonal, cyclical and random variations are removed from the observed data. Thus only the secular trend is left. This trend is then projected. Trend projection fits a trend line to a mathematical equation.

The trend can be estimated by using any one of the following methods:

(a) The Graphical Method.

(b) The Least Square Method.

a) Graphical Method:

This is the simplest technique to determine the trend. All values of output or sale for different years are plotted on a graph and a smooth free hand curve is drawn passing through as many points as possible. The direction of this free hand curve—upward or downward— shows the trend. A simple illustration of this method is given in Table 2.

Table 2: Sales of Firm

Year	Sales(Rs. Crore)
1995	40
1996	50
1997	44
1998	60
1999	54
2000	62

In Fig. 1, AB is the trend line which has been drawn as free hand curve passing through the various points representing actual sale values.

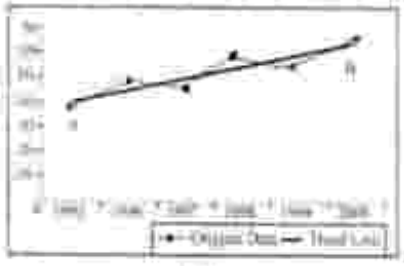


Fig.1

(b) Least Square Method: Under the least square method, a trend line can be fitted to the time series data with the help of statistical techniques such as least square regression. When the trend in sales over time is given by straight line, the equation of this line is of the form: $y = a + bx$. Where 'a' is the intercept and 'b' shows the impact of the independent variable. We have two variables—the independent variable x and the dependent variable y. The line of best fit establishes a kind of mathematical

relationship between the two variables .v and y. This is expressed by the regression y on x.

In order to solve the equation v = a + bx, we have to make use of the following normal equations:

$\Sigma y = na + b \Sigma X$
$\Sigma xy = a \Sigma x + b \Sigma x2$

(ii) Barometric Technique: A barometer is an instrument of measuring change. This method is based on the notion that "the future can be predicted from certain happenings in the present." In other words, barometric techniques are based on the idea that certain events of the present can be used to predict the directions of change in the future. This is accomplished by the use of economic and statistical indicators which serve as barometers of economic change.

Generally forecasters correlate a firm's sales with three series: Leading Series, Coincident or Concurrent Series and Lagging Series:

(a) The Leading Series: The leading series comprise those factors which move up or down before the recession or recovery starts. They tend to reflect future market changes. For example, baby powder sales can be forecasted by examining the birth rate pattern five years earlier, because there is a correlation between the baby powder sales and children of five years of age and since baby powder sales today are correlated with birth rate five years earlier, it is called lagged correlation. Thus we can say that births lead to baby soaps sales.

(b) Coincident or Concurrent Series: The coincident or concurrent series are those which move up or down simultaneously with the level of the economy. They are used in confirming or refuting the validity of the leading indicator used a few months afterwards. Common examples of coinciding indicators are G.N.P itself, industrial production, trading and the retail sector.

(c) The Lagging Series: The lagging series are those which take place after some time lag with respect to the business cycle. Examples of lagging series are, labor cost per unit of the manufacturing output, loans outstanding, leading rate of short term loans, etc.

(iii) Regression Analysis: It attempts to assess the relationship between at least two variables (one or more independent and one dependent), the purpose being to predict the value of the dependent variable from the specific value of the independent variable. The basis of this prediction generally is historical data. This method starts from the assumption that a basic relationship exists between two variables. An

interactive statistical analysis computer package is used to formulate the mathematical relationship which exists.

For example, one may build up the sales model as:

Quantum of Sales = a. price + b. advertising + c. price of the rival products + d. personal disposable income +u

Where a, b, c, d are the constants which show the effect of corresponding variables as sales. The constant u represents the effect of all the variables which have been left out in the equation but having effect on sales. In the above equation, quantum of sales is the dependent variable and the variables on the right hand side of the equation are independent variables. If the expected values of the independent variables are substituted in the equation, the quantum of sales will then be forecasted.

The regression equation can also be written in a multiplicative form as given below:

Quantum of Sales = (Price)a + (Advertising)b+ (Price of the rival products) c + (Personal disposable income) Y + u

In the above case, the exponent of each variable indicates the elasticities of the corresponding variable. Stating the independent variables in terms of notation, the equation form is QS= P°8. Ao42 . R°.83. Y2°,68. 40

Then we can say that 1 per cent increase in price leads to 0.8 per cent change in quantum of sales and so on.

If we take logarithmic form of the multiple equation, we can write the equation in an additive form as follows:

log QS =a log P+ b log A + c log R + d log Yd + log u

In the above equation, the coefficients a, b, c, and d represent the elasticity's of variables P, A, R and Y d respectively.

The co-efficient in the logarithmic regression equation are very useful in policy decision making by the management.

(iv)Econometric Models: Econometric models are an extension of the regression technique whereby a system of independent regression equation is solved. The requirement for satisfactory use of the econometric model in forecasting is under three heads: variables, equations and data. The appropriate procedure in forecasting by econometric methods is model building. Econometrics attempts to express economic theories in mathematical terms in such a way that they can be verified by statistical methods and to measure the impact of one economic variable upon another

so as to be able to predict future events.

Utility of Forecasting: Forecasting reduces the risk associated with business fluctuations which generally produce harmful effects in business, create unemployment, induce speculation, discourage capital formation and reduce the profit margin. Forecasting is indispensable and it plays a very important part in the determination of various policies. In modern times forecasting has been put on scientific footing so that the risks associated with it have been considerably minimized and the chances of precision increased.

5.8 CRITERIA OF A GOOD FORECASTING METHOD:

There are thus, a good many ways to make a guess about future sales. They show contrast in cost, flexibility and the adequate skills and sophistication. Therefore, there is a problem of choosing the best method for a particular demand situation.

There are certain economic criteria of broader applicability. They are:

(i) Accuracy, (ii) Plausibility, (iii) Durability, (iv) Flexibility, (v) Availability, (vi) Economy, (vii) Simplicity and (viii) Consistency.

(i) Accuracy: The forecast obtained must be accurate. How is an accurate forecast possible? To obtain an accurate forecast, it is essential to check the accuracy of past forecasts against present performance and of present forecasts against future performance. Accuracy cannot be tested by precise measurement but buy judgment.

(ii) Plausibility: The executive should have good understanding of the technique chosen and they should have confidence in the techniques used. Understanding is also needed for a proper interpretation of results. Plausibility requirements can often improve the accuracy of results.

(iii) Durability: Unfortunately, a demand function fitted to past experience may back cost vary greatly and still fall apart in a short time as a forecaster. The durability of the forecasting power of a demand function depends partly on the reasonableness and simplicity of functions fitted, but primarily on the stability of the understanding relationships measured in the past. Of course, the importance of durability determines the allowable cost of the forecast.

(iv) Flexibility: Flexibility can be viewed as an alternative to generality. A long lasting function could be set up in terms of basic natural forces and human motives. Even though fundamental, it would nevertheless be hard to measure and thus not very useful. A set of variables whose co-efficient could be adjusted from time to time to meet changing conditions in more practical way to maintain intact the routine procedure of forecasting.

(v) Availability: Immediate availability of data is a vital requirement and the search for reasonable approximations to relevance in late data is a constant strain on the forecaster's patience. The techniques employed should be able to produce meaningful results quickly. Delay in result will adversely affect the managerial decisions.

(vi) Economy: Cost is a primary consideration which should be weighed against the importance of the forecasts to the business operations. A question may arise: How much money and managerial effort should be allocated to obtain a high level of forecasting accuracy? The criterion here is the economic consideration.

(vii) Simplicity: Statistical and econometric models are certainly useful but they are intolerably complex. To those executives who have a fear of mathematics, these methods would appear to be Latin or Greek. The procedure should, therefore, be simple and easy so that the management may appreciate and understand why it has been adopted by the forecaster.

(viii) Consistency: The forecaster has to deal with various components which are independent. If he does not make an adjustment in one component to bring it in line with a forecast of another, he would achieve a whole which would appear consistent.

5.9 SUMMARY

In fine, the ideal forecasting method is one that yields returns over cost with accuracy, seems reasonable, can be formalized for reasonably long periods, can meet new circumstances adeptly and can give up-to-date results. The method of forecasting is not the same for all products. There is no unique method for forecasting the sale of any commodity. The forecaster may try one or the other method depending upon his objective, data availability, the urgency with which forecasts are needed, resources he intends to devote to this work and type of commodity whose demand he wants to forecast.

5.10 GLOSSARY

Demand Forecasting: Demand is a systematic process that involves anticipating the demand for the product and services of an organization in future under a set of uncontrollable and competitive forces.

Producer's Goods: Goods used for production of other goods.

Consumer's Goods: Goods and services used for final consumption are called consumer goods.

Sample Survey: The probable demand expressed by each selected unit is summed up

to get the total demand of sample units in the forecast period.

Regression Analysis: Methods by which the relationship between quantity demanded and one or more independent variables is estimated.

5.11 SELF ASSESSMENT QUESTIONS

1. What are the steps to be considered in mind before forecasting demand for any commodity?

2. Suppose you have to forecast demand for one consumer product and one industrial product. What will be the techniques you will use for forecasting demand? Assume that you can use more than one technique.

3. State the objectives and significance of demand forecasting.

5.12 LESSON END EXERCISE

1. What is demand forecasting? Discuss in detail the steps of demand forecasting process.

2. Explain various methods of demand forecasting. Highlight the advantages and disadvantages in each case.

3. Discuss the factors influencing demand forecasting. Also suggest criteria of a good forecasting technique.

5.13 FURTHER READINGS

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UTILITY ANALYSIS: LAW OF DIMINSHING MARGINAL UTILITY

STRUCTURE

6.1 INTRODUCTION

Utility is the want satisfying power of a commodity. It is a subjective entity and varies from person to person. It should be noted that utility is not the same thing as usefulness. Even harmful things like liquor, may be said to have utility from the economic stand point because people want them. Thus, in Economics, the concept of utility is ethically neutral. Utility is the anticipated satisfaction by the consumer, and satisfaction is the actual satisfaction derived. Utility hypothesis forms the basis of the theory of consumer behavior. From time to time, different theories have been advanced to explain consumer behavior and thus to explain his demand for the product. Two important theories are (i) Marginal Utility Analysis propounded by

Marshall, and (ii) Indifference Curve Analysis propounded by Hicks and Allen.

6.2 OBJECTIVES

After going through this chapter you should be able to:

i. Understand the concept of utility analysis,

ii. Understand the Law of Diminishing Marginal Utility.

iii. Understand the significance of Law of Diminishing Marginal Utility

6.3 UTILITY ANALYSIS

This theory which is formulated by Alfred Marshall, a British economist, seeks to explain how a consumer spends his income on different goods and services so as to attain maximum satisfaction. This theory is based on certain assumptions. But before stating the assumptions, let us understand the meaning of total utility and marginal utility.

6.3.1 Total utility: It is the sum of utility derived from different units of a commodity consumed by a consumer. In other words, Total utility = the sum total of all marginal utility.

6.3.2 Marginal utility: It is the additional utility derived from the consumption of an additional unit of a commodity. In short, Marginal utility = the addition made to the total utility by the addition of consumption of one more unit of a commodity.

Total Utility is otherwise known as "Full Satiety". Marginal Utility is also known as Marginal Satiety.

6.4 ASSUMPTIONS OF MARGINAL UTILITY ANALYSIS

The law of DMU operates under certain specific conditions. Economists call them the 'assumptions' of this law. These are as follows:

1. Cardinal measurement of utility: It is assumed that utility can be measured and a consumer can express his satisfaction in quantitative terms such as 1, 2, 3, etc.

2. Monetary measurement of utility: It is assumed that utility is measurable in monetary terms.

3. Consumption of reasonable quantity: It is assumed that a reasonable quantity of the commodity is consumed. For example, we should compare MU of glassfuls of water and not of spoonful's. If a thirsty person is given water in a spoon, then every additional spoon will yield him more utility. So, to hold the law true, suitable and

proper quantity of the commodity should be consumed.

4. Continuous consumption: It is assumed that consumption is a continuous process. For example, if one ice-cream is consumed in the morning and another in the evening, then the second ice-cream may provide equal or higher satisfaction as compared to the first one.

5. No change in Quality: Quality of the commodity consumed is assumed to be uniform. A second cup of ice-cream with nuts and toppings may give more satisfaction than the first one, if the first ice-cream was without nuts or toppings.

6. Rational consumer: The consumer is assumed to be rational who measures, calculates and compares the utilities of different commodities and aims at maximising total satisfaction.

7. Independent utilities: It is assumed that all the commodities consumed by a consumer are independent. It means, MU of one commodity has no relation with MU of another commodity. Further, it is also assumed that one person's utility is not affected by the utility of any other person.

8. MU of money remains constant: As a consumer spends money on the commodity, he is left with lesser money to spend on other commodities. In this process, the remaining money becomes dearer to the consumer and it increases MU of money for the consumer. But, such an increase in MU of money is ignored. As MU of a commodity has to be measured in monetary terms, it is assumed that MU of money remains constant.

9. Fixed Income and prices: It is assumed that income of the consumer and prices of the goods which the consumer wishes to purchase remain constant.

It must be noted that 'Utility approach to Consumer's Equilibrium' is based on all these assumptions.

6.5 LAW OF DIMINISHING MARGINAL UTILITY

One of the important laws under Marginal Utility analysis is the Law of Diminishing Marginal Utility. The law of diminishing marginal utility is based on an important fact that while total wants of a person are virtually unlimited, each single want is satiable i.e., each want is capable of being satisfied. Since each want is satiable, as a consumer consumes more and more units of a good, the intensity of his want for the

good goes on decreasing and a point is reached where the consumer no longer wants it.

6.5.1 Statement of the Law

"The additional benefit which a person derives from a given increase in stock of a thing diminishes with every increase in the stock that he already has."- Marshall

In other words, 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".

This law describes a very fundamental tendency of human nature. In simple words it says that as a consumer takes more units of a good, the extra satisfaction that he derives from an extra unit of a good goes on falling. It is to be noted that it is the marginal utility and not the total utility which declines with the increase in the consumption of a good.

6.5.2 Explanation of the Law

Suppose that you are hungry and plan to have some oranges. Since you are hungry, the first orange provides you with great amount of utility. The utility derived from the second orange is certainly less than that of the first orange. Similarly, the utility derived from the third orange is less than that of the second orange; the fourth orange yields you less utility than the third orange and so on. After certain stage of consumption, the utility derived becomes zero and beyond this stage, the utility derived becomes negative. This is because of the reason that you are getting satiated as you consume more and more oranges.

When the utility becomes zero, it means that the consumer is not in need of the commodity any further. For better understanding, let us look at the following table. The figures mentioned in the table are hypothetical and the table represents the utility derived by a person from the consumption of oranges.

Table 1

Number of Oranges	Total Utility	Marginal Utility
1	6	6
2	11	5
3	15	4

4	18	3
5	20	2
6	21	1
7	21	0
8	20	-1

Total utility

Total utility, as the term indicates, is the utility derived from all units of commodity. Suppose that a person consumes 10 oranges. In this case, the total utility is obtained by adding the utility derived from each unit of orange. In our example (Table 1), the total utility derived from the first six oranges is 21 (21 = 6 + 5 + 4 + 3 + 2 + 1).

Marginal utility

Marginal utility is the utility from a successive unit of commodity. To put it simple, marginal utility represents the utility derived from each unit of commodity under consideration.

Symbolically,

MU = ΔTU/ΔC where,

TU = total utility

ΔTU = change in total utility (TUn – TUn-1)

C = consumption and ΔC = 1 unit or

In other words, marginal utility of nth unit of commodity A is the difference between the total utility of nth unit and the total utility of (n-1)th unit of the commodity.

Symbolically,

MUn = TUn – TUn-1

where,

MUn = Marginal utility of nth unit

TUn = Total utility of nth unit

TUn-1 = Total utility of (n-1)th unit

In our example (Table 1), the marginal utility of the 4th orange is MU4 = TU4 – TU3= 18 – 15 = 3.

The figure 1 details the path of total utility and marginal utility curves. The total utility curve rises initially and after certain stage, the curve starts declining. At this stage, the marginal utility curve enters into the negative zone.

Figure 1

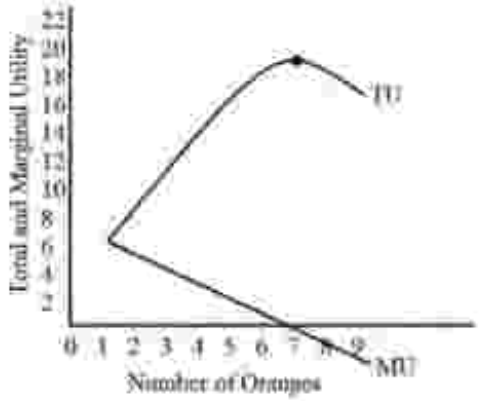

Table 2: Relationship between Marginal Utility and Total Utility

	Marginal Utility	Total Utility
1.	Declines	Increases but at a diminishing rate
2	Reaches zero; and	Reaches maximum; and
3.	Becomes Negative	Declines from the maximum

The law claims that the marginal utility diminishes as quantity consumed increases. In some cases, the marginal utility may keep increasing in the beginning. However, a stage certainly comes at which the marginal utility starts decreasing. The law is relevant only at this decreasing part.

Why does the marginal utility diminish?

The following two important reasons are advanced for the operation of the law of

diminishing marginal utility:

i. ***Satiability of particular wants:*** Firstly, human wants are satiable. Though you are an ardent lover of movies, you cannot watch infinite number of movies. At certain stage, you are bored of movies. Because your want is getting satiated as you watch more and more movies. This is the fundamental reason for the operation of the law of diminishing marginal utility.

ii. ***Commodities are not perfectly substitutes:*** Secondly, each commodity is unique in the usage. This means that commodities are not perfectly substitutes. When you are satisfied with one commodity, you switch over to another because of their unique usages. When you try out something new, the utility derived from the first unit is high and the subsequent units give you less and less utility. Therefore, the law of diminishing marginal utility operates. Had all commodities been perfectly substitutes, there would be nothing new to excite you. In this case, law of diminishing marginal utility does not operate.

6.5.3 Exceptions to the Law of Diminishing Marginal Utility

The Law of diminishing marginal utility does not operate under some circumstances. The following are the exceptions to the law of diminishing marginal utility:

1. ***Abnormality:*** Abnormality in individuals prevents the law from working well. For instance, misers or drunkards are considered abnormal here. Additional units of toxic substance may yield increasing marginal utility to a drunkard. In this scenario, the law of diminishing marginal utility does not work. Similarly, a miser may get increasing marginal utilities by acquiring more and more money. However, this argument is ruled out because the law assumes rationality in human behavior.

2. ***Rare collections:*** Some people may involve collection rare articles such as antiques, stamps, old paintings, coins and so on. Under these circumstances also, the law of diminishing marginal utility does not hold good. Similarly, some people purchase goods such as jewels and diamonds just to display them in order to uphold their social status. In this case, the law of diminishing marginal utility does not operate properly.

3. ***Increasing usage:*** When many people start using a commodity, the utility derived from it starts increasing. For example, when you alone use a mobile phone, you may not find it much useful. If all your friends start using mobile phone, you will start using yours frequently. In this case, the utility you derive from your mobile

phone start increasing, when others start using mobile phone. Therefore, there is no possibility for the law of diminishing marginal utility to operate under this circumstance.

6.5.4 Significance of the Law

The importance or the role of the law of diminishing marginal utility is as follows:

1. By purchasing more of a commodity the marginal utility decreases. Due to this behavior, the consumer cuts his expenditures to that commodity.

2. In the field of public finance, this law has a practical application, imposing a heavier burden on the rich people.

3. This law is the base of some other economic laws such as law of demand, elasticity of demand, consumer surplus and the law of substitution etc.

4. The value of commodity falls by increasing the supply of a commodity. It forms a basis of the theory of value. In this way prices are determined

6.6 SUMMARY

In making choices, most people spread their incomes over different kinds of goods. People prefer a variety of goods because consuming more and more of any one good reduces the marginal satisfaction derived from further consumption of the same good. This law expresses an important relationship between utility and the quantity consumed of a commodity. Let us understand this law with the help of an example: Suppose your father has just come from work and you offer him a glass of juice. The first glass of juice will give him great satisfaction. The satisfaction with the second glass of juice will be relatively lesser. With further consumption, a stage will come, when he would not need any more glass of juice, i.e. when the marginal utility drops to zero. After that point, if he is forced to consume even one more glass of juice, it will lead to disutility. Such a decrease in satisfaction with consumption of successive units occurs due to 'Law of diminishing marginal utility'. Law of DMU has universal applicability and applies to all goods and services.

6.7 GLOSSARY

Utility: is a want satisfying power of a commodity.

Total utility: is the sum total of all marginal utility.

Marginal utility: the addition made to the total utility by the addition of consumption of one more unit of a commodity.

6.8 SELF ASSESSMENT QUESTIONS

1. Explain the concept of marginal utility analysis.
2. Discuss the relationship between Marginal Utility and Total Utility.
3. State the assumptions to the Law of Diminishing Marginal Utility.

6.9 LESSON END EXERCISE

1. State and explain the Law of Diminishing Marginal Utility With the help of table and diagram.
2. Describe the significance of Law of Diminishing Marginal Utility and also give the exceptions to the law.

6.10 FURTHER READINGS

Ahuja, H. L., "Advanced Economic Theory", 2000, Sultan Chand and Co. (Pvt.) Ltd., New Delhi.

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LAW OF EQUI- MARGINAL UTILITY

STRUCTURE

7.1 INTRODUCTION

We know that human wants are unlimited whereas the means to satisfy these wants are strictly limited. It, therefore' becomes necessary to pick up the most urgent wants that can be satisfied with the money that a consumer has. Of the things that he decides to buy he must buy just the right quantity. Every prudent consumer will try to make the best use of the money at his disposal and derive the maximum satisfaction.

7.2 OBJECTIVES

After going through this chapter you should be able to:

i. Understand the Law of Equi- Marginal Utility.

ii. Understand the significance of Law of Equi-Marginal Utility.

7.3 LAW OF EQUI- MARGINAL UTILITY

The fundamental problem in an economy is that there are unlimited human wants. However, there are no adequate resources to satisfy all human wants. Hence, a

rational individual tries to optimize the available scarce resources in order to attain maximum satisfaction. An individual's attempt to optimize the available scare resources is known as consumer's behavior. The law of equi-marginal utility explains such consumer's behavior when the consumer has limited resources and unlimited wants. Because of this reason, the law of equi-marginal utility is further referred to as the law of maximum satisfaction, the principle of income allocation, the law of economy in expenditure or the law of substitution.

7.3.1 Statement of the Law

"A person can get maximum utility with his given income when it is spent on different commodities in such a way that the marginal utility of money spent on each item is equal".

It is clear that consumer can get maximum utility from the expenditure of his limited income. He should purchase such amount of each commodity that the last unit of money spend on each item provides same marginal utility.

7.3.2 Explanation of the Law

In order to get maximum satisfaction out of the funds we have, we carefully weigh the satisfaction obtained from each rupee had we spend If we find that a rupee spent in one direction has greater utility than in another, we shall go on spending money on the former commodity, till the satisfaction derived from the last rupee spent in the two cases is equal.

In other words, we substitute some units of the commodity of greater utility for some units of the commodity of less utility. The result of this substitution will be that the marginal utility of the former will fall and that of the latter will rise, till the two marginal utilities are equalized. That is why the law is also called the Law of Substitution or the Law of Equi-Marginal Utility.

Suppose apples and oranges are the two commodities to be purchased. Suppose further that we have got seven rupees to spend. Let us spend three rupees on oranges and four rupees on apples. What is the result? The utility of the 3rd unit of oranges is 6 and that of the 4th unit of apples is 2. As the marginal utility of oranges is higher, we should buy more of oranges and less of apples. Let us substitute one orange for one apple so that we buy four oranges and three apples.

Now the marginal utility of both oranges and apples is the same, i.e., 4. This arrangement yields maximum satisfaction. The total utility of 4 oranges would be 10 + 8 + 6 + 4 = 28 and of three apples 8 + 6 + 4= 18 which gives us a total utility of 46. The satisfaction given by 4 oranges and 3 apples at one rupee each is greater than could be obtained by any other combination of apples and oranges. In no other case

does this utility amount to 46. We may take some other combinations and see.

Table 1: Marginal Utility of Oranges and Apples

Units	Marginal utility of oranges	Marginal utility of apples
1	10	8
2	8	6
3	6	4
4	4	2
5	2	0
6	0	−2
7	−2	−4
8	−4	−6

We thus come to the conclusion that we obtain maximum satisfaction when we equalize marginal utilities by substituting some units of the more useful for the less useful commodity. We can illustrate this principle with the help of a diagram.

Diagrammatic Representation:

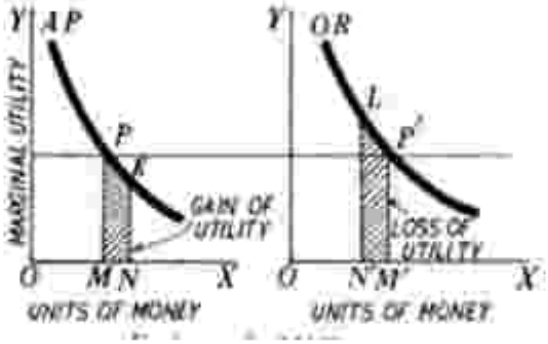

Fig: Equi- Marginal Utility

In the two figures given above, OX and OY are the two axes. On X-axis OX are represented the units of money and on the Y-axis marginal utilities. Suppose a person has 7 rupees to spend on apples and oranges whose diminishing marginal utilities are shown by the two curves AP and OR respectively.

The consumer will gain maximum satisfaction if he spends OM money (3 rupees) on apples and OM' money (4 rupees) on oranges because in this situation the marginal utilities of the two are equal (PM = P'M'). Any other combination will give less total satisfaction.

Let the purchase spend MN money (one rupee) more on apples and the same amount of money, N'M'(= MN) less on oranges. The diagram shows a loss of utility represented by the shaded area LN'M'P' and a gain of PMNE utility. As MN = N'M'

and PM=P'M', it is proved that the area LN'M'P' (loss of utility from reduced consumption of oranges) is bigger than PMNE (gain of utility from increased consumption of apples). Hence the total utility of this new combination is less.

7.3.3 Exceptions to the Law of Equi-Marginal Utility

Like other economic laws, the law of equi-marginal utility too has certain limitations or exceptions. The following are the main exception.

(i) Ignorance: If the consumer is ignorant or blindly follows custom or fashion, he will make a wrong use of money. On account of his ignorance he may not know where the utility is greater and where less. Thus, ignorance may prevent him from making a rational use of money. Hence, his satisfaction may not be the maximum, because the marginal utilities from his expenditure cannot be equalized due to ignorance.

(ii) Inefficient Organization: In the same manner, an incompetent organizer of business will fail to achieve the best results from the units of land, labor and capital that he employs. This is so because he may not be able to divert expenditure to more profitable channels from the less profitable ones.

(iii) Unlimited Resources: The law has obviously no place where this resources are unlimited, as for example, is the case with the free gifts of nature. In such cases, there is no need of diverting expenditure from one direction to another.

(iv) Hold of Custom and Fashion: A consumer may be in the strong clutches of custom, or is inclined to be a slave of fashion. In that case, he will not be able to derive maximum satisfaction out of his expenditure, because he cannot give up the consumption of such commodities. This is especially true of the conventional necessaries like dress or when a man is addicted to some intoxicant.

(v) Frequent Changes in Prices: Frequent changes in prices of different goods render the observance of the law very difficult. The consumer may not be able to make the necessary adjustments in his expenditure in a constantly changing price situation.

7.3.4 Significance of Law of Substitution

The law of substitution is of great practical importance. Everybody has got limited income. Naturally he must try to make the best use of it.

This can be done by the application of this law in the various aspects of economic life as under:

(i) Consumption: A wise consumer consciously acts on this law while arranging his expenditure. His expenditure is so distributed that the same price measures equal

utilities at the margin of different purchases. Every person must try to spend his income in a manner which yields him the greatest satisfaction. This he will be able to do only if he spends his money in such a manner as to obtain equal satisfaction from the marginal units of money spent on the various commodities he purchases.

(ii) Production: The law is also of great importance in production. The producer has to use several factors of production. He wants maximum net profit. For this purpose, he must substitute one factor for another so as to have the most economical combination, for example, he will substitute labor for machinery and vice versa. So that the marginal utility or marginal productivity of the two is equalized in this manner, he will get most economical combination of the 'actors of production at his disposal to make maximum profit.

(iii) Exchange: The law also applies in exchange because exchange is nothing else but substitution of one thing for another. When we sell a commodity, say, sugar, we get money. With this money, we buy another commodity, say, wheal. We have, therefore, really substituted sugar for wheat.

(iv) Distribution: It is on the principle of marginal productivity that the share of each factor of production (viz., land, labor, capital, organization) is determined. The use of each factor is pushed up to a point where its marginal product is equal to the marginal product of every other factor, of course after allowing for the differences in their respective remunerations. This necessitates substituting one factor for another.

(v) Public Finance: The Government, too, is guided by this law in public expenditure. The public revenues are so spent as to secure maximum welfare for me community. The Government must cut down all wasteful expenditure while the return is not proportionate and instead concentrate its resources on more productive or more beneficial expenditure.

(vi) Influences Prices: The law of substitution influences prices. When a commodity becomes scarce and its price soars high, we substitute for it things which are less scarce. Its price, therefore, comes down.

7.4 SUMMARY

The law of equi-marginal utility is also known as law of maximum satisfaction or law of substitution. A consumer has number of wants. He tries to spend limited income on different things in such a way that marginal utility of all things is equal. When he buys several things with given money income he equalizes marginal utilities of all such things. The law of equi marginal utility is an extension of the law of diminishing marginal utility. The consumer can get maximum utility by allocating income among commodities in such a way that last dollar spent on each item provides the same

marginal utility.

7.5 GLOSSARY

Equi-Marginal Utility: When a consumer buys several things with given money income he equalizes marginal utilities of all such things.

7.6 SELF ASSESSMENT QUESTIONS

1. Write a detailed note on Law of Equi- Marginal Utility.

2. Highlight the importance of Law of Equi- Marginal Utility.

7.7 LESSON END EXERCISES

1. Explain the Law of Equi- Marginal Utility with the help of table and diagram.

2. Discuss in detail the exceptions to the Law of Equi- Marginal Utility and also highlight its significance.

7.8 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

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INDIFFERENCE CURVE ANALYSIS

STRUCTURE

8.1 INTRODUCTION

In the last chapter, we discussed marginal utility analysis of demand. A very popular alternative and more realistic method of explaining consumer's demand is the Indifference Curve Analysis. This approach to consumer behavior is based on consumer preferences. It believes that human satisfaction, being a psychological phenomenon, cannot be measured quantitatively in monetary terms as was attempted in Marshall's utility analysis. In this approach, it is felt that it is much easier and scientifically more sound to order preferences than to measure them in terms of money. The consumer preference approach is, therefore, an ordinal concept based on ordering of preferences compared with Marshall's approach of cardinality.

8.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand the meaning of indifference curve.

ii. Analyze indifference curve approach.

iii. Understand the concept of indifference map.

iv. Explain the properties of indifference curve.

8.3 MEANING OF INDIFFERENCE CURVE ANALYSIS

Indifference curve analysis is basically an attempt to improve cardinal utility analysis (principle of marginal utility). The cardinal utility approach, though very useful in studying elementary consumer behavior, is criticized for its unrealistic assumptions vehemently. In particular, economists such as Edgeworth, Hicks, Allen and Slutsky opposed utility as a measurable entity. According to them, utility is a subjective phenomenon and can never be measured on an absolute scale. The disbelief on the measurement of utility forced them to explore an alternative approach to study consumer behavior. The exploration led them to come up with the ordinal utility approach or indifference curve analysis. Because of this reason, aforementioned economists are known as ordinalists. As per indifference curve analysis, utility is not a measurable entity. However, consumers can rank their preferences.

8.3.1 Indifference Curve

Ordinal analysis of demand (here we will discuss the one given by Hicks and Allen) is based on indifference curves. **An indifference curve is a curve which represents all those combinations of two goods which give same satisfaction to the consumer. Since all the combinations on an indifference curve give equal satisfaction to the consumer, the consumer is indifferent among them. In other words, since all the combinations provide the same level of satisfaction the consumer prefers them equally and does not mind which combination he gets.**

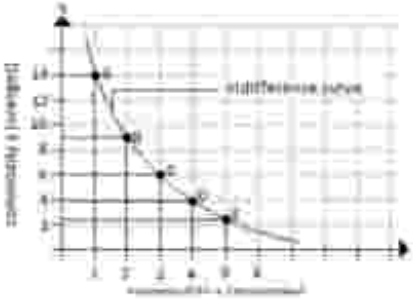
To understand indifference curves, let us consider the example of a consumer who has one unit of mangoes and 14 units of oranges. Now, we ask the consumer how many units of oranges he is prepared to give up to get an additional unit of mangoes, so that his level of satisfaction does not change. Suppose the consumer says that he is ready to give up 9 units of oranges to get an additional unit of mangoes. We will have then two combinations of mangoes and oranges giving equal satisfaction to consumer: Combination A which has 1 unit of mangoes and 14 units of oranges, and combination B which has 2 units of mangoes and 9 units of oranges. Similarly, by asking the consumer further how much of oranges he will be prepared to forgo for successive increments in his stock of mangoes so that his level of satisfaction remains unaltered, we get various combinations as given below:

Table: Indifference schedule

Combination	Margarine	Oranges
A	1	14
B	2	9
C	3	6
D	4	4
E	5	2.5

An indifference curve IC is drawn by plotting the various combinations of the indifference schedule. The quantity of food is measured on the X axis and the quantity of clothing on the Y axis. As in indifference schedule, the combinations lying on an indifference curve will give the consumer the same level of satisfaction. The indifference curve is also called Iso-Utility curve.

Figure: Graphical representation of indifference curve



8.3.2 Assumptions Underlying Indifference Curve Approach

1. Two commodities: It is assumed that the consumer has a fixed amount of money, whole of which is to be spent on the two goods, given constant prices of both the goods.

2. Non Satiety: It is assumed that the consumer has not reached the point of saturation. Consumer always prefer more of both commodities, i.e. he always tries to move to a higher indifference curve to get higher and higher satisfaction.

3. Ordinal Utility: Consumer can rank his preferences on the basis of the satisfaction from each bundle of goods.

4. Diminishing marginal rate of substitution: Indifference curve analysis assumes diminishing marginal rate of substitution. Due to this assumption, an indifference curve is convex to the origin.

5. Rational Consumer: The consumer is assumed to behave in a rational manner, i.e. he aims to maximize his total satisfaction.

8.3.3 Indifference Map

Indifference Map: An Indifference map represents a collection of many indifference curves where each curve represents a certain level of satisfaction. In short, a set of indifference curves is called an indifference map. An indifference map depicts the complete picture of consumer's tastes and preferences. In the given figure, an indifference map of a consumer is shown which consists of three indifference curves. We have taken good X on X-axis and good Y on Y-axis. It should be noted that while the consumer is indifferent among the combinations lying on the same indifference curve, he certainly prefers the combinations on the higher indifference curve to the combinations lying on a lower indifference curve because a higher indifference curve signifies a higher level of satisfaction. Thus, while all combinations of IC1 give him the same satisfaction, all combinations lying on IC2 give him greater satisfaction than those lying on IC1.

8.4 PROPERTIES OF INDIFFERENCE CURVE

The main attributes or properties or characteristics of indifference curves are as follows:

Indifference curves slope downward to the right : The indifference curves must slope downward from left to right. As the consumer increases the consumption of X commodity, he has to give up certain units of Y commodity in order to maintain the same level of satisfaction.

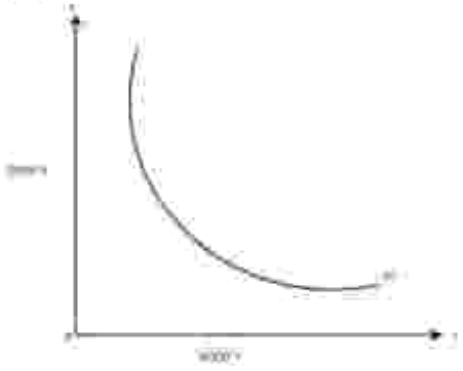
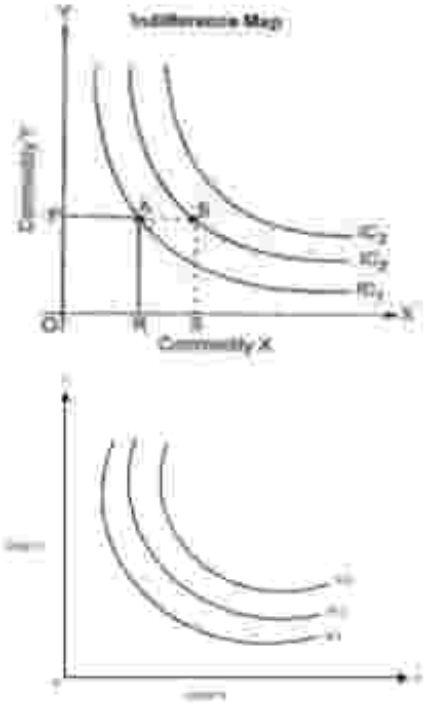


Fig : Indifference Curve

1. **Indifference curves are always convex to the origin:** This is an important property of indifference curves. They are convex to the origin. As the consumer substitute's commodity X for commodity Y, the marginal rate of substitution diminishes as X for Y along an indifference curve. The Slope of the curve is referred as the Marginal Rate of Substitution. The Marginal Rate of Substitution is the rate at which the consumer must sacrifice units of one commodity to obtain one more unit of another commodity.

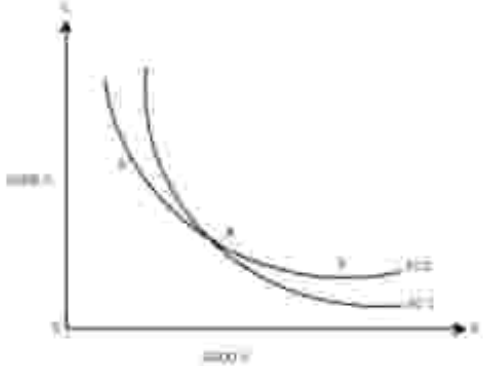
2. **A higher indifference curve represents a higher level of satisfaction than the lower indifference curve:** Indifference curve that lies above and to the right of another indifference curve represents a higher level of satisfaction. The combination of goods which lies on a higher indifference curve will be preferred by a consumer to the combination which lies on a lower indifference curve.



Fig

In this diagram, there are three indifference curves, IC1, IC2 and IC3 which represents different levels of satisfaction. The indifference curve IC3 shows greater amount of satisfaction and it contains more of both goods than IC2 and IC1. IC3 > IC2> Ic1.

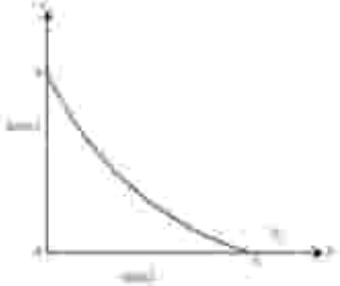
4. **Indifference curves can never intersect each other:** The indifference curves cannot intersect each other. It is because at the point of tangency, the higher curve will give as much as of the two commodities as is given by the lower indifference curve. This is absurd and impossible.



In the above diagram, two indifference curves are showing cutting each other at point B. The combinations represented by points B and F given equal satisfaction to the consumer because both lie on the same indifference curve IC2. Similarly the combinations shows by points B and E on indifference curve IC1 give equal satisfaction top the consumer.

If combination F is equal to combination B in terms of satisfaction and combination E is equal to combination B in satisfaction. It follows that the combination F will be equivalent to E in terms of satisfaction. This conclusion looks quite funny because combination F on IC2 contains more of good Y (wheat) than combination which gives more satisfaction to the consumer. We, therefore, conclude that indifference curves cannot cut each other.

5. **Indifference curve will not touch either axes:** One of the basic assumptions of indifference curves is that the consumer purchases combinations of different commodities. He is not supposed to purchase only one commodity. In that case indifference curve will touch one axis. This violates the basic assumption of indifference curves.



Fig

In the above diagram, it is shown that the indifference IC touches Y axis at point P and X axis at point S. At point C, the consumer purchase only OP commodity of Y good and no commodity of X good, similarly at point S, he buys OS quantity of X good and no amount of Y good. Such indifference curves are against our basic assumption. Our basic assumption is that the consumer buys two goods in combination.

8.5 SUMMARY

Indifference curves are a graphical representation of how much value an individual receives from various combinations of consumption. We measure value through the catch-all term "utility", an concept for the value, well-being, satisfaction, benefit, etc. that someone receives. As I have expressed before, utility is a relatively abstract concept; people constantly face trade-offs between current satisfaction and later success or happiness. We can examine utility from a short or long-term perspective in most cases, pondering the existential question of which happiness is the most important—the current, tangible feeling or that of later, but not-assured, joy. In this case, however, we will be sticking to the neo-classical interpretation of utility, where we assume people are totally rational and weigh all their decisions fully, implying that they will aim to make choices that are both responsible and maximize their utility in the long run. With this definition of utility in mind, we can tackle the concept of an indifference curve. An indifference curve aims to display all the various combinations of consumption for two goods that will give an individual the same level of utility. Because the combinations all give you the same level of satisfaction (utility), you won't care which one you pick—that is, consumers will be indifferent to the various combinations along the indifference curve.

8.6 GLOSSARY

Indifference Curve: Indifference curves are a graphical representation of how much value an individual receives from various combinations of consumption. Since each combination gives equal satisfaction to the consumer he is indifferent which combination he gets.

Indifference Map: A set of indifference curve is called indifference map.

8.7 SELF ASSESSMENT QUESTIONS

1. What do you understand by indifference curve?

2. State the various assumptions underlying indifference curve.

3. Construct an indifference curve using hypothetical data.

8.8 LESSON END EXERCISES

1. Explain indifference curve with a schedule and diagram.

2. Discuss in detail properties of indifference curve.

8.9 FURTHER READINGS

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Seth,M.L., Advanced Economic Theory.

CONSUMER'S EQUILIBRIUM THROUGH INDIFFERENCE CURVE ANALYSIS

STRUCTURE

9.1 INTRODUCTION

All consumers strive to maximize their utility. We try to get as much satisfaction as we can. The consumer's scale of preference is derived by means of indifference mapping that is a set of indifference curves which ranks the preferences of the consumer. Getting to the indifference curve which is farthest from the origin gives the highest total utility. Although the goal of the consumer is maximization of satisfaction, the means of achieving the goal is not clear. Higher indifference curve not only gives higher satisfaction but also are more expensive. Here we are confronted with the basic conflict between preferences and the prices of the commodities consumer wants to consume. With a given amount of money income to spent, we cannot attain the highest satisfaction but have to settle for less.

9.2 OBJECTIVES

After going through this chapter you will be able to:

i. Understand the meaning of marginal rate of substitution.

ii. Get an insight into budget line.

iii. Explain consumer's equilibrium with the help of indifference curve.

9.3 CONDITIONS FOR CONSUMER'S EQUILIBRIUM

1. A given budget line must be tangent to an indifference curve , or the marginal rate of substitution between commodity X and commodity Y (MRSx,y) must be equal to the price ratio between the two goods PX/PY.

2. At the point of equilibrium, indifference curve must be convex to the origin.

9.4 MARGINAL RATE OF SUBSTITUTION

Marginal Rate of Substitution (MRS) is the rate at the consumer is prepared to exchange goods X and Y. Consider Table-7. In the beginning the consumer is consuming 1 unit of food and 12 units of clothing. Subsequently, he gives up 6 units of clothing to get an extra unit of food, his level of satisfaction remaining the same. The MRS here is 6. Like wise when he moves from B to C and from C to D in his indifference schedule, the MRS are 2 and 1 respectively. Thus, we can define MRS of X for Y as the amount of Y whose loss can just be compensated by a unit gain of X in such a manner that the level of satisfaction remains the same. We notice that MRS is falling i.e., as the consumer has more and more units of food, he is prepared to give up less and less units of clothing. There are two reasons for this.

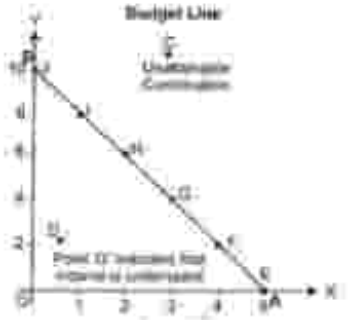
1. The want for a particular good is satiable so that when a consumer has more of it, his intensity of want for it decreases. Thus, when the consumer in our example, has more units of food, his intensity of desire for additional units of food decreases.

2. Most goods are imperfect substitutes of one another. If they could substitute one another perfectly, MRS would remain constant.

9.5 BUDGET LINE

A higher indifference curve shows a higher level of satisfaction than a lower one. Therefore, a consumer, in his attempt to maximize satisfaction will try to reach the highest possible indifference curve. But in his pursuit of buying more and more goods and thus obtaining more and more satisfaction, he has to work under two constraints: first, he has to pay the prices for the goods and, second, he has a limited money income with which to purchase the goods. These constraints are explained by the budget line or price line. In simple words, a budget line shows all those

combinations of two goods which the consumer can buy spending his given money income on the two goods at their given prices. All those combinations which are within the reach of the consumer (assuming that he spends all his money income) will lie on the budget line.



It should be noted that any point outside the given price line, say H, will be beyond the reach of the consumer and any combination lying within the line, say D, shows under spending by the consumer.

9.6 ASSUMPTIONS UNDERLYING CONSUMER EQUILIBRIUM

1. The consumer has a given indifference map exhibiting his scale of preferences for various combinations of two goods, X and Y.

2. He has a fixed amount of money to spend on the two goods. He has to spend whole of his given money on the two goods.

3. Prices of the goods are given and constant for him. He cannot influence the prices of the goods by buying more or less of them.

4. Goods are homogeneous and divisible.

9.7 CONSUMER'S EQUILIBRIUM THROUGH INDIFFERENCE CURVE ANALYSIS

When consumers make choices about the quantity of goods and services to consume, it is presumed that their objective is to maximize total utility. In maximizing total utility, the consumer faces a number of constraints, the most important of which are the consumer's income and the prices of the goods and services that the consumer wishes to consume. The consumer's effort to maximize total utility, subject to these constraints, is referred to as the consumer's problem. The solution to the consumer's problem, which entails decisions about how much the consumer will consume of a number of goods and services, is referred to as consumer equilibrium.

9.7.1 Determination of Consumer Equilibrium

To show which combination of two goods X and Y the consumer will buy to be in equilibrium we bring his indifference map and budget line together. We know by now, that the indifference map depicts the consumer's preference scale between various combinations of two goods and the budget line shows various combinations which he can afford to buy with his given money income and prices of the two goods. Consider the given Figure , in which IC1, IC2, IC3, IC4 and IC5 are shown together with budget line PL for good X and good Y. Every combination on the budget line PL costs the same.

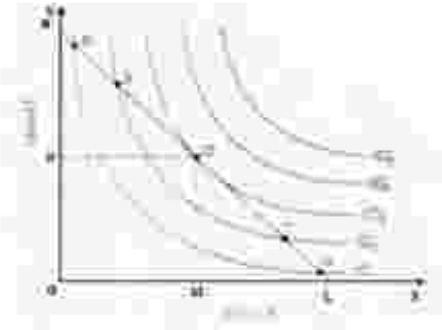


Fig: Consumer's Equilibrium

Thus combinations R, S, Q, T and H cost the same to the consumer. The consumer's aim is to maximize his satisfaction and for this, he will try to reach highest indifference curve.

Since there is a budget constraint, he will be forced to remain on the given budget line, that is he will have to choose combinations from among only those which lie on the given price line. Which combination will he choose? Suppose he chooses R. We see that R lies on a lower indifference curve IC1, when he can very well afford S, Q or T lying on higher indifference curve. Similar is the case for other combinations on IC1, like H. Again, suppose he chooses combination S (or T) lying on IC2. But here again we see that the consumer can still reach a higher level of satisfaction remaining within his budget constraints i.e., he can afford to have combination Q lying on IC3 because it lies on his budget line. Now, what if he chooses combination Q? We find that this is the best choice because this combination lies not only on his budget line but also puts him on the highest possible indifference curve i.e., IC3. The consumer can very well wish to reach IC4 or IC5, but these indifference curves are beyond his reach given his money income. Thus, the consumer will be at equilibrium at point Q on IC3. What do we notice at point Q? We notice that at this point, his budget line PL is tangent to the indifference curve IC3. In this equilibrium position (at Q), the consumer will buy OM of X and ON of Y. At the tangency point Q, the slopes of the price line PL and the indifference curve IC3 are equal. The slope of the indifference

curve shows the marginal rate of substitution of X for Y

(MRSxy) which is equal to MUx /MUy while the slope of the price line indicates the ratio between the prices of two goods i.e., Px/ Py

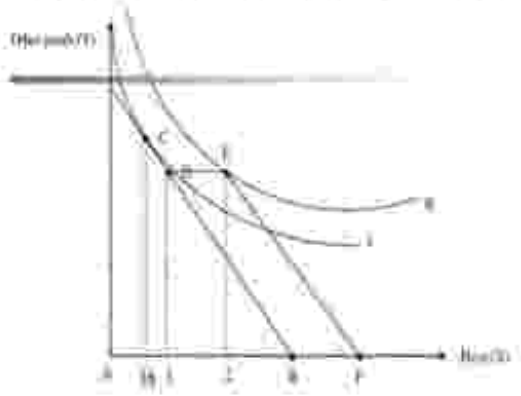
At equilibrium point Q,

MRSxy = MUx /MUy = Px/ Py

Thus, we can say that the consumer is in equilibrium position when price line is tangent to the indifference curve or when the marginal rate of substitution of goods X and Y is equal to the ratio between the prices of the two goods.

9.8 APPLICATION OF INDIFFERENCE CURVE

The indifference curve technique has come as a handy tool in economic analysis. It has freed the theory of consumption from the unrealistic assumptions of the Marshallian utility analysis. In particular, mention may be made of consumer's equilibrium, derivation of the demand curve and the concept of consumer's surplus.

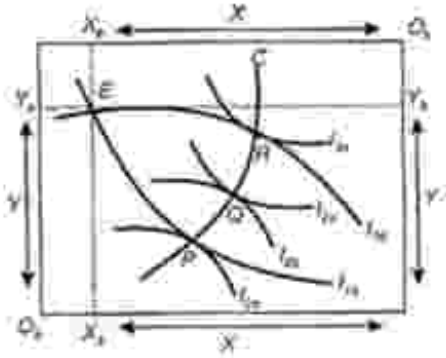


The indifference curve analysis has also been used to explain producer's equilibrium, the problems of exchange, rationing, taxation, supply of labor, welfare economics and a host of other problems. Some of the important problems are explained below with the help of this technique.

(1) The Problem of Exchange: With the help of indifference curve technique the problem of exchange between two individuals can be discussed. We take two consumers A and B who possess two goods X and Y in fixed quantities respectively. The problem is how can they exchange the goods possessed by each other. This can be solved by constructing an Edgeworth-Bowley box diagram on the basis of their preference maps and the given supplies of goods.

In the box diagram, Figure, Oa is the origin for consumer A and Ob the origin for consumer B (turn the diagram upside down for understanding). The vertical sides of

the two axes, Oa and Ob, represent good Y and the horizontal sides, good X. The preference map of A is represented by the indifference curves I1a, I2 a and I3 a and B's map by I1b, I2b and I3b indifference curves. Suppose that in the beginning A possesses ObYb units of good Y and Ob Xb units of good X. B is thus left with ObYb of Y and Ob Xb of X. This position is represented by point E where the curve I1a intersects I1b.



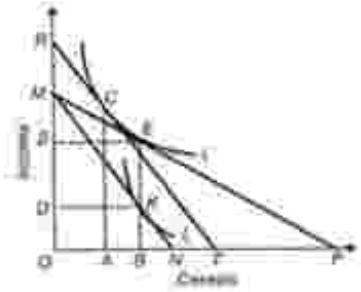
Suppose A would like to have more of X and S more of Y. Both will be better off, if they exchange each other's unwanted quantity of the good, i.e. if each is in a position to move to a higher indifference curve. But at what level will exchange take place? Both will exchange each other's good at a point where the marginal rate of substitution between the two goods equals their price ratios.

This condition of exchange will be satisfied at a point where the indifference curves of both the exchangers touch each other. In the above figure P, Q and R are the three conceivable points of exchange. A line CC passing through these points is the "contract curve" or the "conflict curve", which shows the various positions of exchange of X and Y that equalize the marginal rates of substitution of the two exchangers.

If exchange were to take place at point P then consumer S would be in an advantageous position because he is on the highest indifference curve I3b. Individual A would, however, be at a disadvantage for he is on the lowest indifference curve I1a. On the other side, at point R, consumer A would be the maximum gainer and S the loser. However, both will be at an equal position of advantage at Q. They can reach this level only by mutual agreement otherwise the point of exchange depends upon the bargaining power of each party. If A has better bargaining skill than S, he can push the latter to point R. Contrariwise, if B is more skillful in bargaining he can push A to point P.

(2) Effects of Subsidy on Consumers: The indifference curve technique can be used to measure the effects of government subsidy on low income groups. We take a situation when the subsidy is not paid in money but the consumers are supplied

cereals at concessional rates, the price-difference being paid by the government. This is actually being done by the various state governments in India. In Figure, income is measured on the vertical axis and cereals on the horizontal axis.



Suppose the consumer's income is OM and his price-income line without subsidy is MN. When he is given subsidy by supplying cereals at a lower price, his price-income line is MP (it is equivalent to a fall in the price of cereals). At this price-income line, he is in equilibrium at point E on curve I1 where he buys OB of cereals by spending MS amount of money. The full market price of OB cereals is MD on the line MN where the curve lo touches.

The government, therefore, pays SD amount of subsidy. But the consumer receives cereals at a lower price. He does not receive SD amount of subsidy in cash. If the money value of the subsidy were to be paid to him in cash, they would receive MR amount of money. The equivalent variation MR shows that in the absence of the subsidy, a cash payment would bring the consumer on the same indifference curve, which makes him as better off as the subsidy.

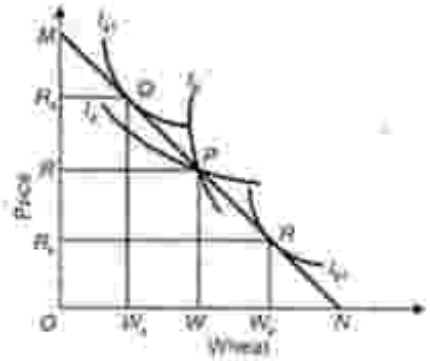
But the value of the subsidy MR to the consumer is smaller than the cost of the subsidy DS to the government. It reveals the fact that the consumer is happier if he is paid the subsidy in cash rather than in the E S form of subsidized cereals. In this case, the cost of subsidy to the exchequer will also be less. It points out to another interesting result. When the income of the consumer is raised by giving him cash subsidy, he will buy less cereals than before. In Figure 12.29 at the equilibrium point C, he buys OA of cereals which are less than OB when he was getting them at the subsidized price. This is what the government actually wants.

(3) The Problem of Rationing: The indifference curve technique is used to explain the problem arising from various systems of rationing. Usually rationing consists of giving specific and equal quantities of goods to each individual (we ignore families because equal quantities are not possible in their case).

The other, rather liberal, scheme is to allow an individual more or less quantities of the rationed goods according to his taste. It can be shown with the help of indifference curve analysis that the latter scheme is definitely better and beneficial

than the former.

Let us suppose that there are two goods rice and wheat that are rationed, the prices of the two goods are equal and that each consumer has the same money income. Thus, given the income and price-ratios of the two goods, MN is the price-income line. Rice is taken on vertical axis and wheat on the horizontal axis in Figure 12.30.



According to the first system of rationing, both consumers A and B are given equal specific quantities of rice and wheat, OR + OW. Consumer A is on indifference curve Ia and B is on Ib. With the introduction of the liberal scheme each can have more or less of rice or wheat according to his taste. In this situation, A will move from P to Q on a higher indifference curve Ia1. Now he can have ORb of rice + OWa of wheat. Similarly, B will move from P to R on a higher indifference curve Ib1 and can buy ORb of rice + OWb of wheat. With the introduction of the liberal scheme of rationing both the consumers derive greater satisfaction. The total quantity of goods sold is the same.

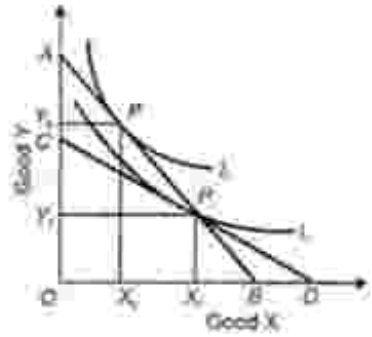
For when B buys more quantity of wheat WWb, he purchases less quantity of rice RRb and when A buys RRb more of rice, he purchases WW less of wheat. Thus, the governmental aim of controlled distribution of goods is not disturbed at all rather there has been a better distribution of goods in accordance with individual tastes.

(4) Index Numbers: Measuring Cost of Living: The indifferent curve analysis is used in measuring the cost of living or standard of living in terms of index numbers. We come to know with the help of index numbers whether the consumer is better off or worse off by comparing two time periods when the income of the consumer and prices of two goods change.

Suppose a consumer buys only two goods X and Y in two different time periods 0 and 1 and he spends his entire income on them in the two periods. It is also assumed that the consumer's tastes and quality of the two goods do not change.

Suppose the initial budget line is AB in the base period 0 and the consumer is in equilibrium at point P on the indifference curve Io in Figure 12.31. The new budget

line in period 1 is CD which passes through point P, on the new indifference curve I1. Both the combinations P and P1 lie on the original budget line AB.



Therefore, they have the same cost. But combination P is on the higher indifference curve IQ than combination P1. However, the consumer cannot have combination P at the new price (P_1) in period 1. Thus he chooses combination P_1 on the lower indifference curve I1 and is worse off in period 1 than in the base period 0. This shows that his standard of living has decreased in period 1 as compared with period 0.

(5) The Supply of Labor: The supply curve of an individual worker can also he derived with the indifference curve and leisure and on the wage rate. In Figure 12.32 hours of work and leisure are measured on the horizontal axis and income or money wage on the vertical axis. W2L is the wage line or income-leisure line whose slope indicates wage rate (w) per hour. When the wage rate increases, the new wage line becomes W3L and the wage rate per hour-also increases and similarly for the wage line W3 L. technique. His offer to supply labour depends on his preference between income,

As the wage rate per hout increases, the wage line becomes steeper. When the worker is in equilibrium at the tangency point E1 of wage line W1L and indifference curve I1, he earns E1L1 wage by working L1L hours and enjoys OL1 of leisure. Similarly, when his wage increases, to L1, he works for longer hours L2 L and with E3 L3 wage increase, he works for still longer hours L3 L and enjoys lesser and lesser leisure than

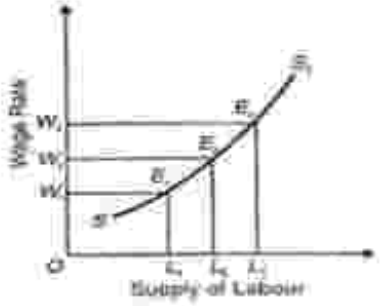
before. The line connecting the points E1E2 and E3 is called the wage-offer curve.

The supply curve of labor can be drawn from the locus of the equilibrium points E1E2 and But the wage-offer curve is not the supply curve of labor. Rather, it indicates the supply curve of labor. To derive the supply curve of labor from the wage-offer curve given in Figure, we draw the wage-hour schedule in Table.

Table: Wage-Hour Schedule:

Equilibrium Point	Wage Rate Per Hour	Hours Worked
E_1	$OW_1/OL_1 = w_1$	L_1L
E_2	$OW_2/OL_2 = w_2$	L_2L
E_3	$OW_3/OL_3 = w_3$	L_3L

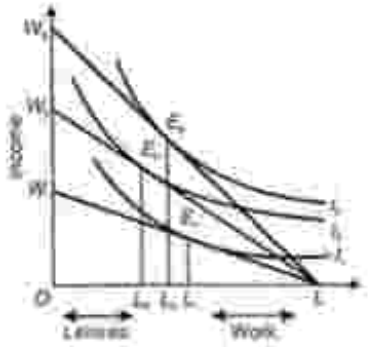
On the basis of the above schedule, the supply curve of labor is drawn in Figure 12.33 where the wage rate per hour is plotted on the vertical axis and hours worked (or supply of labor) on the horizontal axis. When the wage rate is W1 labor supplied is OL1. As the wage rate rises to W1and labor supplied increases to OL2 and OL1 respectively. The wage-labor combination points E1E2 and E3 trace out the supply of labor curve SS1. The SS1 curve is positively sloping upwards from left to right which shows that when the wage rate increases, the worker works for more hours.



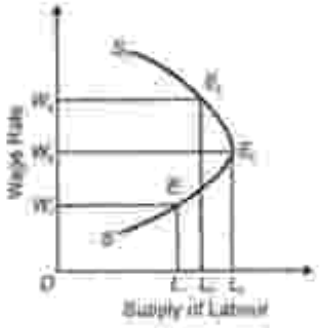
This attitude of the worker is the result of two forces: one, the substitution effect, and two, the income effect of the wage increase. When the wage rate increases, the tendency to work longer hours increases on the part of the worker in order to earn more. It is as if leisure has become more expensive. So the worker has a tendency to substitute work for leisure. This is the substitution effect of the wage increase. Further, when the wage rate increases, the worker becomes potentially better off, he has a feeling of satisfaction and gives preference to leisure over work. This is the income effect of the wage increase. In the figure, as the wage rate increases from W1 to W2, hours worked increase from OL1 to OL2 and to OL1. This is because the

substitution effect of wage increase is stronger than the income effect.

Backward-Sloping Supply Curve of Labor: At some higher wage rate if the wage rate increases further, the worker may work for lesser hours and enjoy more leisure. This case is illustrated in Figure 12.34. When the income of the worker increases progressively from E1L1 to E2L2 and to E3L3, hours worked may decline at some level of income. At the equilibrium point E1 hours worked are L1L and they increase to L2L at the equilibrium point E2, when his income rises to E2L2, from E1L1. But further increase in income to E3L3 leads to the reduction in hours worked to E3L3 from L2L. The worker now increases his leisure hours from OL2 to OL3.



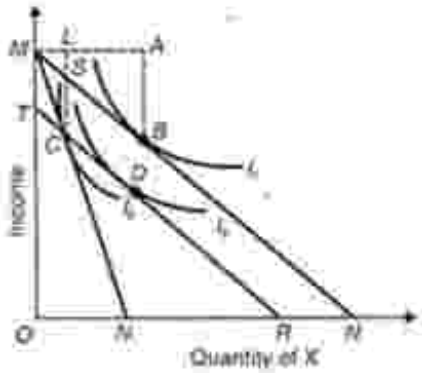
The corresponding supply curve of labour is drawn in Figure 12.35 which is backward slopping. Taking the substitution effect and the income effect of the wage increase up to the wage rate W2, the substitution effect is stronger than the income effect. So the supply curve of this worker is positively sloped from S to E2.



At the wage rate W2 the substitution effect exactly equals the income effect and the SS1 curve is vertical at point E2. As the wage rate increases above W2, the income effect is stronger than substitution effect and the supply curve is negatively sloped in the region E2S1 which shows that the worker gives preference to leisure over work. In the figure, when the wage rate increases to W3 the worker reduces his hours worked from OL2 to OL3 and thus enjoys L2L3 of leisure.

(6) The Effect of Income Tax vs. Excise Duty: The indifference curve technique helps in considering the welfare implications of income tax vs. excise duty or sales tax. Whether an income tax hurts the tax payer more or an excise duty of an equal amount? Let us take a taxpayer who is required to pay, say Rs. 4000 annually either as income tax or as excise tax on a commodity X. It is further assumed that he will continue to buy the commodity even after the imposition of the duty when its price goes up.

In the figure, the money income of the taxpayer is shown along the vertical axis. He has OM of income and his original price-income line, before the tax is levied, is MN. He is in equilibrium at point B on the indifference curve I1.



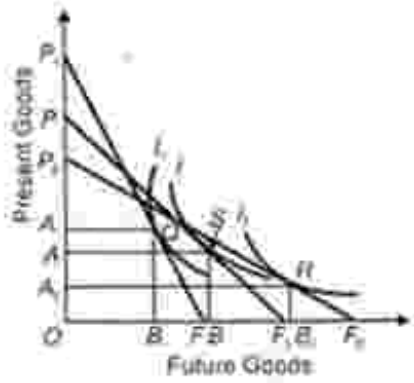
For MA quantity of X, he spends AB. Now when the excise duty on commodity X is levied, its price rises so that his price-income line shifts to MN1 where he is in equilibrium at point C on the I1 curve. As a result of the tax, he buys ML quantity of X and spends LC on it. But at the original price, this quantity ML would have cost him LS. Thus SC is the amount of tax which he pay for it.

If an equal amount of tax is raised by the government through income tax instead, the taxpayer's income would be reduced by MT (=SC). He moves to a lower line TR on the indifference curve I3, at point D. Since the indifference curve I3 is higher than I2 the income tax equivalent to an excise duty places the taxpayer in a favorable position.

(7) The Saving Plan of an Individual: The indifference curve technique can also be used to study the saving plan of an individual. An individual's decision to save depends upon his present and future income, his tastes and preferences for present and future commodities, their expected prices, on the current and future rate of interest, and on the stock of his savings.

As a matter of fact, his decision to save is influenced by the intensity of his desire for present goods and future goods. If he wants to save more, he spends less on present

goods, other things being equal. Thus saving is, in fact, a choice between present goods and future goods. This is illustrated in Figure 12.37 with the help of indifference curves.



Let PF1 be the original price-income line of the individual where he is in equilibrium at point S on the indifference curve I.

Given the price of the present and future goods, the income of the consumer, his tastes and preferences for the present and the future, and the rate of interest, he buys OA of the present goods and plans to save so much as to have OB of goods in the future.

Suppose there is a change in his preferences. What will be the effect of such a change on the consumer's saving plan? If his preference for the present goods increases, his price-income line will move to P1F so that he is in equilibrium at point Q on I1 He now buys OA, present goods and thus saves less for the future goods. As a result, the purchase of the future goods will fall from OB to OB1. On the other hand, if in his estimation the value of future consumption increases, his price-income line will move to P1F where he will be in equilibrium at point R on L curve. He will, therefore, save more and thus reduce his consumption of present goods to OA2 in order to have OB2 future goods. Similar effects can be traced if the rate of interest changes, other things remaining constant.

9.9 SUMMARY

Every consumer aims at getting maximum satisfaction out of his given expenditure. A consumer is said to have attained equilibrium when he spends given income or budget in such a way as to yield optimum satisfaction, given the prices of two goods and the consumer's preference. In simple words, a consumer is said to be in equilibrium when he is getting maximum satisfaction out of his limited income. A consumer may find out his equilibrium condition with the help of indifference curve analysis.

9.10 GLOSSARY

Budget line: Budget line or price line shows all those combinations of two goods which the consumer can buy spending his given money income on the two goods at their given prices.

Marginal rate of substitution: Marginal rate of substitution is the rate at which the consumer is prepared to exchange goods X and Y.

9.11 SELF ASSESSMENT QUESTIONS

1. What is a budget line?

2. Explain various conditions in which a consumer is said to be in equilibrium?

3. Discuss the various applications of indifference curve analysis?

9.12 LESSONS END EXERCISE

1. Explain in detail when a consumer is said to be in equilibrium with the help of indifference curve?

9.13 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

Chopra,P.N.," Principles of Economics", 2000, Kalyani Publishers, New Delhi.

Jhingan, M.L., "Micro–Economic Theory", 2002, Vrinda Publishets (P) Ltd., Delhi.

Seth,M.L.., Advanced Economic Theory.

INDIFFERENCE CURVE VERSUS UTILITY ANALYSIS

STRUCTURE

10.1 INTRODUCTION

Though cardinal utility theory is Marshall's brilliant work to analyze consumer's behavior, the indifference curve theory or ordinal utility theory outweighs the former because of its more realistic way to analyze consumer's economic behavior. One of the major difficulties in studying consumer's behavior is that it is impossible to predict human behavior. However, indifference curve analysis is considered the best tool to perform such a difficult task. Two important ordinalists are Hicks and Allen. Hicks and Allen opposed the idea of utility as a measurable entity and advanced indifference curve analysis as an alternative method to the cardinal utility theory.

10.2 OBJECTIVES

After going through this chapter you will be able to:

1. Understand merits of indifference curve analysis over marginal utility analysis.
2. Get an insight into significance of indifference curve.

10.3 MERITS OF INDIFFERENCE CURVE ANALYSIS

The indifference curve analysis definitely possesses certain distinguishable and unquestionable merits over Marshall's cardinal utility analysis. The following are the undeniable merits of indifference curve analysis:

Marginal utility of money

Marshall's idea of constant utility of money just happens to be impractical. With his assumption of constant marginal utility of money, Marshall was unable to figure out the 'income effects' of a price change. Hence, he was unable to differentiate between 'substitution' and 'income' effects that are the two elements of 'Price-effect'. Because of this, Marshall failed to produce any adequate details for Giffen Paradox. By splitting the price effect into income and substitution effects, Hicks makes it possible for us to enunciate substantially more general demand theorem. When it comes to Giffen goods, the negative income effect is stronger to overshadow the positive substitution effect; hence, the buyer purchases less of the particular commodity while the price decreases.

Realistic method of measuring utility

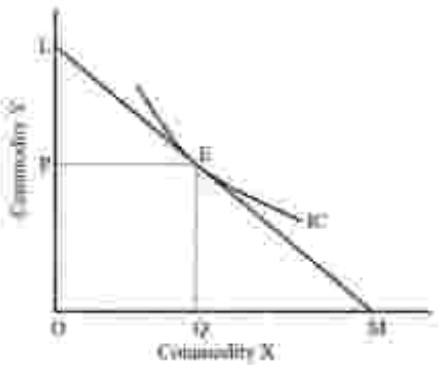
The Marshallian study of consumer behavior relies upon the unstable basis of the cardinal utility approach, which considers that utility is measurable and additive. This in accordance with Hicks and Allen is tremendously impractical and ambiguous. Because utility is a psychic-entity, it differs from individual to individual as well as from time to time. The fundamental benefit of the indifference curve approach is that it happens to be dependent on the ordinal utility function. It is certainly not deemed that the buyer is capable of gauging the quantity of utility resulting from any specified addition of a commodity. The only thing that is assumed is that the customer is able to choose the best composition of products and services, and also is able to reveal which combination of goods is preferred more than or less than or equally to another combination. As a result, the indifference curve method presents a much more practical way of measuring consumer's satisfaction when held up against the first one offered by Marshall.

10.4 ASSUMPTIONS

Economists criticize that Marshall's cardinal utility method assumes too many things. Therefore, the model places more restrictions to analyze consumer's equilibrium condition. The indifference curve analysis also evaluates the same consumer's equilibrium condition, however with fewer assumptions. Hence, the indifference curve theory is less restrictive.

According to indifference curve analysis, a consumer is equilibrium where the budget line is tangent to an indifference curve. In technical terms, the equilibrium is the point where the marginal rate of substitution (MRSXY) is equal to the price ratio (PX/PY) of two commodities. In figure 1, the point E denotes equilibrium.

Figure 1



MRS of commodity X for commodity Y = price of commodity X/price of commodity Y ---------- (a)

MRS of commodity X for commodity Y is the ratio between the marginal utility of commodity X and marginal utility of commodity Y.

MRS of X for Y = MU of X/MU of Y ---------- (b)

From equations (a) and (b), we can derive that MU of commodity X/MU of commodity Y = Price of commodity X/Price of commodity Y that can be reformulated as MU of commodity X/Price of commodity X = MU of commodity Y/Price of commodity Y.

Marshall has actually introduced the proportionality rule of consumer's equilibrium mentioned above. However, the same rule can be fulfilled with fewer restrictions and assumptions by ordinal utility approach.

According to the principle of Occam's razor or the rule of parsimony, if two theories provide same result, the theory with the fewer assumptions should be preferred. Therefore, indifference curve analysis outweighs Marshall's cardinal utility method in this regard.

Substitutes and complementary goods

Marshall's cardinal utility theory is founded on single-commodity model. Marshall eliminates the contention of substitutes and complementary goods by classifying them as one commodity. Hick's ordinal utility method takes into account at least two

commodities in a single combination. Prof. Hicks describes the association between substitutes and complements of goods in a systematic method.

10.5 PRACTICAL SIGNIFICANCE

The indifference curve analysis enables you to investigate the consequences of rationing as well as taxation on consumption and revenue of the individuals.

Hicks and Allen in an attempt to find an alternative approach to Marshall's utility analysis has attributed the indifference curve analysis. However, many economists feel that the idea of indifference curve is not an alternative to cardinal utility theory but a replica of it.

For instance, according to Prof. D.H. Robertson, the indifference curve analysis is just 'the old wine in a new bottle.' Robertson further states that the indifference curve analysis has simply substituted new terms in the place of old ones. The following table shows how the concepts of cardinal utility theory have been replaced with new concepts:

Cardinal Utility Theory	**Indifference Curve Analysis**
1. Diminishing marginal utility	Marginal rate of substitution
2. utility	Preference
3. Cardinal number system (one, two, three....)	Ordinal number system (first, second, third....)
4. Equilibrium condition: MU of X/price of X = MU of Y/price of Y (Proportionality Rule)	Equilibrium condition: MRS of X for Y = price of X/price of Y

According to Prof. Schumpeter, from a practical standpoint, we are not much better off when drawing purely imaginary indifference curves than we are when speaking of a purely imaginary utility function.

Furthermore, Prof. Armstrong claims that Marshall's concept of marginal utility is the base for Hicksian principle of diminishing marginal rate of substitution. He points out that Marshall's concept of marginal utility is the reason why the MRSxy diminishes and the indifference curve is convex to the origin. If the consumer increases the stock of commodity X, the marginal utility of commodity X in terms of commodity Y will start decreasing and at the same time, marginal utility of commodity Y will start increasing. Hicks has not admitted the fundamental concept of utility in his analysis. However, by means of terminological manipulation, the

concept of diminishing marginal utility is there in the indifference curve analysis always. Because of this reason, economists claim that it is the reformulation of Marshall's utility theory.

10.6 SUMMARY

Hicks and Allen in an attempt to find an alternative approach to Marshall's utility analysis has attributed the indifference curve analysis. One of the major difficulties in studying consumer's behavior is that it is impossible to predict human behavior. However, indifference curve analysis is considered the best tool to perform such a difficult task.

10.7 GLOSSARY

Marginal utility: It is the additional utility derived from the consumption of an additional unit of a commodity.

Marginal Rate of Substitution: Marginal Rate of Substitution (MRS) is the rate at which the consumer is prepared to exchange goods X and Y.

10.8 SELF ASSESSMENT QUESTIONS

1. State the advantages of indifference curve over Marshall's cardinal utility analysis.

2. Describe the significance of indifference curve over Marshall's cardinal utility analysis.

10.9 LESSON END EXERCISE

1. Compare and contrast indifference curve analysis and marginal utility analysis.

10.10 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

Chopra,P.N., " Principles of Economics", 2000, Kalyani Publishers, New Delhi.

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Seth,M.L., Advanced Economic Theory.

FACTORS OF PRODUCTION

STRUCTURE

11.1 INTRODUCTION

Production is an important economic activity which satisfies the wants and needs of the people. Production function brings out the relationship between inputs used and the resulting output. A firm is an entity that combines and processes resources in order to produce output that will satisfy the consumer's needs. The firm has to decide as to how much to produce and how much input factors (labor and capital) to employ to produce efficiently. This chapter helps to understand the set of conditions for efficient production of an organization. Production is a very important economic activity. The standard of living in the ultimate analysis depends on the volume and variety of goods and services produced in a country. In fact, the performance of an economy is judged by the level of its production. Those countries which produce goods in large quantities are rich and those which produce little of them are poor. Thus, the amount of goods and services an economy is able to produce determines the richness or poverty of that economy. The U.S.A. is a rich country just because its

level of production is high. India is not so because its level of production is not very high.

11.2 OBJECTIVES

After going through this chapter you will be able to:

1. Know the meaning of production in Economics.
2. Have an insight into the various factors of production.
3. Understand short-run and long-run production function.

11.3 WHAT IS PRODUCTION?

In Economics, by production, we mean the process by which man utilizes or converts the resources of nature, working upon them so as to make them satisfy human wants. In other words, production is any economic activity which is directed towards the satisfaction of the wants of people by converting physical inputs into physical outputs. Whether it is the making of material goods or providing any service, it is included in production provided it satisfies the wants of some people. So, in Economics, if making of cloth by an industrial worker is production, the service of the retailer who delivers it to consumers is also production. Similarly, the work of doctors, lawyers, teachers, actors, dancers, etc. is production since the services are provided by them to satisfy the wants of those who pay for them. The want satisfying power of goods and services is called utility. Production can also be defined as creation or addition of utility.

According to James Bates and J.R. Parkinson " Production is the organized activity of transforming resources into finished products in the form of goods and services; and the objective of production is to satisfy the demand of such transformed resources".

It should be noted that production should not be taken to mean as creation of matter because, according to the fundamental law of science, man cannot create matter. What a man can do is only to create or add utility. When a man produces a table, he does not create the matter of which the wood is composed of. He only transforms wood into a chair. By doing so, he adds utility to wood which did not have utility before. Production consists of various processes to add utility to natural resources for gaining greater satisfaction from them by:

i. Changing the form of natural resources. Most manufacturing processes consist of taking raw material and transforming them into some items possessing utility, e.g., changing the form of a log of wood into a table or changing the form of iron into a machine. This may be called conferring utility of form.

ii. Changing the place of the resources, from the place where they are of little or no use to another place where they are of greater use. This utility of place can be obtained by :

(a) extraction from earth e.g., removal of coal, minerals, gold and other metal ores from mines and supplying them to markets.

(b) transferring goods from where they give little or no satisfaction, to places where their utility is more, e.g., tin in Malaya is of little use until it is brought to the industrialized centers where necessary machinery and technology are available to produce metal boxes for packing. Another example is: apples in Kashmir orchards have some use to farmers. But when the apples are transported to markets where human settlements are thick and crowded like the city centers, they afford more satisfaction to greater number of people, rather than to the farmers in the Kashmir apple orchards. These examples only emphasize the additional utility conferred on all goods, by all forms of transportation systems, by transport workers and by the agents who assist in the movement and marketing of goods.

iii. Making available materials at times when they are not normally available e.g., harvested food grains are stored for use till next harvest. Canning of seasonal fruits is undertaken to make them available during off season. This may be called conferring of utility of time.

(iv) Making use of personal skills in the form of services, e.g., those of organizers, merchants, transport workers etc. The fundamental purpose of all these activities is the same, namely to create utility in some manner. So production is nothing but the creation of utilities in the form of goods and services. For example, in the production of a woolen suit, utility is created in some form or the other. Firstly wool is changed into woolen cloth at the spinning and weaving mill (utility created by changing the form). Then, it is taken to a place where it is to be sold (utility added by transporting it). Since woolen clothes are used only in winter, they will be retained until such time when they are required by purchasers (time utility). In the whole process, services of various groups of people are utilized (as that of mill workers, shopkeepers, agents etc.) to contribute to the enhancement of utility. Thus, the entire process of production is nothing but creation of form utility, place utility, time utility and/or personal utility.

11.3.1 Factors of Production

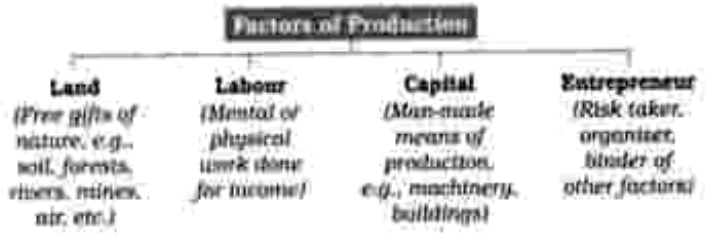
Whatever is used in producing a commodity is called its inputs. For example, for producing wheat, a farmer uses inputs like soil, tractor, tools, seeds, manure, water and his own services.

All the inputs are classified into two groups—primary inputs and secondary inputs. Primary inputs render services only whereas secondary inputs get merged in the commodity for which they are used.

In the above example, soil, tractor, tools and farmer's services are primary inputs because they render services only whereas seeds, manure, water and insecticides are secondary inputs because they get merged in the commodity for which they are used. It is primary inputs which are called factors of production.

Primary inputs are also called factor inputs and secondary inputs are known as non-factor inputs. Alternatively, production is undertaken with the help of resources which can be categorized into natural resources (land), human resources (labor and entrepreneur) and manufactured resources (capital).

All factors of production are traditionally classified in the following four groups:



1. Land:

- Land includes all natural physical resources – e.g. fertile farm land, the benefits from a temperate climate or the harnessing of wind power and solar power and other forms of renewable energy.

- Some nations are richly endowed with natural resources and then specialize in the their extraction and production – for example – the high productivity of the vast expanse of farm land in the United States and the oil sands in Alberta, Canada. Other countries such as Japan are heavily reliant on importing these resources.

2. Labor

- Labor is the human input into production e.g. the supply of workers available and their productivity

- An increase in the size and the quality of the labor force is vital if a country wants to achieve growth. In recent years the issue of the migration of labor has become important. Can migrant workers help to solve labor shortages? What are the long-term effects on the countries who suffer a drain or loss of workers through

migration?

3. Capital

- Capital goods are used to produce other consumer goods and services in the future
- Fixed capital includes machinery, equipment, new technology, factories and other buildings
- Working capital means stocks of finished and semi-finished goods (or components) that will be either consumed in the near future or will be made into consumer goods
- New items of capital machinery, buildings or technology are used to boost the productivity of labor. For example, improved technology in farming has vastly increased productivity and allowed millions of people to move from working on the land into more valuable jobs in other industries.

4. Entrepreneurship

- Regarded by some as a specialized form of labor input
- An entrepreneur is an individual who supplies products to a market to make a profit
- Entrepreneurs will usually invest their own financial capital in a business and take on the risks. Their main reward is the profit made from running the business.

11.4 PRODUCTION FUNCTION

Production function states the functional relationship between inputs and output i.e., the maximum amount of output that can be produced with given quantities of inputs under a given state of technical knowledge. It can also be defined as the minimum quantities of various inputs that are required to yield a given quantity of output. The output takes the form of volume of goods or services and the inputs are the different factors of production i.e., land, labor, capital and enterprise. Samuelson describes production function as the relationship between the maximum amount of output that can be produced and the input required to make that output. It is defined for a given state of technology.

According to Richard H. Leftwich, "The term production function is applied to the physical relationship between a firm's input of resources and its output of goods or services per unit of time leaving prices aside".

In short, the production function is a catalogue of output possibilities. The production function can be algebraically expressed in an equation in which the output is the dependent variable and inputs are the independent variables. The equation can be expressed as:

$q = f(a, b, c, d \ldots\ldots n)$

where 'q' stands for the rate of output of given commodity and a, b ,c, d……..n, are the different factors (inputs) and services used per unit of time.

11.4.1 Short-run and Long-run Production Function

The production function of a firm can be studied in the context of short period or long period. Short period or short run is that period of time which is too short for a firm to install a new capital equipment to increase production. It implies that capital is a fixed factor in the short run and the production function is studied by holding the quantities of capital fixed, while varying the amount of other factors (labor, raw material etc.) Symbolically, Q = T (K, L). This is done when the law of variable proportion is derived. The production function can also be studied in the long run. The long run is a period of time (or planning horizon) in which all the factors of production are variable. It is a time period when the firm will be able to install new machines and capital equipments apart from increasing the units of labor. The behavior of production when all factors are varied is the subject matter of the law of returns to scale.

11.5 ASSUMPTIONS OF PRODUCTION FUNCTION

The production function is based on certain assumptions:

1. It is related to a particular unit of time.

2. The technical knowledge during that period of time remains constant.

3. The producer is using the best technique available

11.6 LAW OF VARIABLE PROPORTION

Before discussing this law, if would be appropriate to understand the meaning of total product, average product and marginal product.

Total Product (TP): Total product is the total output resulting from the efforts of all

the factors of production combined together at any time. If the inputs of all but one factor are held constant, the total product will vary with the quantity used of the variable factor. Column (1) and (2) of Table represent a total product schedule.

TOTAL PRODUCT SCHEDULE

Quantity of labor	Total Product (TP)	Average Product (AP)	Marginal Product (MP)
(1)	(2)	(3)	(4)
1	100	100.0	100
2	210	105.0	110
3	330	110.0	120
4	440	110.0	110
5	520	104.0	80
6	600	100.0	80
7	670	95.7	70
8	720	90.0	50
9	750	83.3	30
10	760	76.0	10
11	740	67.2	–20

We find that when one unit of labor is employed, the total product is 100 units. When two units of labor are employed, the total product rises to 210 units. The total product goes on rising as more and more units of labor are employed. With 10 units of labor, the total product rises to 760 units. When 11 units of labor are employed, total product falls to 740 units.

Average Product (AP): Average product is the total product per unit of the variable factor. It is shown as a schedule in column (3) of Table 1. When one unit of labor is employed, average product is 100, when two units of labor are employed, average product rises to 105. This goes on, as shown in the Table .

Marginal Product (MP): Marginal product is the change in total product per unit change in the quantity of variable factor. In other words, it is the addition made to the total production by an additional unit of input.

The computed value of the marginal product appears in the last column of Table 1. For example, the MP corresponding to 4 units is given as 110 units. This reflects the fact that an increase in labor from 3 to 4 units, increased output from 330 to 440 units.

Relationship between Average Product and Marginal Product: Both average product and marginal product are derived from the total product. Average product is obtained by dividing total product by the number of units of variable factor and marginal product is the change in total product resulting from a unit increase in the quantity of variable factor. The various points of relationship between average product and marginal product can be summed up as follows:

a. when average product rises as a result of an increase in the quantity of variable input, marginal product is more than the average product.

b. when average product is maximum, marginal product is equal to average product. In other words, the marginal product curve cuts the average product curve at its maximum.

c. when average product falls, marginal product is less than the average product.

The law of variable proportions or the law of diminishing returns examines the production function with one factor variable, keeping quantities of other factors fixed. In other words, it refers to input-output relationship, when the output is increased by varying the quantity of one input. This law operates in the short run 'when all the factors of production cannot be increased or decreased simultaneously (for example, we cannot build a plant or dismantle a plant in the short run).

The law operates under certain assumptions which are as follows :

1. The state of technology is assumed to be given and unchanged. If there is any improvement in technology, then marginal and average product may rise instead of falling.

2. There must be some inputs whose quantity is kept fixed. This law does not apply to cases when all factors are proportionately varied. When all the factors are proportionately varied, laws of returns to scale are applicable.

3. The law does not apply to those cases where the factors must be used in fixed proportions to yield output. When the various factors are required to be used in fixed proportions, an increase in one factor would not lead to any increase in output i.e., marginal product of the variable factor will then be zero and not diminishing.

4. We consider only physical inputs and outputs and not economic profitability in monetary terms.

The law states that as we increase the quantity of one input which is combined with other fixed inputs, the marginal physical productivity of the variable input must eventually decline.

In other words, an increase in some inputs relative to other fixed inputs will, in a given state of technology, cause output to increase; but after a point, the extra output resulting from the same addition of extra inputs will become less and less.

The behavior of output when the varying quantity of one factor is combined with a fixed quantity of the others can be divided into three distinct stages or laws. In order to understand these three stages or laws, we may graphically illustrate the production function with one variable factor.

In the following figure, the quantity of variable factor is depicted on the X axis and on the Y-axis is measured the Total Product (TP), Average Product (AP) and Marginal Product (MP). As the figure shows TP curve goes on increasing up to a point and after that it starts declining. AP and MP curves first rise and then decline; MP curve starts declining earlier than the AP curve. The behavior of these Total, Average and Marginal Products of the variable factor consequent on the increase in its amount is generally divided into three stages (laws) which are explained below.

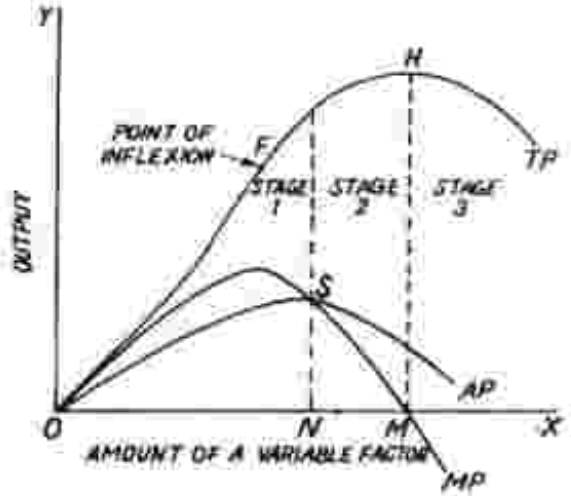


Fig: LAW OF VARIABLE PROPORTION

Stage 1: The Law of Increasing Returns: In this stage, total product increases at an increasing rate up to a point (in figure up to point F), marginal product also rises and is maximum at the point corresponding to F and average product goes on rising. From point F onwards during the stage one, the total product goes on rising but at a

diminishing rate. Marginal product falls but is positive. The stage 1 ends where the AP curve reaches its highest point. Thus in the first stage the AP curve rises throughout whereas the marginal product curve first rises and then starts falling after reaching its maximum. It is to be noted that the marginal product although starts declining, remains greater than the average product throughout the stage so that average product continues to rise.

Explanation of the law: The law of increasing returns operates because; in the beginning the quantity of fixed factors is abundant relative to the quantity of the variable factor. As more units of variable factor are added to the constant quantity of the fixed factors then the fixed factors are more intensively and effectively utilized i.e., the efficiency of the fixed factors increases as additional units of the variable factors are added to them. This causes the production to increase at a rapid rate. For example, if a machine can be efficiently operated when four persons are working on it and if in the beginning we are operating it only with three persons, production is bound to increase if the fourth person is also put to work on the machine since the machine will be effectively utilized to its optimum. This happens because, in the beginning some amount of fixed factor remained unutilized and, therefore, when the variable factor is increased, fuller utilization of the fixed factor becomes possible and it results in increasing returns. A question arises as to why the fixed factor is not initially taken in a quantity which suits the available quantity of the variable factor. The answer is that, generally those factors are taken as fixed which are indivisible. Indivisibility of a factor means that due to technological requirements, a minimum amount of that factor must be employed whatever the level of output. Thus, as more units of the variable factor are employed to work with an indivisible fixed factor, output greatly increases due to fuller utilization of the latter. The second reason why we get increasing returns at the initial stage is that as more units of the variable factors are employed, the efficiency of the variable factors itself increases. This is because with sufficient quantity of the variable factor introduction of division of labor and specialization becomes possible which results in higher productivity.

Stage 2: Law of diminishing returns: In stage 2, the total product continues to increase at a diminishing rate until it reaches its maximum point H, where the second stage ends. In this stage, both marginal product and average product of the variable factor are diminishing but are positive. At the end of this stage i.e., at point M (corresponding to the highest point H of the total product curve), the marginal product of the variable factor is zero. Stage 2, is known as the stage of diminishing returns because both the average and marginal products of the variable factors continuously fall during this stage. This stage is very important because the firm will seek to produce in its range.

Explanation of the law: The question arises as to why do we get diminishing returns after a certain amount of the variable factor has been added to the fixed quantity of that factor. As explained above, increasing returns occur primarily because of the more efficient use of fixed factors as more units of the variable factor are combined to work with it. Once the point is reached at which the amount of variable factor is sufficient to ensure efficient utilization of the fixed factor, any further increases in the variable factor will cause marginal and average product to decline because the fixed factor then becomes inadequate relative to the quantity of the variable factor. Continuing the above example, when four men were put to work on one machine, the optimum combination was achieved. Now, if the fifth person is put on the machine, his contribution will be nil. In other words, the marginal productivity will start diminishing.

The phenomenon of diminishing returns, like that of increasing returns, rests upon the

indivisibility of the fixed factor. Just as the average product of the variable factor increases in the first stage when better utilization of the fixed indivisible factor is being made, so the average product of the variable factor dimnishes in the second stage when the fixed indivisible factor is being worked too hard. Another reason offered for the operation of the law of diminishing returns is the imperfect substituability of one factor for another. Had the perfect substitute of the scarce fixed factor been available, then the paucity of the scarce fixed factor during the second stage would have been made up by increasing the supply of its perfect substitute with the result that output could be expanded without diminishing returns.

Stage 3: Law of negative returns: In Stage 3, total product declines, MP is negative, average product is diminishing. This stage is called the stage of negative returns since the marginal product of the variable factor is negative during this stage.

Explanation the law: As the amount of the variable factor continues to be increased to a constant quantity of the other, a stage is reached when the total product declines and marginal product becomes negative. This is due to the fact that the quantity of the variable factor becomes too excessive relative to the fixed factor so that they get in each other's ways with the result that the total output falls instead of rising. In such a situation, a reduction in the units of the variable factor will increase the total output.

Stage of Operation: An important question is in which stage a rational producer will seek to produce. A rational producer will never produce in stage 3 where marginal product of the variable factor is negative. This being so a producer can always

increase his output by reducing the amount of variable factor. Even if the variable factor is free of cost, a rational producer stops before the beginning of the third stage.

A rational producer will also not produce in stage I as he will not be making the best use of the fixed factors and he will not be utilizing fully the opportunities of increasing production by increasing the quantity of the variable factor whose average product continues to rise throughout stage 1. Even if the fixed factor is free of cost in this stage, a rational entrepreneur will continue adding more variable factors.

It is thus clear that a rational producer will never produce in stage 1 and stage 3. These stages are called stages of economic absurdity or economic non-sense. A rational producer will always produce in stage 2 where both the marginal product and average product of the variable factors are diminishing. At which particular point in this stage, the producer will decide to produce depends upon the prices of factors.

11.7 LAW OF RETURNS TO SCALE

We shall now undertake the study of production in the long run. Or, we will study changes in output when all factors of production in a particular production function are increased together. In other words, we shall study the behavior of output in response to a change in the scale. A change in scale means that all factors of production are increased or decreased in the same proportion. Changes in scale are different from changes in factor proportions. Changes in output as a result of the variation in factor proportions, as seen before, form the subject matter of the law of variable proportions. On the other hand, the study of changes in output as a consequence of changes in scale forms the subject matter of returns to scale which is discussed here. Returns to scale may be constant, increasing or decreasing. If we increase all factors i.e., scale in a given proportion and output increases in the same proportion, returns to scale are said to be constant. Thus, if a doubling or trebling of all factors causes a doubling or trebling of output, returns to scale are constant. But, if the increase in all factors leads to more than proportionate increase in output, returns to scale are said to be increasing. Thus, if all factors are doubled and output increases more than a double, then the returns to scale are said to be increasing. On the other hand, if the increase in all factors leads to less than proportionate increase in output, returns to scale are decreasing. It is needless to say that this law operates in the long run when all the factors can be changed in the same proportion simultaneously.

Constant returns to scale: As stated above, constant returns to scale means that with the increase in the scale in some proportion, output increases in the same proportion. It has been found that production function for the economy as a whole corresponds to

production function exhibiting constant returns to scale. Also, it has been found that an individual firm passes through a long phase of constant returns to scale in its lifetime.

Constant return to scale is otherwise called as "Linear Homogeneous Production Function"

Increasing returns to scale: As stated earlier, increasing returns to scale means that output increases in a greater proportion than the increase in inputs. When a firm expands, increasing returns to scale are obtained in the beginning. For example, a wooden box of 3 ft. cube contains 9 times greater wood than the wooden box of 1 foot-cube. But the capacity of the 3 foot- cube box is 27 times greater than that of the one foot cube. Many such examples are found in the real world. Another reason for increasing returns to scale is the indivisibility of factors. Some factors are available in large and lumpy units and can, therefore, be utilized with utmost efficiency at a large output. If all the factors are perfectly divisible, increasing returns may not occur. Returns to scale may also increase because of greater possibilities of specialization of land and machinery.

Decreasing returns to scale: When output increases in a smaller proportion with an increase in all inputs, decreasing returns to scale are said to prevail. When a firm goes on expanding by increasing all inputs, diminishing returns to scale set in. Decreasing returns to scale eventually occur because of increasing difficulties of management, coordination and control. When the firm has expanded to a very large size, it is difficult to manage it with the same efficiency as before.

The Cobb-Douglas production function, explained earlier is used to exhibit "returns to scale"

in production:

If $a + b > 1$ Increasing returns to scale result i.e. increase in output is more than the proportionate increase in the use of factors (labor and capital).

$a + b = 1$ Constant returns to scale result i.e. the output increases in the same proportion in which factors are increased.

$a + b < 1$ decreasing returns to scale result i.e. the output increases less than the proportionate increase in the labor and capital.

11.8 SUMMARY

Production is one of the basic economic activities. In simple terms production, means 'creation of utility'. It is the outcome of the combined activity of the four factors of production viz, land, labor, capital and organization. Land includes all those natural resources whose supply for the economy as a whole is fixed. Labor is any mental or physical exertion directed to produce goods or services. Capital is produced means of production and it comprises man made machines and materials which are used for further production. Entrepreneur is the person who bears the risk and uncertainties of business. Factors of production can be divided into two categories – Fixed factors are those factors whose quantity remains unchanged and variable factors change with a change in the level of output. Production function is a technical relationship between inputs and output.

11.9 GLOSSARY

Production: creation of utility.

Utility: Want satisfying power of a commodity.

Factors of Production: There are four factors of production that are used up in the process of production. These include - land, labor, capital and entrepreneurship.

Land: refers to all free gifts of nature which would include besides the land,

in common parlance, natural resources, fertility of soil, water, air, natural vegetation etc.

Labor: refers to various types of human efforts which require the use of physical exertion, skill and intellect.

Capital: refers to that part of wealth of an individual or community which is used for further production of wealth.

Production function: as the minimum quantities of various inputs that are required to yield a given quantity of output.

Short-run: is that period of time which is too short for a firm to install a new capital equipment to increase production.

Long-run: It is a time period when the firm will be able to install new machines and capital equipments apart from increasing the units of labor.

11.10 SELF ASSESSMENT QUESTIONS

1. What do you mean by production?
2. What are the various factors of production?
3. Give a note on relationship between Average Product and Marginal Product.
4. Write a short note on production function?

11.11 LESSON END EXERCISE

1. Explain in detail production function. And also state the difference between short-run and long- run production function.

2. State and explain law of variable proportion. Also mention its assumptions.

3. Discuss in detail the law of returns to scale.

11.12 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

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LAW OF SUPPLY

STRUCTURE

12.1 INTRODUCTION

Supply is an independent economic activity but it is based on the demand for commodities. The managers' ability to make more profits depends upon his ability to adjust the supply to the demand without creating a surplus while at the same time not creating a scarcity that will spoil the image of the company in the eyes of the public. Supply is also sometimes inelastic and sometimes elastic. The managers have to take wise decisions to maximize the profits of the firm.

12.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand the meaning of supply.

ii. Understand what determines supply.

iii. Get an insight into the law of supply.

iv. Understand the concept of elasticity of supply.

12.3 WHAT IS SUPPLY?

As the term 'demand' refers to the quantity of a good or service that the consumers are willing and able to purchase at various prices during a given period of time, the term 'supply' refers to the amount of a good or service that the producers are willing and able to offer to the market at various prices during a period of time.

Two important points apply to supply:

(i) Supply refers to what firms offer for sale, not necessarily to what they succeed in selling.

What is offered may not get sold.

(ii) Supply is a flow. The quantity supplied is 'so much' per unit of time, per day, per week, or per year.

12.4 DETERMINANTS OF SUPPLY

Determinants of supply (also known as factors affecting supply) are the factors which influence the quantity of a product or service supplied. We have already learned that price is a major factor affecting the willingness and ability to supply. Here we will discuss the determinants of supply other than price. These are the factors which are assumed to be constant in law of supply.

The price change of a product causes the price-quantity combination to move along the supply curve. However when the other determinants change, the supply curve is shifted.

Following are the major determinants of supply other than price:

1. **Number of Sellers:** Greater the number of sellers, greater will be the quantity of a product or service supplied in a market and vice versa. Thus increase in number of sellers will increase supply and shift the supply curve rightwards whereas decrease in number of sellers will decrease the supply and shift the supply curve leftwards. For example, when more firms enter an industry, the number of sellers increases thus increasing the supply.

2. **Prices of Resources:** Increase in resource prices increases the production costs thus shrinking profits and vice versa. Since profit is a major incentive for producers to supply goods and services, increase in profits increases the supply and decrease in profits reduces the supply. In other words supply is indirectly proportional to resource prices. Increase in resource prices reduces the supply and the supply curve is shifted leftwards whereas decrease in resource prices increases the supply and the supply curve is shifted rightwards.

3. **Taxes and Subsidies:** Taxes reduces profits, therefore increase in taxes reduce supply whereas decrease in taxes increase supply. Subsidies reduce the burden of production costs on suppliers, thus increasing the profits. Therefore increase in subsidies increase supply and decrease in subsidies decrease supply.

4. **Technology:** Improvement in technology enables more efficient production of goods and services. Thus reducing the production costs and increasing the profits. As a result supply is increased and supply curve is shifted rightwards. Since technology in general rarely deteriorates, therefore it is needless to say that deterioration of technology reduces supply.

5. **Suppliers' Expectations:** Change in expectations of suppliers about future price of a product or service may affect their current supply. However, unlike other determinants of supply, the effect of suppliers' expectations on supply is difficult to generalize. For example when farmers suspect the future price of a crop to increase, they will withhold their agricultural produce to benefit from higher price thus reducing the supply. In case of manufacturers, when they expect the future price to increase, they will employ more resources to increase their output and this may increase current supply as well.

6. **Prices of Related Products:** Firms which are able to manufacture related products (such as air conditioners and refrigerators) will the shift their production to a product the price of which increases substantially related to other related product(s) thus causing a reduction of supply of the products which were produced before. For example a firm which produces cricket bats is usually able to manufacture hockey sticks as well. When the price of hockey sticks increases, the firm will produce more hockey sticks and less cricket bats. As a result, the supply of cricket bats will be reduced.

7. **Prices of Joint Products:** When two or more goods are produced in a joint process and the price of any of the product increases, the supply of all the joint products will be increased and vice versa. For example, increase in price of meat will increase the supply of leather

12.5 LAW OF SUPPLY

This refers to the relationship of quantity supplied of a good with one or more related variables which have an influence on the supply. Normally, supply is related with price but it can be related with the type of technology used, scale of operations etc.

The law of supply can be stated as : Other things remaining constant, the quantity of a good produced and offered for sale will increase as the price of the good rises and decrease as the price falls.

This law is based upon common sense, for the higher the price of the good, the greater the profits that can be earned and thus greater the incentives to produce the good and offer it for sale. The law is known to be correct in a large number of cases. There is an exception however.

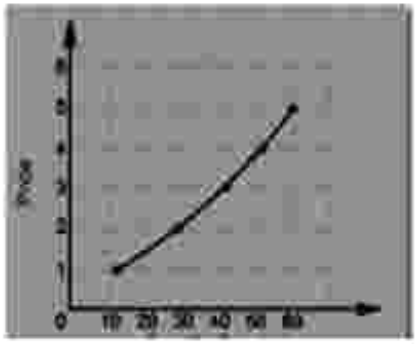
If we take the supply of labor at very high wages, we may find that the supply of labor has decreased instead of increasing. Thus, the behavior of supply depends upon the phenomenon considered and the degree of possible adjustment in supply. The behavior of supply is also affected by the time taken into consideration. In the short run, it may not be easy to increase supply but in the long run supply can be easily adjusted in response to changes in price.

The law of supply can be explained through a supply schedule and a supply curve. Consider the following schedule.

Table: Supply Schedule of Good 'X'

Price (Rs) (per kg)	Quantity supplied (kg)
1	5
2	35
3	45
4	55
5	65

The table shows the quantities of good X that would be produced and offered for sale at a number of alternative prices. At Rs. 1, for example, 5 kilograms of good X are offered for sale and at Rs. 3 per kg. 45 kg would be forthcoming. We can now plot the data from Table on a graph. In the figure, price is plotted on the vertical axis and quantity on the horizontal axis, and various price-quantity combinations of the schedule 8 are plotted.



Quantity Supplied

Fig: Supply Curve

When we draw a smooth curve through the plotted points, what we get is the supply curve for good X. The curve shows the quantity of X that will be offered for sale at each price of X. It slopes upwards towards right showing that as price increases, the quantity supplied of X increases and vice-versa.

The market supply curve for 'X' can be obtained by adding horizontally the various firms' supply curves.

12.6 ELASTICITY OF SUPPLY

The elasticity of supply is defined as the responsiveness of the quantity supplied of a good to a change in its price. Elasticity of supply is measured by dividing the percentage change in quantity supplied of a good by the percentage change in its price i.e.

$$E = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

$$\text{Change in quantity supplied} \quad \text{Quantity supplied}$$

Or,

$$\text{change in price} \quad \text{price}$$

$$Es = \frac{\Delta Qs / Qs}{\Delta P / P}$$

ΔQs = change in quantity supplied

Qs = quantity supplied

ΔP = change in price

P = price

12.6.1 Types of Supply Elasticity

Different commodities respond differently to a given change in price. Depending upon the degree of responsiveness of the quantity supplied to the price change, there are five kinds of price elasticity of supply.

1. Perfectly Elastic Supply: When there is an infinite supply at a particular price and the supply becomes zero with a slight fall in price, then the supply of such a commodity is said to be perfectly elastic. In such a case Es = ∞ and the supply curve is a c horizontal straight line parallel to the X-axis, as shown in Fig.:

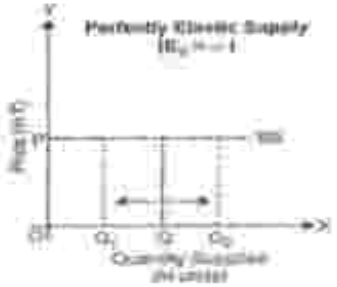


Table : Perfectly Elastic Supply:

Price (in Rs.)	Supply (in units)
30	100
30	200
30	300

Quantity supplied can be 100, 200 or 300 units at the same price of Rs. 30. As seen in the diagram, quantity supplied can be OQ or OQ1 or OQ2 at the same price of OP. It must be noted that perfectly elastic supply is an imaginary situation.

2. Perfectly Inelastic Supply: When the supply does not change with change in price, then supply for such a commodity is said to be perfectly inelastic. In such a case, Es = 0 and the supply curve (SS) is a vertical straight line parallel to the Y-axis as shown s in Fig.

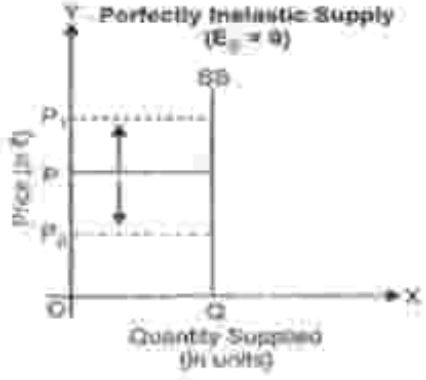


Table : Perfectly Inelastic Supply:

Price (in Rs.)	Supply (in units)
20	20
30	20
40	20

Quantity supplied remains same at 20 units, whether the price is Rs. 20, Rs. 30 or 140. As seen in the diagram, quantity supplied remains the same at OQ, with change in price from OP to OP1 or OP2. It must be noted that perfectly inelastic supply is an imaginary situation.

3. Highly Elastic Supply: When percentage change in quantity supplied is more than the percentage change in price, then supply for such a commodity is said to be highly elastic. In such a case, Es > 1 and the supply curve has an intercept on the Y-axis as shown in Fig.

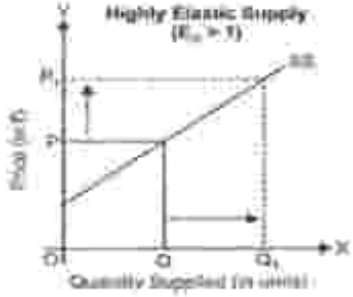


Table : Highly Elastic Supply:

Price (in Rs.)	Supply (in units)
10	100
15	200

As seen in the schedule, the quantity supplied rises by 100% due to a 50% rise in price. In Fig., the quantity supplied rises from OQ to OQ1 with rise in price from OP to OP1. As QQ1 is proportionately more than PP1 elasticity of supply is more than 1.

4. Less Elastic Supply: When percentage change in quantity supplied is less than the percentage change in price, then supply for such a commodity is said to be less elastic. In such a case, Es < 1 and the supply curve has an intercept on the X-axis as shown in Fig.

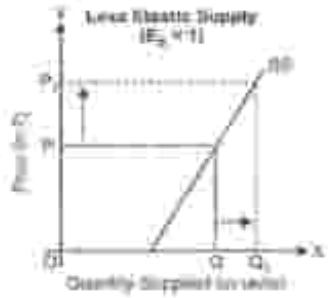


Table : Less Elastic Supply:

Price (in Rs.)	Supply (in units)
10	100
15	120

In Table, the quantity supplied rises by 20 % due to 50% rise in price. In Fig. 9.26, the quantity supplied rises from OQ to OQ1 with rise in price from OP to OP1. As QQ1 is proportionately less than PP1, elasticity of supply is less than 1.

5. Unitary Elastic Supply: When percentage change in quantity supplied is equal to percentage change in price, then supply for such a commodity is said to the unitary elastic. In such a case, Es = 1 and supply curve is a straight line passing through the origin as shown in Fig.

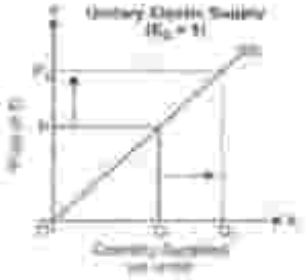


Table : Unitary Elastic Supply:

Price (in Rs.)	Supply (in units)
10	100
15	150

In Table, the quantity supplied also rises by 50% due to 50% rise in price. In Fig. 9.27, the quantity supplied rises from OQ to OQ1 with rise in price from OP to OP1. As QQX is proportionately equal to PP1, elasticity of supply is equal to 1.

12.7 SUMMARY

Supply is an independent economic activity but it is based on the demand for commodities. The managers' ability to make more profits depends upon his ability to adjust the supply to the demand without creating a surplus while at the same time not creating a scarcity that will spoil the image of the company in the eyes of the public. Supply is also sometimes inelastic and sometimes elastic. The managers have to take wise decisions to maximize the profits of the firm.

12.8 GLOSSARY

Supply: Supply refers to what firms offer for sale, not necessarily to what they succeed in selling.

Elasticity of supply: It means the responsiveness of supply to change in the price of the commodity.

Price elasticity of supply: Price elasticity of supply measures the responsiveness of changes in quantity supplied to a change in price.

Perfectly inelastic supply: If there is no response in supply to a change in price. (Es = 0)

Inelastic supply: The proportionate change in supply is less than the change in price (Es=0-1)

Unitary elastic supply: The percentage change in quantity supplied equals the change in price (Es=1)

Elastic supply: The change in quantity supplied is more than the change in price (Ex= 1-∞)

12.9 SELFASSESSMENT QUESTIONS

1. What do you mean by supply?
2. What are the various factors affecting supply?
3. Define the following terms:

i. Perfectly inelastic supply

ii. Elastic supply

4. Study the impact of these factors on the supply curve in the short term.

i. A rise in the price of raw materials.

ii. A change in technology of requiring more sophisticated machinery.

iii. A fall in the supply of a joint product.

iv. An increasing in the tax rates.

12.10 LESSON END EXERCISES

1. State and explain law of supply. What are the various factors affecting supplied?

2. What do you mean by elasticity of supply? Discuss in details various types of elasticity of supply.

12.11 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

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PRODUCER'S EQUILIBRIUM

STRUCTURE

13.1 INTRODUCTION

Producer equilibrium refers to the fact that supply and demand work together to help determine the price and production levels for any given product in a small market. Producers of goods would like to charge the highest possible price for their goods but demand for the product forces their hand to move the price down in most cases. Supply of a product also helps to determine equilibrium in a small market. When supply is low and demand is high, the price for that product will rise to the point that people will still buy the product. When the price reaches a level that people are not willing to pay, the price will drop. Producers will manipulate production levels if necessary to keep prices at an acceptable level where they are making a profit that is satisfactory to them.

These are concepts that ring true whether you are comparing macro or micro

economics. Supply and demand in a capitalist society will always determine the value of goods and services. Producers that grasp these concepts and manipulate their production levels to keep prices high or increase production when demand is high and supply is short are most likely to succeed in today's dynamic business climate.

13.2 OBJECTIVES

After going through this chapter you will be able to:

i. Understand when a producer is said to be in equilibrium.

ii. Know about internal and external economies of scale.

13.3 PRODUCER'S EQUILIBRIUM

As we all know, producers generally strive hard to maximize profit at minimum cost. A producer can attain equilibrium by applying the least cost combination of factors of production to attain maximum profit.

Therefore, he/she needs to decide the appropriate combination among different combinations of factors of production to get maximum profit at least cost. The producers try to use ratios of factors in such a way so that maximum output can be obtained, while keeping the cost as low as possible. The decision of a producer depends on the principal of substitution. Suppose a producer has two factors of production, A and B. In these factors A can produce more output than B with the same amount of money spent on them. This would make the producer to substitute A for B The producer equilibrium would be attained when the output produced by spending an additional unit of money (marginal rupee) on A is equal to the output produced by spending an additional unit of money on B. The producer would keep on substituting one input with the other to get maximum output till the producer equilibrium is not reached.

The marginal rupee spent on A would be represented as:

Marginal rupee spent on A= marginal product of A/price per unit

Suppose, the marginal output produced by A is 120 at Rs. 10 per unit, then

Marginal rupee spent on A = 120/10

= 12

Therefore, 12 is the additional output obtained by spending marginal rupee on A.

The producer equilibrium can be represented as follows:

MPa/Pa = MPb/Pb = ... = MPn/Pn

In case the value of MPa/Pa is greater than MPb, then producers would substitute A for B.

13.3.1 Determination of Producer's Equilibrium

Producer's equilibrium can be obtained with the help of iso-quant and iso-cost line. An iso-quant enables a producer to get those combinations of factor that yield maximum output.

On the other hand, iso-cost line provides the ratio of prices of factors of production and the amount that a producer is willing to spend. For attaining equilibrium, a producer needs to obtain a combination that helps in producing maximum output with the least price.

Figure shows the equilibrium position obtained with the help of isoquant and iso-cost line.

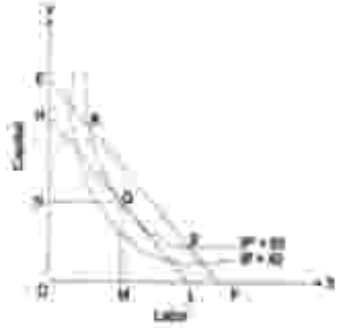


Fig: Producer Equilibrium

As shown in Figure, the producer can produce 60 units of output by using any combinations that is R, Q, and S, on curve IP'. He/she would select the combination that would obtain the lowest cost. It can be seen from Figure-11 that Q lies on the lowest iso- cost line and would yield same profit as on R and S points, at the lowest cost. In such a case, Q is the point of equilibrium; therefore, it would be selected by the producer.

13.4 EXPANSION PATH

In case, after attaining equilibrium, if a producer is willing to increase its production, then he/she needs to determine the combination that is required to reach a new equilibrium state. Let us consider the above Figure in which the producer is willing to produce 60 units of output. Now, the producer wants to produce 80 units of output instead of 60 units.

In such a case, the equilibrium would be achieved at the point Q', which is shown in the following figure.

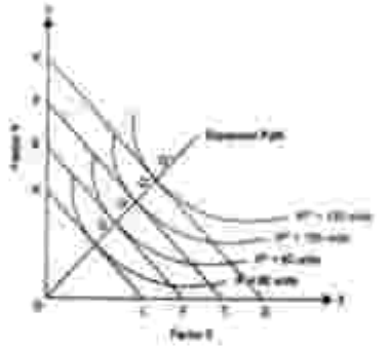


Fig: Expansion Path

In the above Figure, Q_1' would be the equilibrium point for producing 80 units of output. This is because at point Q_1' iso-cost line is tangent to iso-quant curve of IP^1. Similarly, the equilibrium point for producing 100 and 120 units are Q_1'' and Q_1''', respectively. When the points Q, Q_1', Q_1'', and Q_1''' are joined, a straight line is obtained, which is called expansion path or scale line.

This line is termed as scale line because producer needs to adjust its scale of production according to this line to achieve the output he/she desires. On the other hand, this line is also termed as expansion path because the producer needs to expand his/her output by following this path when the prices of factors remain constant. Producers would prefer to move along the scale line to increase the output to get maximum output at least cost with fixed factor prices.

13.5 ECONOMIES OF SCALE

Economies of scale concept is an old one but the majority of the companies knew about it through try an error, this concept as a summary means that as the quantity produced of each product increase the unit cost per unit will decrease thus the contribution margin will increase and the sales revenue also will increase. Due to the tough competition nowadays locally and globally, the need to apply this concept becomes necessary for companies especially if they are competing in a very competitive environment where price wars takes place.

Economies of scale can be achieved through five basics which are, product development, purchasing, production, demand management and order fulfilment.

Product development can helps us to decrease the unit cost through designing products once and only once for the global markets. The importance of this concept is due to that the product design decreases the maintenance needed hence decrease the warranties cost, it also decreases the returned sales in spite of getting rid of the repairing cost associated with the defective items which will cost us approximately

as like as the production cost.

Purchasing: the company can achieve the economies of scale when they purchase the raw materials needed for the production. this cost depends on the quantity purchased and offers given by the suppliers, from this point of view the company must sign contracts with the suitable suppliers in order to keep the raw materials prices constant as much as they can so that the company will not be forced to charge additional prices for their customers as the raw materials prices violates.

Production: it is well known that the company can reach the economies of scale when the production increases, because set up cost will be minimized and the total overheads cost will be eliminated.

Demand management: managers use marketing and sales forecasts the core of demand management to set sales quotas, plan production schedules and inventory requirements, negotiate suppliers' contracts and establish corporate revenue plans.

Order fulfilment: this concept can lead also to the economies of scales because if the company fulfils all of its customer's orders they will be more efficient order agreement decrease in total finished goods inventory and quicker, more direct delivery and all our customers will be well satisfied.

From this we can conclude that in order to reach economies of scale there is a chain that must be accurately applied at the same time because only in this way we can compete with our competitors especially if there is a fierce competition and price war.

This concept can be applied anywhere and in every company regardless of its working capital and size. This concept can be applied easily in Lebanon but it will not be so much effective because quantities play a major role in this sequence to be effective. In some industries in Lebanon, competition forced some companies to use this concept and they tried to be benefited from it especially in computers industry and dairy products.

The scale of production has an important bearing on the cost of production. It is a common experience of every producer that costs can be reduced by increased production. That is why the producers are keener on expanding the size or scale of production. In the process of expansion, the producer may benefit from the emergence of economies of scale.

13.5.1 Types of Economies of Scale

These economies are broadly classified into two types:

1. Internal Economies

2. External Economies

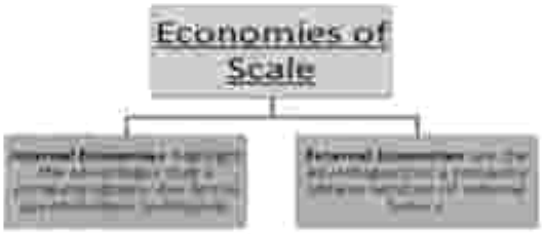


Fig: Economies of scale

13.5.2 Internal Economies

When a firm expands its scale of production, the economies, which accrue to this firm, are known as internal economies.

According to Cairncross, "Internal economies are those which are open to a single factory or a single firm independently of the action of other firms. They result from an increase in the scale of output of the firm, and cannot be achieved unless output increases. They are not the result of inventions of any kind, but are due to the use of known methods of production which a small firm does not find worthwhile."

Internal economies may be of the following types:

1. Technical Economies: Technical economies are those, which accrue to a firm from the use of better machines and techniques of production. As a result, production increases and cost per unit of production decreases.

Following Prof. Cairncross, we may classify the various kinds of technical economies as follows:

(a) Economies of Increased Dimensions: Certain technical economies may arise because of increased dimensions. For example, a double decker bus is more economical than a single decker. One driver and one conductor may be needed, whether it is a double decker or a single decker bus.

(b) Economies of Linked Processes: As a firm increases its scale of operations, it can properly be linked to various production processes more efficiently. For example, in order to obtain the advantage in a linkage process, both editing and printing of newspapers are generally carried out in the same premises.

In the words of Prof. Cairncross, "There is generally a saving in time and a saving in transport costs, when the two departments of the same factory are brought closer together than two separate factories."

(c) Economies of the Use of By-products: A large firm is in a better position to utilize the by-products efficiently and attempt to produce another new product. For example, in a large sugar factory, the molasses left over after the manufacture of sugar from out of the sugarcane can be used for producing power alcohol by installing a small plant.

(d) Economies in Power: Large sized machines without continuous running are often more economical than small sized machines running continuously in respect of power consumption. For example, a big boiler consumes more or less the same power as that of a small boiler but gives more heat.

(e) Economies of Increased Specialization: A large firm can divide the work into various sub-processes. Therefore, division of labor and specialization become possible. At one stroke, all the advantages of division of labor can be achieved. For example, only well established big school can have specialized teachers.

2. Economies of Continuation: Technical economy is also realized due to al long-run continuation of the production process. For example, composing and printing of 1000 copies may cost $200; but if we increase the number of copies to 2000 it may cost only $250, because the same sheet plate which has been composed previously can be utilized for the increased number of copies also.

3. Labor Economies: A large firm employs a large number of laborers. Therefore, each person can be employed in the job to which he is most suited. Moreover, a large firm is in a better position to attract specialized experts into the industry. Likewise, specialization saves time and encourages new inventions. All these advantages result in lower costs of production.

4. Marketing Economies: Economies are achieved by a large firm both in buying raw materials as also in selling its finished products. Since the large firm purchases its requirements in bulk, it can bargain on its purchases on favorable terms. It can ensure continuous supply of raw materials. It is eligible for preferential treatment. The special treatment may be in the form of freight concessions from transport companies, adequate credit from banks and other financial treatments etc. In terms of advertisements also, it is better placed than the smaller firms. Better-trained and efficient sales persons can be appointed for promoting sales.

5. Financial Economies: The credit requirements of the big firms can be met from banks and other financial institutions easily. A large firm is able to mobilize much credit at cheaper rates. Firstly, investors have more confidence in investing money in the well-established large firms. Secondly, the shares and debentures of a large firm can be disbursed or sold easily and quickly in the share market.

6. Managerial Economies: On the managerial side also, economies can be achieved; when output increases, specialists can be more fully employed. A large firm can divide its big departments into various sub-departments and each department may be placed under the control of an expert. A brilliant organizer can devote himself wholly to the work of organizing while the routine jobs can be left to relatively low paid workers.

7. Risk Bearing Economies: The larger the size of a firm, the more likely are its losses to be spread among its various activities according to the law of averages.

A big firm produces a large number of items and of different varieties so that the loss in one can be counter balanced by the gain in another. For example, a branch bank can spread its risk by diversification of its investment portfolio rather than a unit bank. Suppose a bank in a particular locality is facing a run on the bank, it can recall its resources from other branches, and can easily overcome the critical situation. Thus, diversification avoids "putting all its eggs in one basket."

8. Economies of Research: A large sized firm can spend more money on its research activities. It can spend huge sums of money in order to innovate varieties of products or improve the quality of the existing products. In cases of innovation, it will become an asset of the firm. Innovations or new methods of producing a product may help to reduce its average cost.

9. Economies of Welfare: A large firm can provide welfare facilities to its employees such as subsidized housing, subsidized canteens, crèches for the infants of women worker, recreation facilities etc.; all these measures have an indirect effect on increasing production and at reducing the costs.

13.5.3 External Economies

External economies refer to gains accruing to all the firms in an industry due to the growth of that industry. All the firms in the industry irrespective of their size can enjoy external economies. The emergence of external economies is due to localization.

The main types of external economies are as follows:

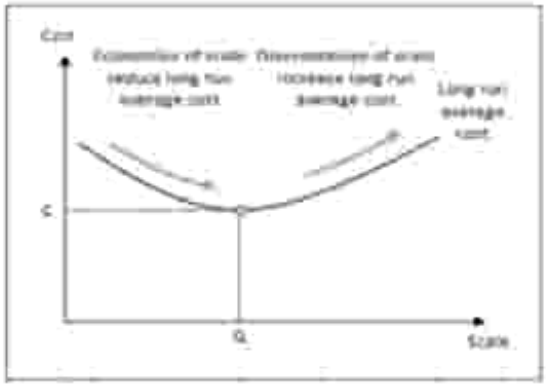
1. Economies of Concentration: When a number of firms are located in one place, all the member firms reap some common economies. Firstly, skilled and trained labor becomes available to all the firms.

Secondly, banks and other financial institutions may set up their branches, so that all the firms in the area can obtain liberal credit facilities easily. Thirdly, the transport and communication facilities may get improved considerably. Further, the power requirements can be easily met by the electricity boards. Lastly, supplementary

industries may emerge to assist the main industry.

2. Economies of Information: The economies of information may arise because of the collective efforts of the various firms. Firstly, an individual firm may not be in a position to spend enormous amounts on research. However, by pooling all their resources new inventions may become possible. The fruits of the invention can be shared by all the member firms. Secondly, publication of statistical, technical and marketing information will be of vital importance to increase output at lower costs.

3. Economies of Disintegration: When the industry grows, it becomes possible to split up production into several processes and leave some of the processes to be carried out more efficiently by specialized firms. This makes specialization possible and profitable. For example, in the cotton textile industry, some firms may specialize in manufacturing thread, some others in producing vests, some in knitting briefs, some in weaving t-shirts etc. The disintegration may be horizontal or vertical. Both will help the industry in avoiding duplication, and in saving time materials.



External economies of scale are the cost-saving advantages that accrue to the industry as a whole, as a result of the firms being close to each other and an increase in the number of firms in the industry. (size of the industry). An industry is a number of firm producing similar goods. They are external advantages because they derive from conditions outside the firm. For instance the use of common facilities such as transportation; use of skilled labor attracted to the area; banking and insurance services attracted to the area, water, electricity and others.

While the firm can plan its internal economies, it can only hope to benefit from external economies which arise as the industry grows. The concentration of similar firms in an area may produce mutual benefits. A skilled labor force attracted to the area may cooperate in providing common services, such as marketing and research; better roads and social amenities etc. The firm must take into account such

economies when deciding where production shall take place.

External economies can take the form of common information services provided either by association of the firms or even by the government. The firms may also collectively finance research which benefits all the firms. These external economies result in a fall in the cost of production of the industry.

13.5.4 Relationship Between Internal and External Economies

No watertight compartmental division can be made between internal and external economies. When a number of firms are combined into one, external economies will become internal economies. Internal economies are due to the expansion of individual firm while external economies arise due to the growth of the entire industry. External economies are a pre-requisite for the growth of backward regions.

13.6 SUMMARY

A producer can attain equilibrium by applying the least cost combination of factors of production to attain maximum profit. Economies of scale as a summary means that as the quantity produced of each product increase the unit cost per unit will decrease thus the contribution margin will increase and the sales revenue also will increase. Due to the tough competition nowadays locally and globally, the need to apply this concept becomes necessary for companies especially if they are competing in a very competitive environment where price wars takes place.

13.7 GLOSSARY

Iso quant: Iso quant indicates various combinations of two factors of production which give the same level of output per unit of time.

Iso cost: Iso cost curve is the locus traced out by various combinations of L and K, each of which costs the producer the same amount of money.

Economies of scale: means that as the quantity produced of each product increase the unit cost per unit will decrease thus the contribution margin will increase and the sales revenue also will increase.

13.8 SELF ASSESSMENT QUESTIONS

1. What do you understand by the term economies of scale?

2. State the relationship between internal and external economies of scale.

13.9 LESSON END EXERCISES

1. Discuss in detail various internal and external economies of scale.
2. Explain with the help of diagram when a producer is said to be in

equilibrium.

13.10 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

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COST CONCEPTS: COST CURVES

STRUCTURE

14.1 INTRODUCTION

Cost can be classified in terms of the functions it performs such as manufacturing costs, selling & administration costs and financial costs. Some costs can be directly and conveniently identified to a particular product such as direct material and direct labor. Others are indirect costs or shared costs or common costs. Similarly, some costs increase or decreases in line with the volume of production but some remain fixed even if the plant is closed down. Some costs result in physical goods while others are just a service. Finally, management policy plays a great role in cost classification. Depreciation is fixed by default but not if based on units produced or sum-of-digit method or even written-down-value basis. If a company enters into a long contract with an advertising firm, the advertisement cost becomes fixed.

14.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand the meaning of cost.

ii. Get an insight into various types of costs

14.3 COST ANALYSIS

Cost analysis refers to the study of behavior of cost in relation to one or more production criteria, namely, size of output, scale of operations, prices of factors of production and other relevant economic variables. In other words, cost analysis is concerned with financial aspects of production relations as against physical aspects which were considered in production analysis. In order to have a clear understanding of the cost function, it is important to understand various concepts of costs.

14.4 COST CONCEPTS

14.4.1 Accounting costs and economic costs: When an entrepreneur undertakes an act of production he has to pay prices for the factors which he employs for production. He thus pays, wages to workers employed, prices for the raw materials, fuel and power used, rent for the building he hires, and interest on the money borrowed for doing business. All these are included in his cost of production and are termed as accounting costs. Thus, accounting costs take care of all the payments and charges made by the entrepreneur to the suppliers of various productive factors. But it generally happens that an entrepreneur invests a certain amount of capital in his business. If the capital invested by the entrepreneur in his business had been invested elsewhere, it would have earned certain amount of interest or dividend. Moreover, an entrepreneur devotes time to his own work of production and contributes his entrepreneurial and managerial ability to do business. Had he not set up his own business, he would have sold his services to others for some positive amount of money. Accounting costs do not include these costs. These costs form part of economic cost. Thus, economic costs include : (1) the normal return on money capital invested by the entrepreneur himself in his own business; (2) the wages or salary not paid to the entrepreneur, but could have been earned if the services had been sold somewhere else. Likewise, the monetary reward for all factors owned by the entrepreneur himself and employed by him in his own business is also considered a part of economic costs. Thus, accounting costs relate to those costs only which involve cash payments by the entrepreneur of the firm. Economic costs take into account these accounting costs; in addition, they also takes into account the amount of money the entrepreneur could have earned if he had invested his money and sold his own services and other factors in the next best alternative uses. Accounting costs are also called explicit costs whereas the cost of factors owned by the entrepreneur himself and employed in his own business is called implicit costs. Thus, economic costs include both accounting costs and implicit costs. The concept of economic cost is important because an entrepreneur must cover his economic cost if he wants to earn normal profits and abnormal profits are over and above these normal profits. In other words, an entrepreneur is said to be earning profits (abnormal) only when his

revenues are able to cover not only his explicit costs but also implicit costs.

14.4.2 Outlay costs and opportunity costs: Outlay costs involve actual expenditure of funds on, say, wages, materials, rent, interest, etc. Opportunity cost, on the other hand, is concerned with the cost of foregone opportunity; it involves a comparison between the policy that was chosen and the policy that was rejected. For example, the opportunity cost of using capital is the interest that it can earn in the next best use with equal risk. A distinction between outlay costs and opportunity costs can be drawn on the basis of the nature of the sacrifice. Outlay costs involve financial expenditure at some time and hence are recorded in the books of account. Opportunity costs relate to sacrificed alternatives; they are, in general not recorded in the books of account. The opportunity cost concept is generally very useful, e.g., in a cloth mill which spins its own yarn, the opportunity cost of yarn to the weaving department is the price at which the yarn could be sold. This has to be considered while measuring profitability of the weaving operations. In long-term cost calculations also it is a useful concept e.g., while calculating the cost of higher education, it is not the tuition fee and cost of books alone that are relevant. One should also take into account the earnings foregone in order to attend classes.

14.4.3 Direct or traceable costs and indirect or non-traceable costs: Direct costs are costs that are readily identified and are traceable to a particular product, operation or plant. Even overhead costs can be direct as to a department; manufacturing costs can be direct to a product line, sales territory, customer class etc. We must know the purpose of cost calculation before considering whether a cost is direct or indirect. Indirect costs are not readily identified nor visibly traceable to specific goods, services, operations, etc. but are nevertheless charged to the jobs or products in standard accounting practice. The economic importance of these costs is that these, even though not directly traceable to a product, may bear some functional relationship to production and may vary with output in some definite way. Examples of such costs are electric power and common costs incurred for general operation of business benefiting all products jointly.

14.4.4 Fixed costs and variable costs: Fixed or constant costs are not a function of output; they do not vary with output up to a certain level of activity. These costs require a fixed expenditure of funds irrespective of the level of output, e.g., rent, property taxes, interest on loans and depreciation when taken as a function of time and not of output. However, these costs vary with the size of the plant and are a function of capacity. Therefore, fixed costs do not vary with the volume of output within a capacity level. Fixed costs cannot be avoided. These costs are fixed so long as operations are going on. They can be avoided only when operations are completely closed down. We can call them as inescapable or uncontrollable costs. But, there are some costs which will continue even after the operations are suspended, as for example, for storing of old machines which cannot be sold in the

market. Some of the fixed costs such as costs of advertising, etc. are programmed fixed costs or discretionary expenses, because they depend upon the discretion of management whether to spend on these services or not.

14.5 SUMMARY

The relationship between cost and output is called cost function. Cost function of a firm depends upon its production function and the prices of factors of production. There are various kinds of cost concepts such as accounting and economic costs, direct and indirect costs, outlay and opportunity costs, fixed and variable costs.

14.6 GLOSSARY

Accounting costs: The cost or expenditure which a firm incurs for producing or acquiring a good or service. (E.g. Raw material cost).

Economic costs: Costs which are accounted for plus costs which are not incurred but would have been incurred but for the employment of self services by the entrepreneurs. In other words, it is the sum of implicit and explicit cost.

Outlay costs: The cost that involves actual expenditure.

Opportunity costs: The revenue which could have been earned by employing that good or service in some other alternative uses. (E.g. A land owned by the firm does not pay rent. Thus a rent is an income forgone by not letting it out).

Direct costs: The costs that are readily identified and are traceable to a particular product or product line.

Indirect costs: The costs that is not readily identifiable or visibly traceable to a particular product or line of products.

Fixed costs: A cost which is not related to production is called fixed costs. In other words, it is a cost that remains unchanged even with variations in output.

Variable costs: Any cost which varies exactly in proportion to the change in activity (production or sale) would be term as variable cost.

14.7 SELF ASSESSMENT QUESTIONS

1. Identify the type of costs in each case.

i. Advertising expenditure for a new car to be launched.

ii. Last year's total office expenditure.

iii. Payment to Construction Company for extension of office premises.

iv. Depreciation of machinery

v. Payment for office stationery

vi. Telephone charges of the office

vii. Cost of raw material

viii. Compensation paid to workers due to lock-outs

ix. Salary of the administrative personnel

x. Salary of the owner of the company

xi. Interests cost of partner's capital

xii. Fine paid to Government on account of polluting unit

xiii. Packaging material used for all products

xiv. Rent of office premises

xv. Payment for refreshment

2. Assume that you are setting up a new office. What are the costs that you will need to incur. Prepare a statement of these costs.

14.8 LESSONS END EXERCISE

1. What do you mean by cost analysis? Discuss various types of costs in detail with suitable examples.

2. Distinguish the following:

i. Accounting costs and economic costs

ii. Outlay costs and opportunity costs

iii. Direct or traceable costs and indirect or non-traceable costs

Fixed costs and variable costs

14.9 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

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COST FUNCTIONS: SHORT RUN AND LONG RUN COSTS CURVES

STRUCTURE

15.1 INTRODUCTION

The cost function expresses a functional relationship between total cost and factors that determine it. Usually, the factors that determine the total cost of production (C) of a firm are the output (0, the level of technology (T), the prices of factors (Pf) and the fixed factors (F). Symbolically, the cost function becomes

C=f(Q, T, Pf, F)

15.2 OBJECTIVES

After reading this chapter you will be able to:

i. Understand cost function in the short run and the long run.

ii. Explain various costs under short run.

iii. Know about the reason behind the U-shape long run cost curve.

15.3 COST FUNCTION

The cost function refers to the mathematical relation between cost of a product and the various determinants of costs. In a cost function, the dependent variable is unit cost or total cost and the independent variables are the price of a factor, the size of the output or any other relevant phenomenon which has a bearing on cost, such as technology, level of capacity utilization, efficiency and time period under consideration. Cost function is a function which is obtained from production function and the market supply of inputs. It expresses the relationship between costs and output. Cost functions are of two kinds: They are Short-run cost functions and Long-run cost functions.

15.4 SHORT RUN TOTAL COSTS

15.4.1 Total, Fixed and Variable Costs: There are some factors which can be easily adjusted with changes in the level of output. A firm can readily employ more workers if it has to increase output. Similarly, it can purchase more raw materials if it has to expand production. Such factors which can be easily varied with a change in the level of output are called variable factors. On the other hand, there are some factors such as building, capital equipment, or top management team which cannot be so easily varied. It requires comparatively longer time to make changes in them. It takes time to install a new machinery. Similarly, it takes time to build a new factory. Such factors which cannot be readily varied and require a longer period to adjust are called fixed factors. Corresponding to the distinction between variable and fixed factors we distinguish between short run and long run periods of time. Short run is a period of time in which output can be increased or decreased by changing only the amount of variable factors, such as labor, raw material, etc. In the short run, quantities of fixed factors cannot be varied in accordance with changes in output. If the firm wants to increase output in the short run, it can do so only with the help of variable factors, i.e., by using more labor and/or by buying more raw materials. Thus, short run is a period of time in which only variable factors can be varied, while the quantities of fixed factors remain unaltered. On the other hand, long run is a period of time in which the quantities of all factors may be varied. Thus, all factors become variable in the long run.

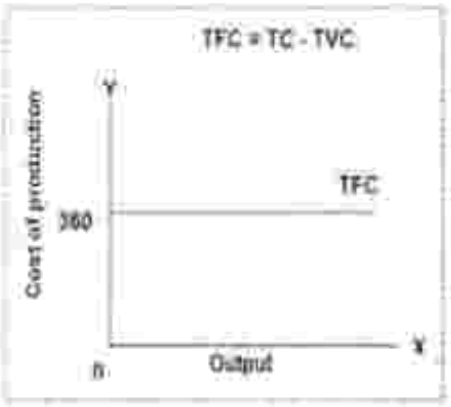


Fig: Total Fixed Cost

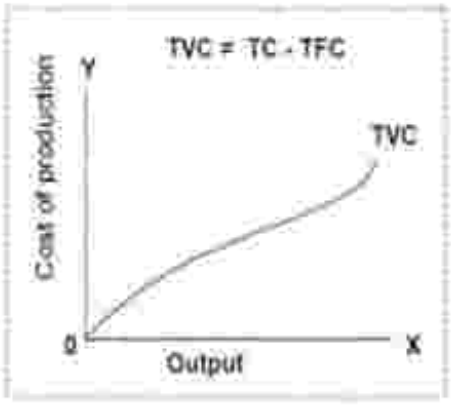


Fig: Total Variable Cost

Thus, we find that fixed costs are those costs which are independent of output, i.e., they do not change with changes in output. These costs are a "fixed amount" which are incurred by a firm in the short run, whether the output is small or large. Even if the firm closes down for sometime in the short run but remains in business, these costs have to be borne by it. Fixed costs include such charges as contractual rent, insurance fee, maintenance cost, property taxes, interest on capital employed, manager's salary, watchman's wages etc. Variable costs, on the other hand are those costs which change with changes in output. These costs include payments such as wages of labor employed, prices of raw material, fuel and power used, transportation cost etc. If a firm shuts down for a short period, then it may not use the variable factors of production and will not therefore incur any variable cost.

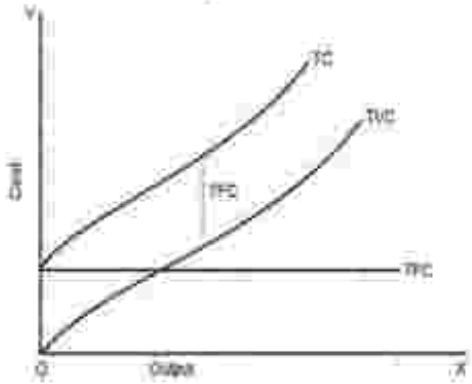


Fig: Short-run Total Cost Curves

Total cost of a business is thus the sum of total variable cost and total fixed cost or symbolically

TC = TFC + TVC. We may represent total cost, total variable cost and fixed cost diagrammatically. In the diagram above, the total fixed cost curve (TFC) is parallel to X-axis. This curve starts from a point on the Y-axis meaning thereby that fixed cost will be incurred even if the output is zero. On the other hand the total variable cost curve rises upward showing thereby that as output increases, total variable cost increases. This curve starts from the origin which shows that when the output is zero, variable costs are also nil. The total cost curve has been obtained by adding vertically the total fixed cost curve and the total variable cost curve.

15.5 SHORT RUN AVERAGE COSTS

15.5.1 Average Fixed Cost (AFC): The average fixed cost is the fixed cost per unit of output. It is obtained by dividing the total cost by the number of units of the commodity produced Symbolically AFC = TFC/Q

Or AFC = AC – AVC

The average fixed cost (AFC) is a rectangular hyperbola, which never meets the horizontal or vertical axis. Since the total fixed cost is constant, as total output becomes larger and larger, the entire AFC must become smaller and smaller. This continuous falling of AFC, as output expands, is what business people commonly call 'spreading the overhead. 'Since total fixed cost is a constant amount, average fixed cost will steadily fall as output increases. Therefore, if we draw an average fixed cost curve, it will slope downwards throughout its length but will not touch the X-axis as AFC cannot be zero.

15.5.2 Average Variable Cost (AVC): The average variable cost is the variable cost per unit of output. It is obtained by dividing the total variable cost by the number of units of the commodity produced.

Symbolically AVC = TVC/Q

Or AVC = AC—AFC

Diagrammatically, the AVC is 'U' shaped. The law of variable proportions provides the fundamental explanation for the shape of this curve. It means that the AVC curve first falls, reaches a minimum and then begins to increase.

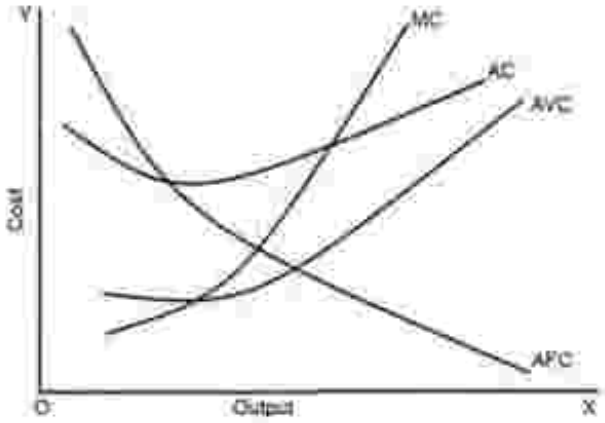


Fig: Short run Average and Marginal Cost Curves

15.5.3 Average Total Cost (ATC): Average cost or average cost is the cost per unit of output. It is obtained by dividing the total cost by the total number of units of the commodity produced.

Symbolically, ATC = TC/Q

TC = TFC + TVC

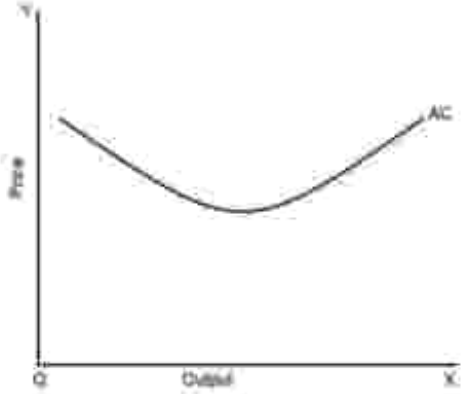
Therefore, ATC = (TFC+TVC)/Q = (TFC/Q) + (TVC/Q)

ATC = AFC + AVC

The AC curve 'U' shaped in nature.

Why the Short-run Average Cost Curve is 'U' Shaped?

Prof. Stonier and Hague have given a simple and advanced explanation for the 'U' shaped average cost curve.



Simple Explanation

The average cost is the sum of AFC and AVC. In the initial stages, both the AFC and AVC go on falling. Consequently, the AC also goes on falling. After a certain stage, the AVC starts rising. The AFC falls no doubt but the rise in AVC is greater than the fall in the AFC. Therefore, the AC goes on rising after reaching a minimum point.

Advanced Explanation

When the size of a firm expands, there emerges certain economies of scale. The economies of scale reduce the average cost of production. The important economies are:

1. Technical economies: Technical economies arise because of the adoption of new and scientifically developed machinery.

2. Managerial economies: The unit cost of administration falls as production expands.

3. Marketing economies: The average cost of marketing tends to be lower when a larger output is involved.

4. Financial economies: As the size of the firm expands, it can borrow funds at lower rates of interest.

5. Risk-bearing economies: As a firm expands its output, the statistical law of large numbers works out in its favor. It can diffuse the risk on various products and in different channels of production.

Therefore, the operation of the law of increasing returns helps to reduce the average cost of production. However, after a certain limit due to the emergence of certain diseconomies, the AC curve starts rising. Thus, the average cost curve is 'U' shaped.

15.5.4 Marginal Cost: Marginal cost is the addition made to the total cost by the production of an additional unit of output. In other words, it is the total cost of producing t units instead of t-1 units, where t is any given number. For example, if we are producing 5 units at a cost of Rs. 200 and now suppose the 6th unit is produced and the total cost is Rs. 250, then the marginal cost is Rs. 250 - 200 i.e., Rs. 50. And marginal cost will be Rs. 24, if 10 units are produced at a total cost of Rs.320 [(320-200)/(10-5)]. It is to be noted that marginal cost is independent of fixed cost.

This is because fixed costs do not change with output. It is only the variable costs which change with a change in the level of output in the short run. Therefore, marginal cost is in fact due to the changes in variable costs. Symbolically marginal

cost can be written as :

MC = MC = ΔTC/ΔQ

Where, ΔTC is change in total cost

ΔQ is change in output.

Or

MCn = TCn – TC n-1

Marginal cost curve falls as output increases in the beginning. It starts rising after a certain level of output. This happens because of the influence of the law of variable proportions. The fact that marginal product rises first, reaches a maximum and then declines ensures that the marginal cost curve of a firm declines first, reaches its minimum and then rises. In other words marginal cost curve of a firm is "U" shaped. The behavior of these costs has also been shown in the Table.

Total Output Units (1)	Total Fixed Cost (2)	Total Variable Cost (3)	Total Cost (4) - (2 + 3)	Average Fixed Cost (5) - (2/1)	Average Variable Cost (6) (3/1)	Average Cost (7) - (4/1)	Marginal Cost (8)
0	50	0	50	–	–	–	–
1	50	50	100	50	50	100	50
2	50	78	128	25	39	64	28
3	50	98	148	16.7	32.7	49.3	20
4	50	112	162	12.5	28	40.5	14
5	50	130	180	10	26	36	18
6	50	150	200	8.3	25	33.5	20
7	50	175	225	7.1	25	32.1	25
8	50	204	254	6.3	25.5	31.8	29
9	50	242	292	5.6	26.9	32.4	38
10	50	300	350	5	30	35	58
11	50	385	435	4.5	35	39.5	85

The above table shows that:

(i) Fixed cost does not change with increase in output up to a given level. Average fixed cost, therefore, comes down with every increase in output.

(ii) Variable cost increases, but not necessarily in the same proportion as the increase in output. In the above case, average variable cost comes down gradually till 4 units are produced. Thereafter it starts increasing.

(iii) Marginal cost is the additional cost divided by the additional units produced. This also comes down first and then starts increasing.

15.5.5 Relationship Between Average Cost and Marginal Cost

The relationship between marginal cost and average cost is the same as that between any other marginal-average quantities.

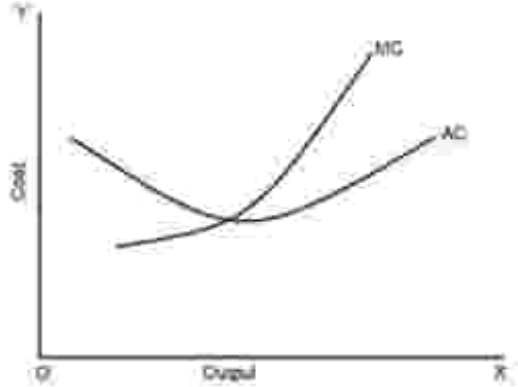


Fig: Relationship between Average cost and Marginal Cost

The following are the points of relationship between the two.

(1) When average cost falls as a result of an increase in output, marginal cost is less than average cost.

(2) When average cost rises as a result of an increase in output, marginal cost is more than average cost.

(3) When average cost is minimum, marginal cost is equal to the average cost. In other words, marginal cost curve cuts average cost curve at its minimum point (i.e. optimum point).

15.6 LONG RUN COST CURVES

As stated above, long run is a period of time during which the firm can vary all of its inputs - unlike short run in which some inputs are fixed and others are variable. In other words, whereas in the short run the firm is tied with a given plant, in the long run the firm moves from one plant to another; it can acquire a big plant if it wants to increase its output and a small plant if it wants to reduce its output. Long run cost of

production is the least possible cost of producing any given level of output when all individual factors are variable. A long run cost curve depicts the functional relationship between output and the long run cost of production.

In order to understand how the long run average cost curve is derived, we consider three short run average cost curves as shown in the following Fig. These short run cost curves (SACs) are also called plant curves. In the short run the firm can be operating on any short run average cost curve given the size of the plant. Suppose that these are the only three plants which are technically possible. Given the size of the plant, the firm will be increasing or decreasing its output by changing the amount of the variable inputs. But in the long run, the firm chooses among the three possible sizes of plants as depicted by short run average curve (SAC1, SAC2, and SAC3). In the long run, the firm will examine with which size of plants or on which short run average cost curve it should operate to produce a given level of output, so that the total cost is minimum. It will be seen from the diagram that up to OB amount of output, the firm will operate on the SAC1, though it could also produce with SAC2. Up to OB amount of output, the production on SAC1 results in lower cost than on SAC2. For example, if the level of output OA is produced with SAC1, it will cost AL per unit and if it is produced with SAC2 it will cost AH and we can see that AH is more than AL. Similarly, if the firm plans to produce an output which is larger than OB but less than OD, then it will not be economical to produce on SAC1. For this, the firm will have to use SAC2. Similarly, the firm will use SAC3 for output larger than OD. It is thus clear that, in the long run, the firm has a choice in the employment of plant and it will employ that plant which yields minimum possible unit cost for producing a given output.

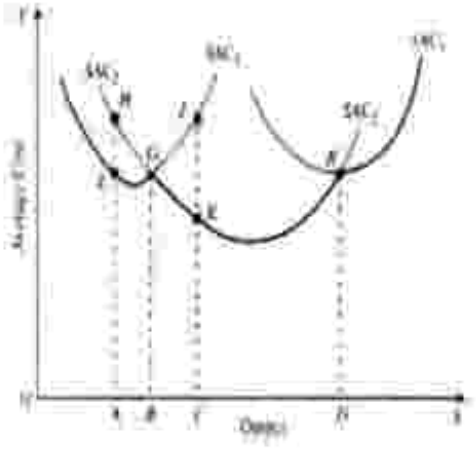


Fig: Short run Average Cost Curves

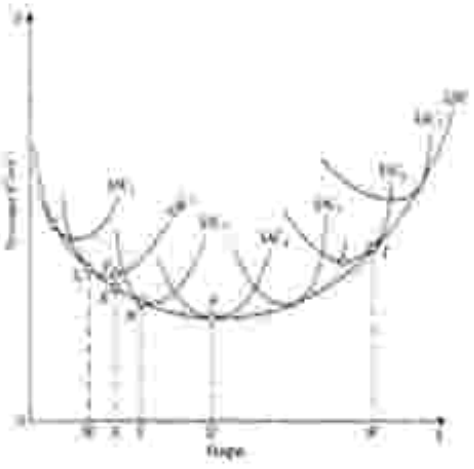


Fig: Long run Average Cost Curves

Suppose, the firm has a choice so that a plant can be varied by infinitely small gradations so that there are infinite number of plants corresponding to which there are numerous average cost curves. In such a case the long run average cost curve will be a smooth curve enveloping all these short run average cost curves.

As shown in Figure of the long run average cost curve is so drawn as to be tangent to each of the short run average cost curves. Every point on the long run average cost curve will be a tangency point with some short run AC curve. If a firm desires to produce any particular output, it then builds a corresponding plant and operates on the corresponding short run average cost curve. As shown in the figure, for producing OM, the corresponding point on the LAC curve is G and the short run average cost curve SAC2 is tangent to the long run AC at this point. Thus, if a firm desires to produce output OM, the firm will construct a plant corresponding to SAC2 and will operate on this curve at point G. Similarly, the firm will produce other levels of output choosing the plant which suits its requirements of lowest possible cost of production. It is clear from the figure that larger output can be produced at the lowest cost with larger plant whereas smaller output can be produced at the lowest cost with smaller plants. For example, to produce OM, the firm will be using SAC2 only; if it uses SAC3, it will result in higher unit cost than SAC2. But, larger output OV can be produced most economically with a larger plant represented by the SAC3. If we produce OV with a smaller plant, it will result in higher cost per unit. Similarly, if we produce larger output with a smaller plant it will involve higher costs because of its limited capacity.

It is to be noted that LAC curve is not tangent to the minimum points of the SAC curves. When the LAC curve is declining, it is tangent to the falling portions of the short run cost curves and when the LAC curve is rising, it is tangent to the rising portions of the short run cost curves. Thus for producing output less than "OQ" at the lowest possible unit cost, the firm will construct the relevant plant and operate it at less than its full capacity, i.e., at less than its minimum average cost of production. On the other hand, for outputs larger than OQ the firm will construct a plant and operate it beyond its optimum capacity. "OQ" is the optimum output. This is because "OQ" is being produced at the minimum point of LAC and corresponding SAC i.e., SAC4. Other plants are either used at less than their full capacity or more than their full capacity. Only SAC4 is being operated at the minimum point.

Long run average cost curve is often called a planning curve because a firm plans to produce any output in the long run by choosing a plant on the long run average cost curve corresponding to the given output. The long run average cost curve helps the

firm in the choice of the size of the plant for producing a specific output at the least possible cost.

15.7 EXPLANATION OF THE "U" SHAPE OF THE LONG RUN AVERAGE COST CURVE

As has been seen in the diagram LAC curve is a "U" shaped curve. This shape of LAC curve depends upon the returns to scale. As discussed earlier, as the firm expands returns to scale increase. After a range of constant returns to scale, the returns to scale finally decrease. On the same line, the LAC curve first declines and then finally rises. Increasing returns to scale cause fall in the long run average cost and decreasing returns to scale result in rise in long run average cost. Falling long run average cost and increasing economies of scale result from internal and external economies of scale and rising long run average cost and diminishing returns to scale result from internal and external diseconomies of scale (economies of scale have been discussed earlier at the relevant place).

The long run average cost curve initially falls with increase in output and after a certain point it rises making a boat shape. Long-run Average cost (LAC) curve is also called the planning curve of the firm as it helps in choosing an appropriate a plant on the decided level of output. The long-run average cost curve is also called "Envelope curve", because it envelopes or supports a family of short run average cost curves from below.

The above figure depicting long-run average cost curve is arrived at on the basis of traditional economic analysis. It is flattened 'U' shaped. This type of curve could exist only when the state of technology remains constant. But, the empirical evidence shows that the state of technology changes in the long-run.

Therefore, modern firms face 'L-shaped' cost curve than 'u-shaped'. The L shaped cost curve is given below. According to the diagram, over AB range, the curve is perfectly flat. Over this range all sizes of plant have the same minimum cost.

15.8 SUMMARY

Cost function refers to the mathematical relation between cost of a production and the various determinants of costs. Economists are generally interested in two types of cost functions; the short run cost function and the long run cost function. In the short-run, some factors are fixed while others are variable. The fixed factors are plant, equipment and a unique kind of skilled labor. Short-run is defined as that period in which the firm can expand or contract its output only by varying the amounts of

variable factors such as labor and raw materials. In the short period, the size of the plant cannot be altered. More production is possible only by over working the existing plant or by hiring more workers and by purchasing and using more raw materials The long run average cost curve initially falls with increase in output and after a certain point, it rises making a boat shape. It is also called planning curve or envelope curve. Modern firms face 'L shaped cost curve than U shaped curve due to change in technology.

15.9 GLOSSARY

Total Cost: Total money expenses incurred for buying the inputs required for producing a commodity or a service. Total cost is equal to the total fixed costs plus total variable costs.

Average Fixed Cost: AFC is the total fixed cost divided by the number of units of output.

Average Variable cost: Average variable cost is the total variable cost divided by the number of units of output produced.

Average total cost: Average total cost is the sum of average variable cost and average fixed cost.

Marginal Cost: Marginal cost is the addition made to the total cost by the production of an additional unit of output.

Long-run Average Cost: The long run average cost curve initially falls with increase in output and after a certain point; it rises making a boat shape. It is also called planning curve or envelope curve.

15.10 SELF ASSESSMENT QUESTIONS

1. What are the various short-run cost curves? Explain them in detail.
2. Assuming that the LAC curve is L-shaped, what would the LMC curve look like? Explain using diagrams.
3. Discuss the inter-relationship between the cost curves of a firm in the short period with the help of diagram.

15.11 LESSON END EXERCISES

1. According to you, is it possible for LAC to acquire any shape other than the

envelope shape? Why or why not? Explain using diagrams.

2. Do you think that the short-run and long run average cost curves of a firm necessarily U-shaped? Give reasons in support of your answer.

15.12 FURTHER READINGS

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PERFECT COMPETITION: SHORT RUN AND LONG RUN EQUILIBRIUM OF THE FIRM

STRUCTURE

16.1 INTRODUCTION

Firms sell goods and services under different market conditions, which economists call market structures. A market structure describes the key traits of a market, including the number of firms, the similarity of the products they sell, and the ease of entry into and exit from the market. Examination of the business sector of our economy reveals firms operating in different market structures. In this chapter and the two chapters that follow, we will study four market structures. The first is perfect competition, to which this entire chapter is devoted.

16.2 OBJECTIVES

After going through this chapter you will be able to:

i. Understand the meaning of perfect competition.

ii. Explain price determination under perfect competition.

iii. Discuss price and output determination under short-run and long-run.

16.3 MEANING OF PERFECT COMPETITION

Suppose you go to a vegetable market and enquire about the price of potatoes from a shopkeeper. He says potatoes are for Rs. 5 per kg. In the same way, you enquire from many shopkeepers and you get the same answer. What do you notice? You notice the following facts:

(i) There are large number of buyers and sellers in the potatoes market.

(ii) All the shopkeepers are selling potatoes at ₹ 5.

(iii) Product homogeneity i.e. all the sellers are selling almost the same quality of potatoes in the sense that you cannot judge by seeing the potatoes from which farmer's field do they come from. Such type of market is known as perfectly competitive market.

All goods in a perfectly competitive market are considered perfect substitutes, and the demand curve is perfectlyelastic for each of the small, individual firms that participate in the market. These firms are price takers—if one firm tries to raise its price, there would be no demand for that firm's product. Consumers would buy from another firm at a lower price instead.

16.4 FEATURES OF PERFECT COMPETITION

Following are the main characteristics of Perfect Competition:

1. Large number of sellers: In this market, there are large numbers of sellers who form total of market supply. Individually, seller is a firm and collectively, it is an industry. In perfect competition, price of commodity is decided by market forces of demand and supply i.e. by buyers and sellers collectively. Here, no individual seller is in a position to change the price by controlling supply. Because individual seller's individual supply is a very small part of total supply. So, if that seller alone raises the price, his product will become costlier than other and automatically, he will be out of market. Hence, that seller has to accept the price which is decided by market forces of demand and supply. This ensures single price in the market and in this way, seller becomes price taker and not price maker.

2. **Large number of buyers:** Individual buyer cannot control the price by changing or controlling the demand. Because individual buyer's individual demand is a very small part of total demand or market demand. Every buyer has to accept the price decided by market forces of demand and supply. In this way, all buyers are price takers and not price makers. This also ensures existence of single price in market.

3. **Homogenous Product:** In this case, all sellers produce homogeneous i.e. perfectly identical products. All products are perfectly same in terms of size, shape, taste, color, ingredients, quality, trademarks etc. This ensures the existence of single price in the market.

4. **Zero Advertisement Cost:** Since all products are identical in features like quality, taste, design etc., there is no scope for product differentiation. So advertisement cost is nil.

5. **No barriers to entry and exit:** There are no restrictions on entry and exit of firms. This feature ensures existence of normal profit in perfect competition. When profit is more, new firms enter the market and this leads to competition. Entry of new firms competing with each other results into increase in supply and fall in price. So, this reduces profit from abnormal to normal level.

When profit is low (below normal level), some firms may exit the market. This leads to fall in supply. So remaining firms raise their prices and their profits go up. So again this ensures normal level of profit.

6. **Knowledge about market conditions:** On the front of both, buyers and sellers, perfect knowledge regarding market and pricing conditions is expected. So, no buyer will pay price higher than market price and no seller will charge lower price than market price.

7. **Perfect mobility of factors:** This feature is essential to keep supply at par with demand. If all factors are easily mobile (moveable) from one line of production to another, then it becomes easy to adjust supply as per demand. Whenever demand is more additional factors should be moved into industry to increase supply and vice versa. In this way, with the help of stable demand and supply, we can maintain single price in the Market.

8. **No Government Intervention:** Since market has been controlled by the forces of demand and supply, there is no government intervention in the form of taxes, subsidies, licensing policy, control over the supply of raw materials, etc.

9. **No Transport Cost:** It is assumed that buyers and sellers are close to market, so there is no transport cost. This ensures existence of single price in market.

16.5 PRICE DETERMINATION UNDER PERFECT COMPETITION

16.5.1 Equilibrium of the Firm

The firm is said to be in equilibrium when it maximizes its profit. The output which gives maximum profit to the firm is called equilibrium output. In the equilibrium state, the firm has no incentive either to increase or decrease its output. Since it is the maximum profit giving output which only gives no incentive to the firm to increase or decrease it, so it is in equilibrium when it gets maximum profit.

Firms in a competitive market are price-takers. This is because there are a large number of firms in the market who are producing identical or homogeneous products. As such these firms cannot influence the price in their individual capacities. They have to accept the price fixed (through interaction of total demand and total supply) by the industry as a whole.

16.5.2 Conditions for Equilibrium of the Firm

As discussed earlier, a firm, in order to attain the equilibrium position, has to satisfy two conditions:

(i) The marginal revenue should be equal to the marginal cost i.e. MR = MC. If MR is greater than MC, there is always an incentive for the firm to expand its production further and gain by sale of additional units. If MR is less than MC, the firm will have to reduce output since an additional unit adds more to cost than to revenue. Profits are maximum only at the point where MR = MC.

(ii) The MC in other words, MC should have a positive slope.

16.6 PRICE AND OUTPUT DETERMINATION UNDER SHORT-RUN

In the short run, a firm will attain equilibrium position and at the same time, it may earn supernormal profits, normal profits or losses depending upon its cost conditions. In the short run, a firm will attain equilibrium position and at the same time, it may earn supernormal profits, normal profits or losses depending upon its cost conditions.

Supernormal Profits: There is a difference between normal profits and supernormal

profits. When the average revenue of a firm is just equal to its average total cost, it earns normal profits. It is to be noted that here a normal percentage of profits for the entrepreneur for his managerial services is already included in the cost of production. When a firm earns supernormal profits, its average revenues are more than its average total cost. Thus, in addition to normal rate of profit, the firm earns some additional profits. The following example will make the above concepts clear.

Suppose the cost of producing 1,000 units of a product by a firm is ₹ 15,000. The entrepreneur has invested ₹ 50,000 in the business and normal rate of return in the market is 10 per cent. Thus the entrepreneur must earn at least ₹ 5,000 (10% of 50,000) in this particular business. This ₹ 5,000 will be shown as a part of cost. Thus, total cost of production is ₹ 20,000 (₹ 15,000 + 5,000). If the firm is selling the product at ₹ 20, it is earning normal profits because AR (₹ 20) is equal to ATC (₹ 20).

If the firm is selling the product at ₹ 22 per unit, its AR (₹ 22) is greater than its ATC (₹ 20) and it is earning supernormal profit at the rate of ₹ 2 per unit.

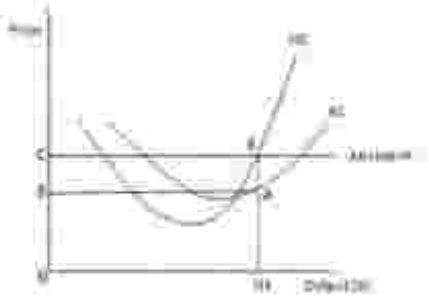

Fig: Short run equilibrium: Supernormal profits of a competitive firm

The above figure shows how a firm can earn supernormal profits in the short run. The diagram shows that in order to attain equilibrium, the firm tries to equate marginal revenue with marginal cost. MR (marginal revenue) curve is a horizontal line and MC (marginal cost) curve is a U-shaped curve which cuts the MR curve at E. At E, MR = MC. OQ is the equilibrium output for the firm. The firm's profit per unit is EB (AR-ATC). AR is EQ and ATC is BQ. Total profits are ABEP.

Normal profits: When a firm just meets its average total cost, it earns normal profits. Here

AR = ATC.

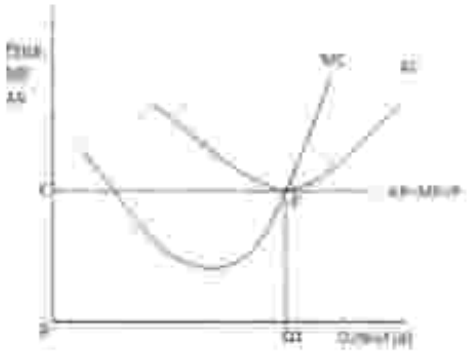

Fig: Short run equilibrium of a competitive firm: Normal profits

The figure shows that MR = MC at E. The equilibrium output is OQ. Since AR=ATC or

OP = EQ, the firm is just earning normal profits.

Losses: The firm can be in an equilibrium position and still makes losses. This is the position when the firm is minimizing losses. When the firm is able to meet its variable cost and a part of fixed cost it will try to continue production in the short run. If it recovers a part of the fixed costs, it will be beneficial for it to continue production because fixed costs (such as costs towards plant and machinery, building etc.) are already incurred and in such case it will be able to recover a part of them. But, if a firm is unable to meet its average variable cost, it will be better for it to shut down.

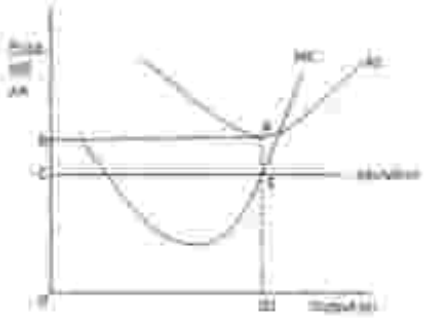

Fig: Short run equilibrium of a competitive firm: Losses

In the above figure, E is the equilibrium point and at this point AR = EQ and ATC = BQ since BQ>EQ, the firm is earning BE per unit loss and the total loss is ABEP.

16.7 PRICE AND OUTPUT DETERMINATION UNDER LONG-RUN

In the long run, firms are in equilibrium when they have adjusted their plant so as to produce at the minimum point of their long run AC curve, which is tangent to the demand curve defined by the market price. In the long run, the firms will be earning just normal profits, which are included in the ATC. If they are making supernormal profits in the short run, new firms will be attracted into the industry; this will lead to a fall in price (a down ward shift in the individual demand curves) and an upward shift of the cost curves due to increase in the prices of factors as the industry expands. These changes will continue until the ATC is tangent to the demand curve. If the firms make losses in the short run, they will leave the industry in the long run. This will raise the price and costs may fall as the industry contracts, until the remaining firms in the industry cover their total costs inclusive of the normal rate of profit.

In the following figure, we show how firms adjust to their long run equilibrium position. If the price is OP, the firm is making super-normal profits working with the plant whose cost is denoted by SAC1. It will, therefore, have an incentive to build new capacity and it will move along its LAC. At the same time, new firms will be entering the industry attracted by the excess profits. As the quantity supplied in the market increases, the supply curve in the market will shift to the right and price will fall until it reaches the level of OP1 at which the firms and the industry are in long run equilibrium.

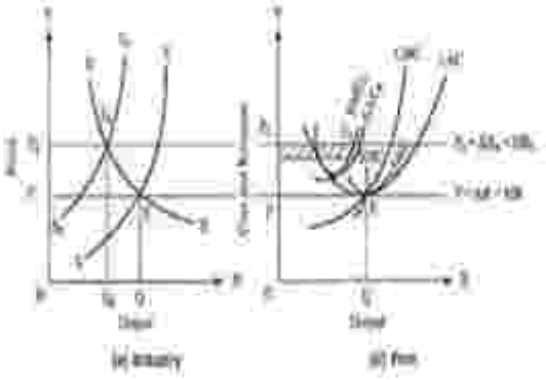

Fig: Long run equilibrium of the firm in a perfectly competitive market

The condition for the long run equilibrium of the firm is that the marginal cost should be equal to the price and the long run average cost i.e. LMC = LAC = P

The firm adjusts its plant size so as to produce that level of output at which the LAC is

the minimum possible. At equilibrium the short run marginal cost is equal to the long run marginal cost and the short run average cost is equal to the long run average cost. Thus, in the long run we have, SMC = LMC = SAC = LAC = P = MR

This implies that at the minimum point of the LAC, the corresponding (short run) plant is worked at its optimal capacity, so that the minima of the LAC and SAC coincide. On the other hand, the LMC cuts the LAC at its minimum point and the SMC cuts the SAC at its minimum point. Thus, at the minimum point of the LAC the above equality is achieved.

Long run equilibrium of the industry: A perfectly competitive industry is in long run equilibrium when (i) all the firms are earning normal profits only i.e. all the firms are in equilibrium (ii) there is no further entry or exit from the market.

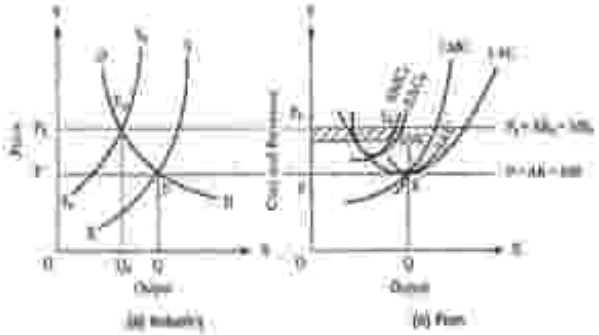

Fig: Long run equilibrium of a competitive industry and its firms

The above figure shows that in the long-run AR = MR = LAC = LMC at E1. Since E1 is the minimum point of LAC curve, the firm produces equilibrium output OM at the minimum (optimum) cost. A firm producing output at optimum cost is called an optimum firm. All the firms under perfect competition, in long run, are optimum firms having optimum size and these firms charge minimum possible price which just covers their marginal cost.

Thus, in the long run, in perfect competition, the market mechanism leads to an optimal allocation of resources. The optimality is shown by the following conditions associated with the long-run equilibrium of the industry:

a. The output is produced at the minimum feasible cost.

b. Consumers pay the minimum possible price which just covers the marginal cost i.e. MC = AR.

c. Plants are used at full capacity in the long run, so that there is no wastage of resources i.e. MC= AC.

d. Firms earn only normal profits i.e. AC =AR.

e. Firms maximize profits (i.e. MC=MR), but the level of profits will be just normal.

In other words, in the long run,

LAR = LMR = P = LMC = LAC and there will be optimum allocation of resources. But it should be remembered that the perfectly competitive market system is a myth. This is because the assumptions on which this system is based are never found in the real world market conditions.

16.8 SHUT DOWN POINT OF THE FIRM

A firm will choose to implement a production shutdown when the revenue received from the sale of the goods or services produced cannot cover the variable costs of production. In this situation, a firm will lose more money when it produces goods than if it does not produce goods at all. Producing a lower output would only add to the financial losses, so a complete shutdown is required. If a firm decreased production it would still acquire variable costs not covered by revenue as well as fixed costs (costs inevitably incurred). By stopping production the firm only loses the fixed costs.

The shutdown occurs within a firm when the marginal revenue is below average variable cost at the profit-maximizing output. The goal of a firm is to maximize profits and minimize losses. When a shutdown is required the firm failed to achieve a primary goal of production by not operating at the level of output where marginal revenue equals marginal cost.

The Shutdown Rule

In the short run, a firm that is operating at a loss (where the revenue is less that the total cost or the price is less than the unit cost) must decide to operate or temporarily shutdown. The shutdown rule states that "in the short run a firm should continue to operate if price exceeds average variable costs."

When determining whether to shutdown a firm has to compare the total revenue to

the total variable costs. If the revenue the firm is making is greater than the variable cost (R>VC) then the firm is covering its variable costs and there is additional revenue to partially or entirely cover the fixed costs. One the other hand, if the variable cost is greater than the revenue being made (VC>R) then the firm is not even covering production costs and it should be shut down immediately.

16.8.1 Implications of a Shut Down of a Firm

The decision to shut down production is usually temporary. It does not automatically mean that a firm is going out of business. If the market conditions improve, due to prices increasing or production costs falling, then the firm can resume production. Shutdowns are short run decisions. When a firm shuts down it still retains capital assets, but cannot leave the industry or avoid paying its fixed costs.

A firm cannot incur losses indefinitely which impacts long run decisions. When a shutdown last for an extended period of time, a firm has to decide whether to continue to business or leave the industry. The decision to exit is made over a period of time. A firm that exits an industry does not earn any revenue, but is also does not incur fixed or variable costs.

16.9 SUMMARY

A market is said to be perfectly competitive if it possesses the following characteristics large number of buyers and sellers, homogeneous product, free entry and exit, perfect mobility of factors of production, perfect knowledge about the market conditions, absence of transport cost, no government interference and absence of collusion. A firm is in equilibrium when it's MC = MR and MC curve cuts the MR curve from below. In the short–run firms may be earning supernormal profits or earning losses at the equilibrium price. In the long-run all the supernormal profits or losses get wiped away with entry or exit of the firms from the industry and all firms earn only normal profit.

16.10 GLOSSARY

Perfect Competition: A market is said to be perfectly competitive if there are large number of buyers and sellers, homogeneous product, free entry and exit, perfect mobility of factors of production, perfect knowledge about the market conditions, absence of transport cost, no government interference and absence of collusion.

Equilibrium Price: It is the price at which both demand and supply are equal.

Normal Profit: When the average revenue of a firm is just equal to its average total cost, it earns normal Profits.

Supernormal Profits: When a firm earns supernormal profits, its average revenues are more than its average total cost.

16.11 SELF ASSESSMENT QUESTIONS

1. List out the major characteristic features of a perfect market.
2. What do you mean by shut down point? Explain why a firm suffers from losses.
3. Is it possible to earn profit in the perfect competition? Justify.

16.12 LESSON END EXERCISE

1. Show graphically how an individual firm attains equilibrium under perfect competition.

2. Explain how the price and output is determined in perfect competition under short run and long run.

16.13 FURTHER READINGS

Chopra,P.N.,"Principles of Economics", 2000, Kalyani Publishers, New Delhi.

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

Jhingan, M.L., "Micro –Economic Theory", 2002, Vrinda Publishets (P) Ltd., Delhi.

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SIMPLE MONPOLY AND DISCRIMINATING MONOPOLY

STRUCTURE

17.1 INTRODUCTION

A monopolist is a firm that is the only producer of a good that has no close substitutes. An industry controlled by a monopolist is known as a monopoly. Note that product differentiation does not matter here in that there is only one product. Why we might be concerned about having a monopolist? The key problem associated with the monopolist is that the producer will no longer be a price-taker. In a competitive

market, the firm cannot directly influence price. If the price-taking competitive firm tries to raise price, it will simply lose sales to other firms in the market. For the monopolist, there are no other firms to worry about. The ability of the monopolist to raise price above the competitive level is known as market power. The monopolist is, however, still constrained by the market demand. - If the firm raises price, quantity demanded will decrease (the quantity effect). - At the same time, what it does sell it will sell at a higher price (the price effect). In general, we will see that the monopolist will raise prices and reduce production relative to the competitive market.

Business firms operating in competitive markets are not restricted to charging only one price for their product. These firms may find that by charging different customers different prices for a common product may actually increase the profits of the firm. This charging of different prices for a particular good is known as Price Discrimination and is very common in various markets around the globe.

17.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand the meaning of monopoly market.

ii. Discuss how profit is maximized under monopoly market.

iii. Get an insight into price discrimination and its various types.

iv. Distinguish between perfect competition and monopoly.

17.3 MEANING OF MONOPOLY

The word 'Monopoly' means "alone to sell". Monopoly is a situation in which there is a single seller of a product which has no close substitute. Pure monopoly is never found in practice. However, in public utilities such as transport, water and electricity, we generally find a monopoly form of market.

17.4 FEATURES OF MONOPOLY MARKET

1. Single Seller: Under monopoly, there is a single producer of a particular commodity or service in the market accruing to a rather large number of buyers. The mono manufacturer may be an individual, a group of partners or a joint stock company or state, being the only source of supply for the goods or services with no close substitute. In this market structure, the firm is the industry and, thus, the market is referred to as 'pure monopoly', but, it is more of a theoretical concept. At times, close substitutes are produced by few manufactures holding a substantial market share and this imperfect form of extreme market is termed as monopolistic competition.

2. **Restricted Entry:** Free entry of new organizations in this market arrangement is prohibited, that is, other sellers cannot enter the market of monopoly. Few of the primary barriers, constricting the entry of new sellers are: Government license or franchise Resource ownership, Patents and copyrights, High start-up cost, Decreasing average total cost, Homogeneous Product. A monopoly firm manufactures a commodity that has no close substitute and is a homogeneous product. With the absence of availability of a substitute, the buyer is bound to purchase what is available at the tagged price. For instance: there is no substitute for railways as the 'bulk carrier'. Thus, to be the sole seller, in the monopolistic setup, a unique product must be produced.

3. **Full Control over Price:** In a monopoly market, restricted entry constricts competition and the monopolist exhibits full control over the market conditions. The absence of competition spares the monopolizing company from price pressure and grants him the opportunity to charge the product as per his advantage, targeting profit maximizing via predetermined quantity choice. Thus, a monopolist is a 'price maker' and not a 'price taker', wherein he decides the price and the buyers has to accept it. Nevertheless, to evade the entry from new market participants, the company needs to regulate the set product or service price within the paradigms of the Monopoly Theorem.

4. **Price Discrimination:** Price discrimination can be defined as the 'practice by a seller of charging different prices from different buyers for the same good or service'. A monopolist has the leverage to carry out price discrimination as he is the market and acts as per his suitability.

5. **Increased Scope for Mergers:** Scope for vertical and/or horizontal mergers increase in lieu of control exhibited by a single entity under a monopoly. The mergers efficiently absorb competition and maintain the supply chain management.

6. **Price Elasticity:** With regards to the demand of the product or service offered by the monopolizing company or individual, the price elasticity to absolute value ratio is dictated by price increase and market demand. It is not uncommon to see surplus and/or a loss categorized as 'deadweight' within a monopoly. The latter refers to gain that evades both, the consumer and the monopolist.

7. **Lack of Innovation:** On account of solitary market domination, monopolies exhibit an inclination towards losing efficiency over a period of time; new designing and marketing dexterity takes a back seat.

8. **Lack of Competition:** When the market is designed to serve a monopoly, the lack of business competition or the absence of viable goods and products shrinks the scope for 'perfect competition'. Being the sole merchant of an eccentric good with no

close imitation, a monopoly has no opposition. The demand for turnout induced by a monopoly is the market demand, adhering extensive market control. The incompetence resulting from market dominance also makes monopoly a key type of market failure.

17.5 PROFIT MAXIMIZATION UNDER MONOPOLY MARKET

Firms in a perfectly competitive market are price-takers so that they are only concerned about determination of output. But this is not the case with a monopolist. A monopolist has to determine not only his output but also the price of his product. Since he faces a downward sloping demand curve, if he rises the price of his product, his sales will go down. On the other hand, if he wants to improve his sales volume, he will have to be content with lower price. He will try to reach that level of output at which profits are maximum i.e. he will try to attain the equilibrium level of output. How he attains this level can be found out as is shown below.

17.5.1 Short Run Equilibrium of the Firm

Conditions for equilibrium: The twin conditions for equilibrium in a monopoly market are the same as discussed earlier.

(i) MC = MR

(ii) MC curve must cut MR curve from below.

Graphically, we can depict these conditions in the following figure.

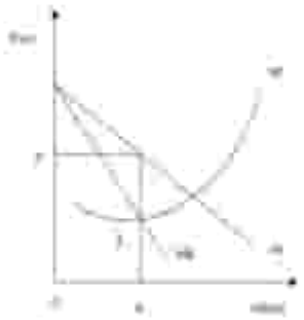


Fig.: Equilibrium of a monopolist (Short run)

The figure shows that MC curve cuts MR curve at E. That means, at E, the equilibrium price is OP and the equilibrium output is OQ. In order to know whether the monopolist is making profits or losses in the short run, we need to introduce the average total cost curve. The following figure shows two possibilities for a monopolist firm in the short run.

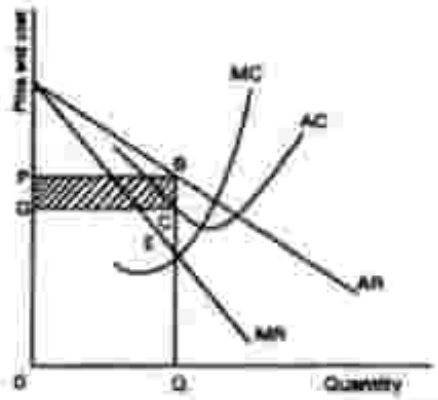


Fig.: Firm's equilibrium under monopoly: maximization of profits

The above figure show that MC cuts MR at E to give equilibrium output as OQ. At OQ, the price charged is OP (we find this by extending line EQ till it touches AR or demand curve). Also at OQ, the cost per unit is CQ. Therefore, profit per unit is BC or total profit is BCGP.

Can a monopolist incur losses? One of the misconceptions about a monopolist is that he always makes profits. It is to be noted that nothing guarantees that a monopolist makes profits. It all depends upon his demand and cost conditions. If he faces a very low demand for his product and his cost conditions are such that ATC >AR, he will not be making profits, rather, he will incur losses. The above figure depicts this position.

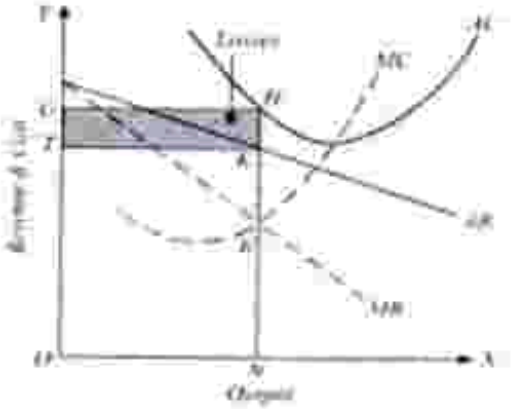


Fig.: Equilibrium of the monopolist: Losses in the short run

In the above figure, MC cuts MR at E. Here E is the point of loss minimization. At E, the equilibrium output is ON and the equilibrium price is OT. The average total cost (SATC) corresponding to ON is NH. Cost per unit of output i.e. NH is greater than

revenue per unit which is KN. Thus, the monopolist incurs losses to the extent of HK per unit or total loss is HKTG. Whether the monopolist stays in business in the short run depends upon whether he meets his average variable cost or not. If he covers his average variable cost and at least a part of fixed cost, he will not shut down because he contributes something towards fixed costs which are already incurred. If he is unable to meet his average variable cost even, he will shut down.

17.5.2 Long Run Equilibrium of the Firm

Long run is a period long enough to allow the monopolist to adjust his plant size or to use his existing plant at any level that maximizes his profit. In the absence of competition, the monopolist need not produce at the optimal level. He can produce at suboptimal scale also. In other words, he need not reach the minimum of LAC curve, he can stop at any place where his profits are maximum.

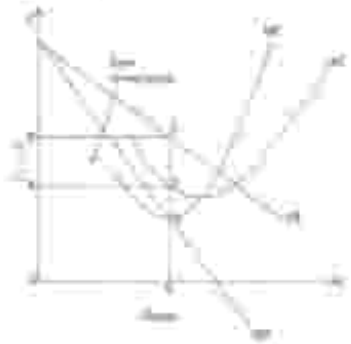


Fig.: Long run equilibrium of a monopolist

However, one thing is certain: The monopolist will not continue if he makes losses in the long run. He will continue to make super normal profits even in the long run as entry of outside firms is blocked.

17.6 MEANING OF PRICE DISCRIMINATION

In monopoly, there is a single seller of a product called monopolist. The monopolist has control over pricing, demand, and supply decisions, thus, sets prices in a way, so that maximum profit can be earned.

The monopolist often charges different prices from different consumers for the same product. This practice of charging different prices for identical product is called price discrimination.

According to Robinson, "Price discrimination is charging different prices for the same product or same price for the differentiated product."

According to Stigler, "Price discrimination is the sale of various products at prices which are not proportional to their marginal costs."

In the words of Dooley, "Discriminatory monopoly means charging different rates from different customers for the same good or service."

17.7 PRICE DISCRIMINATION UNDER MONOPOLY

Consider the following examples.

The family doctor in your neighborhood charges higher fees from a rich patient compared to the fees charged from a poor patient even though both are suffering from viral fever. Why?

Electricity companies sell electricity at a cheaper rate for home consumption in rural areas than for industrial use. Why?

The above cases are examples of price discrimination. What is price discrimination? Price discrimination occurs when a producer sells a specific commodity or service to different buyers at two or more different prices for reasons not associated with differences in cost.

Price discrimination is a method of pricing adopted by the monopolist in order to earn abnormal profits. It refers to the practices of charging different prices for different units of the same commodity.

Further examples:

(a) Railways separate high-value or relatively small-bulk commodities which can bear higher freight charges from other categories of goods.

(b) Some countries dump goods at low prices in foreign markets to capture them.

(c) Some universities charge higher tuition fees from evening class students than from other scholars.

(d) A lower subscription is charged from student readers in case of certain journals.

(e) A higher price for vegetables may be charged in posh localities inhabited by the rich than in other localities.

Price discrimination cannot persist under perfect competition because the seller has no influence over market determined rate. Price discrimination requires an element of monopoly so that the seller can influence the price of his product.

17.7.1 Conditions for Price Discrimination

Here are the **main conditions** required for discriminatory pricing:

1. **Differences in price elasticity of demand:** There must be a different price elasticity of demand for each group of consumers. The firm is then able to charge a higher price to the group with a more price inelastic demand and a lower price to the group with a more elastic demand. By adopting such a strategy, the firm can increase total revenue and profits (i.e. achieve a higher level of producer surplus). To profit maximize, the firm will seek to set marginal revenue = to marginal cost in each separate (segmented) market.

2. **Barriers to prevent consumers switching from one supplier to another:** The firm must be able to **prevent "consumer switching"** – i.e. consumers who have purchased a product at a lower price are able to re-sell it to those consumers who would have otherwise paid the expensive price.

This can be done in a number of ways, – and is probably easier to achieve with the provision of a **unique service** such as a haircut, dental treatment or a consultation with a doctor rather than with the exchange of tangible goods such as a meal in a restaurant.

- Switching might be prevented by selling a product to consumers at unique **moments in time** – for example with the use of airline tickets for a specific flight that cannot be resold under any circumstances or cheaper rail tickets that are valid for a specific rail service.

- Software businesses often offer heavy price discounts for educational users providing they give an academic email address

- Students may be required to show proof of identification using secure ID cards

Price discrimination is easier when there are **separate and distinct markets** for a firm's products and when **price elasticity of demand varies** from one group of consumers to another.

17.8 DEGREES OF PRICE DISCRIMINATION

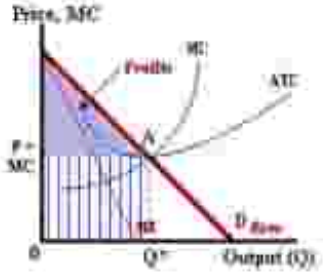
17.8.1 First Degree Price Discrimination

This first type of product pricing is based on the seller's ability to determine exactly how much each and every customer is willing to pay for a good. Different consumers have different preferences and levels of purchasing power and thus the amount they

would be willing to pay for a good often exceeds a single competitive price. This difference between what a consumer is willing to pay and the price actually paid is known, of course, as consumer's surplus. Thus a firm engaging in first degree price discrimination is attempting to extract all the consumers' surplus from its customers as profits.

The seller will take the time to bargain or 'haggle' with the customer about the price that customer is willing to pay - some buyers willing to pay a higher price other buyers a lower price. The firm will sell a quantity of output 'Q*' up to the point where the price of the last unit sold just covers the marginal costs of production. The difference between the price charged on each unit and the average costs of producing 'Q*' units of output will be the firm's profits.

Figure: First Degree Price Discrimination



Common examples of first degree price discrimination include car sales at most dealerships where the customer rarely expects to pay full sticker price, scalpers of concert and sporting-event tickets, and road-side sellers of fruit and produce.

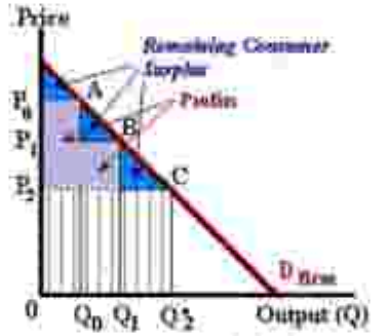
17.8.2 Second Degree Price Discrimination

The second type of price discrimination involves the establishment of a pricing structure for a particular good based on the number of units sold. Quantity discounts are a common example. In this case the seller charges a higher per-unit price for fewer units sold and a lower per-unit price for larger quantities purchased. In this case the seller is attempting to extract some of the consumer's surplus value as profits with residual surplus remaining with the consumer over and above the actual price paid. Like the case of first degree price discrimination, the firm will produce a level of output where the price charged just covers the marginal costs of production.

In the diagram below, we find an example of a firm charging three different prices for the same product. The price P0 is charged per unit if the buyer chooses to buy Q0 units of the good. A lower price P1 is charged for a greater quantity Q1 and the price

P2 is charged for the quantity Q*2 (the level of output such that P2 = MC -- the marginal costs of production).

Figure: Second Degree Price Discrimination



Common examples of second degree price discrimination include quantity discounts for energy use; the variations in price for different sizes of boxed cereal, packaged paper products; and sodas and French fries at fast food outlets.

17.8.3 Third Degree Price Discrimination

The last type of price discrimination exists where the firm is able to segment its customers into two or more separate markets, each market defined by unique demand characteristics. Some of these markets might be less price sensitive (price inelastic) relative to other markets where quantity demanded is more sensitive to price changes (price elastic). The firm might find that by charging a higher price **'P1'** and selling a level of output **'Q1'** in the first market and a lower price **'P2'** selling a level of output **'Q2'** in the second market; profits are greater than in that firm charged a single price **'P*'** **(P2 < P* < P1)** for all units sold. Specifically, the firm will attempt third degree price discrimination if:

P1Q1 + P2Q2 > P*Q* (Q* = Q1 + Q2, Total Costs are the same in either case)

In order for this type of price discrimination to be effective, the firm must be able to prevent a third party from engaging in arbitrage (buying in the second market at a price slightly above P2 and selling in the first market at a price slightly below P1 forcing both prices towards P*) and profiting from the price differences. The markets must be kept separate!

Examples of third degree price discrimination include: business vs. tourist airfares, business vs. residential telephone service, and senior discounts.

17.9 DIFFERENCE BETWEEN PERFECT COMPETITION AND MONOPOLY

Following points make clear difference between both the competitions:

1. **Output and Price:** Under perfect competition price is equal to marginal cost at the equilibrium output. While under monopoly, the price is greater than average cost.

2. **Equilibrium:** Under perfect competition equilibrium is possible only when MR = MC and MC cuts the MR curve from below. But under simple monopoly, equilibrium can be realized whether marginal cost is rising, constant or falling.

3. **Entry:** Under perfect competition, there exist no restrictions on the entry or exit of firms into the industry. Under simple monopoly, there are strong barriers on the entry and exit of firms.

4. **Discrimination:** Under simple monopoly, a monopolist can charge different prices from the different groups of buyers. But, in the perfectly competitive market, it is absent by definition.

5. **Profits:** The difference between price and marginal cost under monopoly results in super-normal profits to the monopolist. Under perfect competition, a firm in the long run enjoys only normal profits.

6. **Supply Curve of Firm:** Under perfect competition, supply curve can be known. It is so because all firms can sell desired quantity at the prevailing price. Moreover, there is no price discrimination. Under monopoly, supply curve cannot be known. MC curve is not the supply curve of the monopolist.

7. **Slope of Demand Curve:** Under perfect competition, demand curve is perfectly elastic. It is due to the existence of large number of firms. Price of the product is determined by the industry and each firm has to accept that price. On the other hand, under monopoly, average revenue curve slopes downward. AR and MR curves are separate from each other. Price is determined by the monopolist.

8. **Goals of Firms:** Under perfect competition and monopoly the firm aims at to maximize its profits. The firm which aims at to maximize its profits is known as rational firm.

9. **Comparison of Price:** Monopoly price is higher than perfect competition price. In long period, under perfect competition, price is equal to average cost. In monopoly, price is higher as is shown in Fig. 11. The perfect competition price is OP1, whereas monopoly price is OP. In equilibrium, monopoly sells ON output at OP

price but a perfectly competitive firm sells higher output ON1 at lower price OP1.

10. Comparison of Output: Perfect competition output is higher than monopoly price. Under perfect competition the firm is in equilibrium at point M1 (As shown in Fig. 11 (a)). AR = MR = AC = MC are equal. The equilibrium output is ON1. On the other hand monopoly firm is in equilibrium at point M where MC=MR. The equilibrium output is ON. The monopoly output is lower than perfectly competitive firm output.

17.10 SUMMARY

Monopoly is an extreme form of imperfect competition with a single seller of a product which has no close substitute. Monopolist has a considerable control over the price of his product. The short-run equilibrium of the monopolist is at the point where MC=MR. In the long-run the supernormal profit will be continued because entry is restricted. One of the important features of monopoly is price discrimination, i.e. charging different prices for the same product from different consumers. Price discrimination means charging different prices from different customers or for different units of the same product. Price discrimination is possible when the monopolist sells in different markets in such a way that it is not possible to transfer any unit of the commodity from the cheap market to the dearer market. Price discrimination is, however, not possible under perfect competition, even if the two markets could be kept separate. Since the market demand in each market is perfectly elastic, every seller would try to sell in that market in which he could get the highest price. Competition would make the price equal in both the markets. Thus price discrimination is possible only when markets are imperfect.

17.11 GLOSSARY

Monopoly: Monopoly is an extreme form of imperfect competition with a single seller of a product which has no close substitute.

Price discrimination: It refers to the practice of a seller of selling the same good at different prices to different buyers.

First-degree Price Discrimination: It refers to a price discrimination in which a monopolist charges the maximum price that each buyer is willing to pay. This is also known as perfect price discrimination as it involves maximum exploitation of consumers. In this, consumers fail to enjoy any consumer surplus. First degree is practiced by lawyers and doctors.

Second-degree Price Discrimination: It refers to a price discrimination in which buyers are divided into different groups and different prices are charged from these

groups depending upon what they are willing to pay. Railways and airlines practice this type of price discrimination.

Third-degree Price Discrimination: It refers to a price discrimination in which the monopolist divides the entire market into submarkets and different prices are charged in each submarket. Therefore, third-degree price discrimination is also termed as market segmentation.

17.12 SELF ASSESSMENT QUESTIONS

1. What do you mean by monopoly market? List out its essential features.
2. Discuss the conditions necessary for the firm to be in equilibrium.
3. What do you mean by price discrimination?
4. Highlight the conditions necessary for price discrimination.
5. Distinguish between Perfect competition and Monopoly.

17.13 LESSON END EXERCISES

1. Explain in detail price and output determination under short run and long run under monopoly competition.
2. Explain price discrimination and various degrees of price discrimination under monopoly market. Illustrate your answer with the help of example.

17.14 FURTHER READINGS

Chopra, P.N., " Principles of Economics", 2000, Kalyani Publishers, New Delhi.

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Seth, M.L., Advanced Economic Theory

PRICING UNDER MONOPOLISTIC COMPETITION

STRUCTURE

18.1 INTRODUCTION

Consider the market for soaps and detergents. Among the well known brands on sale are Lux, Fiama, Cinthol, Dettol, Liril, Pears, Lifebuoy Plus, Dove etc. Is this market an example of perfect competition? Since all the soaps are almost similar, this appears to be an example of perfect competition. But, on a close inspection we find that each seller has at least some variation between his product and those of his competitors. For example, whereas Lux is exhibited to be a beauty soap, Liril is more associated with freshness. Dettol soap is placed as antiseptic and Dove claims to ensure for young smooth skin. The practice of product and service differentiation gives each seller a chance to attract business to him on some basis other than price. This is the monopolistic part of market the situation. Thus, this market contains features of both the markets discussed earlier – monopoly and perfect competition. In fact, this type of market is more common than pure competition or pure monopoly. The industries in monopolistic competition include clothing, manufacturing and retail trade in large cities. There are many hundreds of manufacturers of women's dresses, and hundreds of grocery shops in a medium sized or large city.

18.2 OBJECTIVES

After going through this chapter you will be able to:

i. Understand the meaning of monopolistic market.

ii. Highlight the features of monopolistic market.

iii. Discuss price determination in short run under monopolistic competition.

iv. Discuss price determination in long run under monopolistic competition.

18.3 MEANING OF MONOPOLISTIC COMPETITION

Monopolistic competition is a market structure characterized by many firms selling products that are similar but not identical, so firms compete on other factors besides price. Monopolistic competition is sometimes referred to as imperfect competition, because the market structure is between pure monopoly and pure competition. The major benefit of monopolistic competition is the supply of a wide variety of goods and services.

18.4 FEATURES OF MONOPOLISTIC MARKET

1. **Large Number of Sellers:** There are large numbers of firms selling closely related, but not homogeneous products. Each firm acts independently and has a limited share of the market. So, an individual firm has limited control over the market price. Large number of firms leads to competition in the market.

2. **Product Differentiation:** Each firm is in a position to exercise some degree of monopoly (in spite of large number of sellers) through product differentiation. Product differentiation refers to differentiating the products on the basis of brand, size, color, shape, etc. The product of a firm is close, but not perfect substitute of other firm.

Implication of 'Product differentiation' is that buyers of a product differentiate between the same products produced by different firms. Therefore, they are also willing to pay different prices for the same product produced by different firms. This gives some monopoly power to an individual firm to influence market price of its product. Some examples of Product Differentiation are:

(i) Toothpaste: Pepsodent, Colgate, Neem, Babool, etc.

(ii) Tea: Brooke Bond, Tata tea, Today tea, etc.

(iii) Soaps: Lux, Hamam, Lifebuoy, Pears, etc.

3. **Selling costs:** Under monopolistic competition, products are differentiated and these differences are made known to the buyers through selling costs. Selling

costs refer to the expenses incurred on marketing, sales promotion and advertisement of the product. Such costs are incurred to persuade the buyers to buy a particular brand of the product in preference to competitor's brand. Due to this reason, selling costs constitute a substantial part of the total cost under monopolistic competition. It must be noted that there are no selling costs in perfect competition as there is perfect knowledge among buyers and sellers. Similarly, under monopoly, selling costs are of small amount (only for informative purpose) as the firm does not face competition from any other firm.

4. **Freedom of Entry and Exit:** Under monopolistic competition, firms are free to enter into or exit from the industry at any time they wish. It ensures that there are neither abnormal profits nor any abnormal losses to a firm in the long run. However, it must be noted that entry under monopolistic competition is not as easy and free as under perfect competition.

5. **Lack of Perfect Knowledge:** Buyers and sellers do not have perfect knowledge about the market conditions. Selling costs create artificial superiority in the minds of the consumers and it becomes very difficult for a consumer to evaluate different products available in the market. As a result, a particular product (although highly priced) is preferred by the consumers even if other less priced products are of same quality.

6. **Pricing Decision:** A firm under monopolistic competition is neither a price-taker nor a price-maker. However, by producing a unique product or establishing a particular reputation, each firm has partial control over the price. The extent of power to control price depends upon how strongly the buyers are attached to his brand.

7. **Non-Price Competition:** In addition to price competition, non-price competition also exists under monopolistic competition. Non-Price Competition refers to competing with other firms by offering free gifts, making favorable credit terms, etc., without changing prices of their own products.

Firms under monopolistic competition compete in a number of ways to attract customers. They use both Price Competition (competing with other firms by reducing price of the product) and Non-Price Competition to promote their sales.

18.5 PRICE DETERMINATION UNDER MONOPOLISTIC COMPETITION

Monopolistic competition is the economic market model with many seller selling similar, but not identical, products. The demand curve of monopolistic competition is elastic because although the firms are selling differentiated products, many are still close substitutes, so if one firm raises its price too high, many of its customers will switch to products made by other firms. This elasticity of demand makes it similar to

pure competition where elasticity is perfect. Demand is not perfectly elastic because a monopolistic competitor has fewer rivals then would be the case for perfect competition, and because the products are differentiated to some degree, so they are not perfect substitutes.

Monopolistic competition has a downward sloping demand curve. Thus, just as for a pure monopoly, its marginal revenue will always be less than the market price, because it can only increase demand by lowering prices, but by doing so, it must lower the prices of all units of its product. Hence, monopolistically competitive firms maximize profits or minimize losses by producing that quantity where marginal revenue equals marginal cost, both over the short run and the long run.

18.5.1 Short Run Equilibrium of the Firm

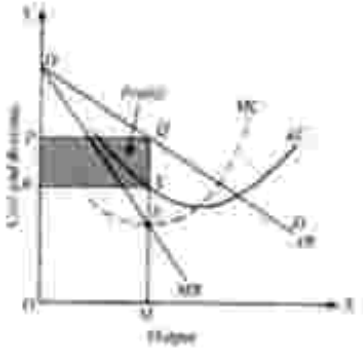

Fig.: Short run equilibrium of a firm under monopolistic competition: Super-normal profits

The firm depicted in the figure has a downward sloping but flat demand curve for its product. The firm is assumed to have U-shaped short run cost curves.

Conditions for the Equilibrium of an individual firm: The conditions for price-output determination and equilibrium of an individual firm may be stated as follows :

(i) MC = MR

(ii) MC curve must cut MR curve from below.

Figure shows that MC cuts MR curve at E. At E, the equilibrium price is OP and the equilibrium output is OM. Since per unit cost is SM, per unit super-normal profit (i.e. price-cost) is QS (or PR) and the total super-normal profit is PQSR.

It is also possible that a monopolistically competitive firm may incur losses in the short run. This is shown in the fig. The figure shows that per unit cost (HN) is higher than price OT (or KN) of the product of the firm and the loss per unit is KH (HN-KN). The total loss is GHKT.

What about long run equilibrium of the industry? If the firms in a monopolistically competitive industry earn super-normal profits in the short run, there will be an incentive for new firms to enter the industry. As more firms enter, profits per firm will go on decreasing as the total demand for the product will be shared among a larger number of firms. This will happen till all the profits are wiped away and all the firms earn only normal profits. Thus in the long run all the firms will earn only normal profits.

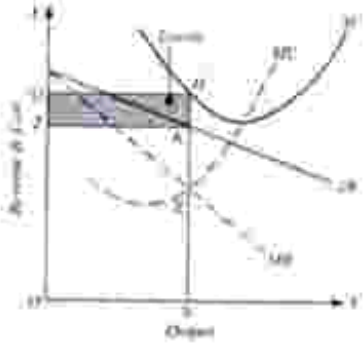

Fig: Short run equilibrium of a firm under Monopolistic Competition – With losses

18.5.2 Long Run Equilibrium of the Firm

If the competitive firms in an industry earn an economic profit, then other firms will enter the same industry, which will reduce the profits of the other firms. More firms will continue to enter the industry until the firms are earning only a normal profit. However, if there are too many firms, then firms will start to incur losses, especially the inefficient ones, which will cause them to leave the industry. Consequently, the remaining firms will return to normal profitability. Hence, the long-run equilibrium for monopolistic competition will equate the market price to the average total cost, where marginal revenue equals marginal cost, as shown in the diagram below. Remember, in economics, average total cost includes a normal profit.

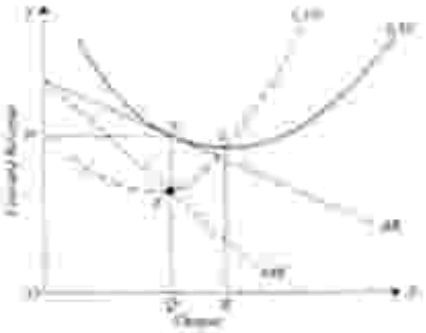

Fig: The long-term equilibrium of a firm in monopolistic competition

Because monopolistically competitive firms do not operate at their minimum average total cost, they, therefore, operate with excess capacity. Note in the above diagram that firms would lose money if they produced more to achieve either allocate or productive efficiency. That most firms operate with excess capacity is evident when looking at most monopolistically competitive firms, such as restaurants and other retailers, where salespeople are often idle. In some cases, a firm will have enough of an advantage to continue earning economic profits, even in the long run. For instance, a business can have an excellent location relative to other locations in the area, which will always give it an advantage over other firms in that local market. Or a firm may have a patent or trademark on its product that prevents competition. In such cases, firms have some degree of market power that would allow them to price their products above competitors' prices without losing too much business.

18.6 SUMMARY

It refers to the market situation in which many producers produce goods which are close substitutes of one another. The essential feature of monopolistic competition is the existence of large number of firms, product differentiation, selling costs and freedom of entry and exit of firms. In monopolistic competition, the features of monopoly and perfect competition are partially present. Demand curve is highly elastic and a firm enjoys some control over the price.

18.7 GLOSSARY

Monopolistic Competition: It is a market structure characterized by many firms selling products that are similar but not identical, so firms compete on other factors besides price.

Product differentiation: It refers to differentiating the products on the basis of brand, size, color, shape, etc.

18.8 SELF ASSESSMENT QUESTIONS

1. What do you mean by monopolistic competition?

2. List down main features of monopolistic market.

3. Discuss the conditions for an individual firm to be in equilibrium under monopolistic competition.

18.9 LESSON END EXERCISES

1. Explain the price-output determination in short run and long run under monopolistic competition. Illustrate your answer with the help of example.

18.10 FURTHER READINGS

Chopra,P.N.," Principles of Economics", 2000, Kalyani Publishers, New Delhi.

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EMERGENCE OF OLIGOPOLY; PRICING ANALYSIS: KINKED DEMAND CURVE

STRUCTURE

19.1 INTRODUCTION

Oligopoly is a market consisting of a few firms' relatively large firms, each with a substantial share of the market and all recognizing their interdependence. It is a common form of market structure. The products may be identical or differentiated. The price determination and profit maximization is based on how the competitors will respond to price or output changes.

19.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand the meaning of oligopoly market.

ii. Discuss the emergence of oligopoly market.

iii. Explain price determination under oligopoly market.

iv. Get an insight into pricing analysis with the help of kinked demand curve.

19.3 MEANING OF OLIGOPOLY MARKET

We have studied price and output determination under three market forms, namely, perfect competition, monopoly and monopolistic competition. However, in the real world economies we find that many of the industries are oligopolistic. Oligopoly is an important form of imperfect competition. Oligopoly is often described as 'competition among the few'. In other words, when there are few (two to ten) sellers in a market selling homogeneous or differentiated products, oligopoly is said to exist. Consider the example of cold drinks industry or automobile industry. There are a handful firms manufacturing cold drinks in India. Similarly there are a few members of automobile industry in India. These industries exhibit some special features which are discussed in the following paragraphs.

Prof. Stigler defines oligopoly as that "situation in which a firm bases its market policy, in part, on the expected behavior of a few close rivals".

19.4 FEATURES OF OLIGOPOLY MARKET

The main features of oligopoly are elaborated as follows:

1. **Few firms:** Under oligopoly, there are few large firms. The exact number of firms is not defined. Each firm produces a significant portion of the total output. There exists severe competition among different firms and each firm try to manipulate both prices and volume of production to outsmart each other. For example, the market for automobiles in India is an oligopolistic structure as there are only few producers of automobiles. The number of the firms is so small that an action by any one firm is likely to affect the rival firms. So, every firm keeps a close watch on the activities of rival firms.

2. **Interdependence:** Firms under oligopoly are interdependent. Interdependence means that actions of one firm affect the actions of other firms. A firm considers the action and reaction of the rival firms while determining its price and output levels. A change in output or price by one firm evokes reaction from other firms operating in the market.

For example, market for cars in India is dominated by few firms (Maruti, Tata, Hyundai, Ford, Honda, etc.). A change by any one firm (say, Tata) in any of its vehicle (say, Indica) will induce other firms (say, Maruti, Hyundai, etc.) to make changes in their respective vehicles.

3. **Non-Price Competition:** Under oligopoly, firms are in a position to influence the prices. However, they try to avoid price competition for the fear of price war. They follow the policy of price rigidity. Price rigidity refers to a situation in which price tends to stay fixed irrespective of changes in demand and supply conditions. Firms use other methods like advertising, better services to customers,

etc. to compete with each other.

If a firm tries to reduce the price, the rivals will also react by reducing their prices. However, if it tries to raise the price, other firms might not do so. It will lead to loss of customers for the firm, which intended to raise the price. So, firms prefer non- price competition instead of price competition.

4. **Barriers to Entry of Firms:** The main reason for few firms under oligopoly is the barriers, which prevent entry of new firms into the industry. Patents, requirement of large capital, control over crucial raw materials, etc, are some of the reasons, which prevent new firms from entering into industry. Only those firms enter into the industry which is able to cross these barriers. As a result, firms can earn abnormal profits in the long run.

5. **Role of Selling Costs:** Due to severe competition 'and interdependence of the firms, various sales promotion techniques are used to promote sales of the product. Advertisement is in full swing under oligopoly, and many a times advertisement can become a matter of life-and-death. A firm under oligopoly relies more on non-price competition.

Selling costs are more important under oligopoly than under monopolistic competition.

6. **Group Behavior:** Under oligopoly, there is complete interdependence among different firms. So, price and output decisions of a particular firm directly influence the competing firms. Instead of independent price and output strategy, oligopoly firms prefer group decisions that will protect the interest of all the firms. Group Behavior means that firms tend to behave as if they were a single firm even though individually they retain their independence.

7. **Nature of the Product:** The firms under oligopoly may produce homogeneous or differentiated product.

i. If the firms produce a homogeneous product, like cement or steel, the industry is called a pure or perfect oligopoly.

ii. If the firms produce a differentiated product, like automobiles, the industry is called differentiated or imperfect oligopoly.

8. **Indeterminate Demand Curve:** Under oligopoly, the exact behavior pattern of a producer cannot be determined with certainty. So, demand curve faced by an oligopolistic is indeterminate (uncertain). As firms are inter-dependent, a firm cannot ignore the reaction of the rival firms. Any change in price by one firm may lead to change in prices by the competing firms. So, demand curve keeps on shifting and it is not definite, rather it is indeterminate.

19.5 EMERGENCE OF OLIGOPOLY

Oligopoly is the market organization in which there are a few or small number of firms in an industry and they produce the major share of the market. The word 'a few' or small number is vague. The economists therefore refer to oligopoly as that market situation in which the number of firms is small but each firm in the industry takes into consideration the reaction of the rival firms in the formulation of price policy. The number of firms in the industry thus may be only two or more than two say 5, 10, 20. The basic condition for the existence of oligopoly is that a firm in the 'group product' formulate its price policies with an eye to their effects on its rivals.

There is thus a great deal of interdependence between or among the small number of firms. The oligopolistic industries are classified in a number of ways. If there are only two giant firms in an industry and they produce identical products. It is called perfect on pure duopoly. In case the goods produced by the two firms are differentiated, the duopoly is said to be imperfect or impure. When the number of firms dominating the product market is so small (more than two) that each firm takes into consideration the reactions of the rivals firms in formulating its own policy, the industry is said to be oligopolistic. The oligopoly like duopoly can also be pure or improve. If firms sell identical products like, cement, steel etc. the oligopoly is said to be pure. But if the products of the firms are not standardized and so are not perfect substitutes of one another, the oligopoly is called impure or differentiated.

The main reasons which give rise to oligopoly are as follows:

1. **Economies of Scale:** If the productive capacity of few firms is large and are able to capture a greater percentage of the total available demand for the product in the market, there will then be a small number of firms in an industry. The firms in the industry with heavy investment using improved technology and reaping economies of scale in production, sales promotion etc. will complete and stay in the market. The firms using outdated machinery and old techniques of production will not be able to compete with the low units costs producing firm and eventually wipe out from the industry. Oligopoly is, thus promoted due to the economies of scale.

2. **Barriers to entry:** In many oligopolies, the new firms cannot enter the industry as the big firms have ownership of patents or control over the essential raw material used in the production of an output. The heavy expenditure on the advertising by the oligopolistic industries may also be a financial barrier for the new firms to enter the industry.

3. **Merger:** If the new firms in the industry smell the danger of entry of new firms, they then immediately merge and formulate a joint policy in the pricing and production of the products. The joint action of a few big firms discourages the entry of new firms into the industry.

4. **Mutual Interdependence:** As the number of firms is small in an oligopolistic industry, therefore they keep a strict watch of the price charged by rival firms in the industry. The firm generally avoid price war and try to create conditions of mutual interdependence.

5. **Large Investment of Capital:** The number of firms in an industry may be small due to the large requirements of capital. No entrepreneur will like to venture to invest large sums in an industry in which addition to output to the existing one may likely to depress prices. Further, the new entrant may also fear of provoking a price-war by the established firms in the industry. This is always true that in the midst of differentiated product, it is difficult to make a new product.

6. **Control of Indispensable Resources:** A few firms may control some indispensable resources which may enable them to secure several advantages in costs over all others. This enables them to operate profitably at a price at which others cannot survive.

7. **Legal Restriction and Patents:** In public utility sector, the entry of new firms is closely regulated through the grant of certificate by the state. This policy of exclusion of rivals may be due to diseconomies of small scale or of duplication of services. Another factor for the emergence of oligopoly is the patent right which a few firms acquire in matter of some goods. Patents have led to many of the most important industrial monopolies in America and elsewhere.

19.6 PRICE DETERMINATION UNDER OLIGOPOLY MARKET

Because of interdependence, an oligopolistic firm cannot assume that its rival firms will keep their prices and quantities constant, when it makes changes in its price and/or quantity. When an oligopolistic firm changes its price, its rival firms will retaliate or react and change their prices which in turn would affect the demand of the former firm. Therefore, an oligopolistic firm cannot have sure and definite demand curve, since it keeps shifting as the rivals change their prices in reaction to the price changes made by it. Now when an oligopolistic does not know his demand curve, what price and output he will fix cannot be ascertained by economic analysis. However, economists have established a number of price-output models for oligopoly market depending upon the behavior pattern of other firms in the market.

19.7 PRICING ANALYSIS: KINKED DEMAND CURVE

It has been observed that many oligopolistic industries exhibit an appreciable degree of price rigidity or stability. In other words, in many oligopolistic industries prices remain sticky or inflexible, that is, there is no tendency on the part of the oligopolists to change the price even if the economic conditions undergo a change.

Many explanations have been given of this price rigidity under oligopoly and most

popular explanation is the so-called kinked demand curve hypothesis. The kinked demand curve hypothesis was put forward independently by Paul M. Sweezy, an American economist, and by Hall and Hitch, Oxford economists.

It is for explaining price and output under oligopoly with product differentiation, that economists often use the kinked demand curve hypothesis. This is because when under oligopoly products are differentiated, it is unlikely that when a firm raises its price, all customers would leave it because some customers are intimately attached to it due to product differentiation.

As a result, demand curve facing a firm under differentiated oligopoly is not perfectly elastic. On the other hand, under oligopoly without product differentiation, when a firm raises its price, all its customers would leave it so that demand curve facing an oligopolists producing homogeneous product may be perfectly elastic.

Further, under oligopoly without product differentiation, there is a greater tendency on the part of the firms to join together and form a collusion, formal or tacit, and, alternatively, to accept one of them as their leader in setting their price. No doubt, kinked demand curve has a special relevance for differentiated oligopoly, but it has also been applied for explaining price and output under oligopoly without product differentiation.

The demand curve facing oligopolists, according to the kinked demand curve hypothesis, has a 'kink' at the level of the prevailing price. The kink is formed at the prevailing price level because the segment of the demand curve above the prevailing price level is highly elastic and the segment of the demand curve below the prevailing price level is inelastic.

A kinked demand curve dD with a kink at point K has been shown in Fig. 29.4. The prevailing price level is OP and the firm is producing and selling the output OM. Now, the upper segment dK of the demand curve dD is relatively elastic and the lower segment KD is relatively inelastic. This difference in elasticity's is due to the particular competitive reaction pattern assumed by the kinked demand curve hypothesis.

The competitive reaction pattern assumed by the kinked demand curve oligopoly theory is as follows:

Each oligopolist believes that if he lowers the price below the prevailing level, his competitors will follow him and will accordingly lower their prices, whereas if he raises the price above the prevailing level, his competitors will not follow his increase in price.

In other words, each oligopolistic firm believes that though its rival firms will not match his increase in price above the prevailing level, they will indeed match its price

cut. These two different types of reaction of the competitors to the increase in price on the one hand and to the reduction in price on the other make the portion of the demand curve above the prevailing price level relatively elastic and the lower portion of the demand curve relatively inelastic.

This is explained below:

(a) Price reduction: If the oligopolists reduce its price below the prevailing price level OP in order to increase his sales, the competitors will fear that their customers would go away from them to buy the product from the former oligopolist which has made a price cut.

Therefore, in order to retain their customers they will be forced quickly to match the price cut. Because of the competitors quickly following the reduction in price by an oligopolists, he will gain in sales only very little. (His sales will increase not at the expense of his competitors but because of the rise in total quantity demanded due to the reduction in price of the good.

In fact each will gain in sales to the extent of a proportionate share in the increase in total demand). Very small increase in sales of an oligopolists following his reduction in price below the prevailing level means that the demand for him is inelastic below the prevailing price. Thus the segment KD of the demand curve in Fig. 29.4 which lies below the prevailing price OP is inelastic showing that very little increase in sales can be obtained by a reduction in price by an oligopolists.

(b) Price increase: If an oligopolist raises his price above the prevailing level, there will be a substantial reduction in his sales. This is because as a result of the rise in his price, his customers will withdraw from him and will go to his competitors who will welcome the new customers and will gain in sales.

These happy competitors will have therefore no motivation to match the price rise. The oligopolist who raises his price will be able to retain only those customers who either have a strong preference for his product (if the products are differentiated) or who cannot obtain the desired quantity of the product from the competitors because of their limited productive capacity.

Large reduction in sales following an increase in price above the prevailing level by an oligopolists means that demand with respect to increases in price above the existing one is highly elastic. Thus, in Fig. 29.4 the segment dK of the demand curve which lies above the current price level OP is elastic showing a large fall in sales if a product raises his price.

It is now evident from above that each oligopolist finds himself placed in such a position that while, on the one hand, he expects his rivals to match his price cuts very quickly, he does not expect his rivals to match his price increases on the other. Given

this expected competitive reaction pattern, each oligopolists will have a kinked demand curve dKD with the upper segment dK being relatively elastic and the lower segment KD being relatively inelastic.

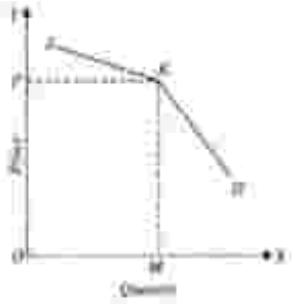

Fig: Kinked Demand Curve under Oligopoly

Why Price Rigidity under Oligopoly?

From what has been said above, it is easy to see why an oligopolist confronting a kinked demand curve will have no incentive to raise its price or to lower it. Since the oligopolists will not gain a large share of the market by reducing his price below the prevailing level, and will have substantial reduction in sales by increasing his price above the prevailing level, he will be extremely reluctant to change the prevailing price. In other words, each oligopolist will adhere to the prevailing price seeing no gain in changing it. Thus, rigid prices are explained in this way by the kinked demand curve theory.

In the above Fig, the prevailing price is OP at which kink is found in the demand curve dKD. The price P will tend to remain stable or rigid as every member of the oligopoly will not see any gain in lowering it or in increasing it. It should be noted that if the prevailing price OP is greater than average cost, more than normal profits will be made.

Further, it is worth mentioning that the oligopolists confronting a kinked demand curve will be maximizing his profits at the current price level. For finding the profit-maximizing price-output combination, marginal revenue curve MR corresponding to the kinked demand curve dKD has been drawn. It is worth mentioning that the marginal revenue curve associated with a kinked demand curve is discontinuous, or in other words, it has a broken vertical portion.

The length of the discontinuity depends upon the relative elasticity's of two segments dK and KD of the demand curve at point K. The greater the difference in the two elasticity's, the greater the length of the discontinuity. In the above figure marginal revenue curve MR corresponding to the kinked demand curve dKD has been drawn which has a discontinuous portion or gap HR.

Now, if the marginal cost curve of the oligopolists is such that it passes anywhere, say from point E, through the discontinuous portion HR of the marginal revenue curve MR, as shown in the figure below, the oligopolists will be maximizing his profits at the prevailing price level OP, that is, he will be in equilibrium at point E or at the prevailing price OP. Since the oligopolists are in equilibrium, or in other words, maximizing his profits at the prevailing price level, he will have no incentive to change the price.

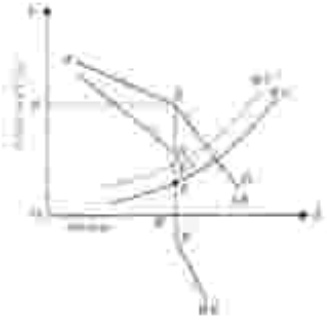

Fig: Change in costs within limit does not affect the oligopoly price

Furthermore, even if there are changes in costs, the price will remain stable so long as the marginal cost curve passes through the gap HR in the marginal revenue curve. In the above figure, when the marginal cost curve shifts upward from MC to MC' (dotted) due to the rise in cost, the equilibrium price and output remain unchanged since the new marginal cost MC' also passes from point E' through the gap HR.

Likewise, the kinked demand curve theory explains that even when the demand conditions change, the price may remain stable. This is illustrated in the above figure, in which when the demand for the oligopolists increases from dKD to d'K'D', the given marginal cost curve MC also cuts the new marginal revenue curve MR' within the gap. This means that the same price OP continues to prevail in the oligopolistic market.

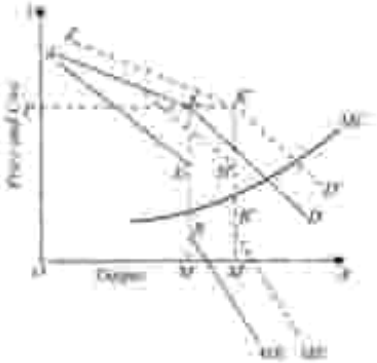

Fig: Change in demand does not affect the oligopoly price

However, it is worth mentioning that from the kinked demand curve oligopoly theory it does not follow that the price always remains the same whenever the costs and demand conditions undergo a change.

When the price is likely to change and when it is likely to remain inflexible in the face of changing costs and demand conditions is explained below:

1. **Decline in Costs:** When the cost of production declines, the price is more likely to remain stable. When the cost of production falls, then segment of the demand curve above the current price will become more elastic because with lower costs there is a greater certainty that the increase in price by an oligopolists will not be followed by his rivals and will thus cause greater loss in sales.

On the other hand, with lower cost the segment of the demand curve below the current price will become more inelastic because with the decline in costs, there is then greater certainty that the reduction in price by oligopolists will be followed by his rivals.

With the upper segment becoming more elastic and the lower segment becoming more inelastic than before, the angle dKD will become less obtuse and hence the gap in the marginal revenue curve will increase.

As a result of the increase in the gap (that is, the length of discontinuity) in the marginal revenue curve, the lower marginal cost curve is likely to pass through this gap showing that the price and output remain the same as before.

2. **Rise in Cost:** If there is a rise in the cost of the oligopolistic industry, the price is not likely to stay rigid. When there is a rise in cost of industry an oligopolists can reasonably expect that his increase in price will be followed by the others in the industry.

Consequently, the segment of the demand curve above the prevailing price will become less elastic and thereby make the angle dKD more obtuse and this will narrow down the gap in the marginal revenue curve.

With the smaller gap in the marginal revenue curve, the higher marginal cost curve is likely to cut it above the upper point H indicating that the equilibrium price will rise and the equilibrium output will fall. Thus it follows from the kinked demand curve theory that price is not likely to remain stable in the event of rise in cost.

3. **Decrease in Demand:** In case of decrease in demand, the price is very likely to remain inflexible and will not fall. When the demand decreases, it becomes more certain that if one oligopolist initiates the reduction in price, others will follow with the result that the lower segment of the demand curve will become more inelastic.

On the other hand, in the face of a decline in demand it is very certain that the increase

in price by one oligopolist will never be followed by others. As a result, the upper segment of the demand curve becomes more elastic, that is, it becomes more nearly horizontal.

With the increase in the elasticity of the upper segment and the decrease in the elasticity of the lower segment, the gap in the marginal revenue curve becomes wider and there it is most likely that the given marginal cost curve will cross the marginal revenue curve inside the gap when the demand curve dKD shifts downward. This indicates that the price will remain unchanged in the case of decrease in demand.

4. Increase in Demand: When the demand increases, the price is unlikely to remain stable, instead the price is likely to rise. In the event of increase in demand, oligopolists can expect that if he initiates the increase in price, his competitors will most probably follow him. Therefore, the upper segment dKD of the demand curve will become less elastic and the angle dKD will become more obtuse.

As a result, the gap HR in the marginal revenue curve will decrease and if this gap decreases much it is very likely that the marginal cost curve crosses the marginal revenue curve above the upper point H, that is, above the gap, indicating that the price will rise above OP.

From above, it is clear that the kinked demand curve analysis of oligopoly explains stability in price in the face of falling costs or declining demand, whereas, price are likely to rise when either the costs rise or demand increases. M.M. Bober, thus rightly writes:

"The kinky demand curve analysis points to the likelihood of price rigidity in oligopoly when a price reduction is in order and of price flexibility when conditions warrant a rise in price, There is hardly any disposition to lower the price when there is decline in demand or in costs, but the price may be raised in response to increased demand or to rising cost."

Critical Appraisal of Kinked Demand Curve Theory:

1. We saw above how the kinked demand curve theory of oligopoly provides an explanation of price rigidity under oligopoly. But there is a major drawback in the theory. It only explains why once an oligopoly price has been determined it would remain rigid or stable it does not explain how the price has been determined.

There is nothing in the kinked demand theory which explains how the price which is prevailing is determined. In other words, whereas this theory shows why price tends to stay where it is, it tells us nothing about why the price is where it is.

In the above Fig. the kink occurs at the price OP because OP happens to be the prevailing or established price. The theory does not explain how the price got to be equal to OP. Commenting upon kinked demand curve theory Prof. Silberston rightly

writes, "The most interesting question is not 'why are prices sticky in the short run?' (if they are), but who decides what the price is to be and on what principles."

However, it may be mentioned that the above criticism applies especially to P.M. Sweezy's version of the kinked demand curve analysis. Hall and Hitch's version of kinked demand curve analysis also explains the determination of oligopoly price.

According to Hall and Hitch, equilibrium price is determined by average cost (including normal profits), that is, by the tangency between average cost curve and the demand curve, as shown in the above Fig. However, Hall and Hitch version runs into difficulty when the average cost curve of the various firms in an oligopolistic industry is different.

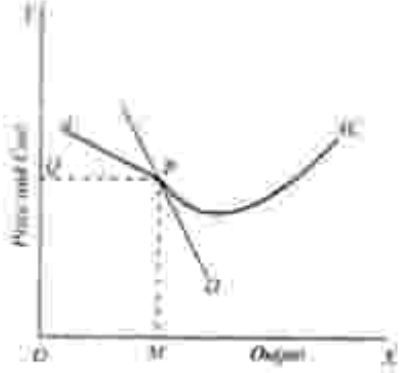

Fig: Full cost pricing and demand curve

2. Another shortcoming of the kinked-demand oligopoly theory is that it does not apply to the oligopoly cases of prices leadership and price cartels which account for quite a large part of the oligopolistic markets. When price leadership and price cartels exist in oligopolistic markets there is concerted behavior in regard to the price changes and hence there is no kink in the demand curve in these cases.

3. Finally, even in the case of pure oligopoly (i.e. oligopoly with homogenous products), the kinked demand curve theory does not furnish a complete explanation for price rigidity observed in oligopolistic markets. From the kinked demand curve analysis it follows that prices are likely to remain stable when demand or cost conditions decrease, whereas under pure oligopoly prices are likely to rise in the case of increase in cost or demand.

4. Finally, it has been rightly asserted that explanation of price stability by Sweeny's kinked demand curve theory applies only to depression periods. In periods of depression, demand for the products decreases. As has been explained above, in the context of decreased demand, price in kinked demand curve theory is likely to

remain sticky. But in periods of boom and inflation when the demand for the product is high and increasing, the price is likely to rise rather than remaining stable.

We, therefore, conclude that from Sweezy as well as Hall and Hitch's versions of kinked demand curve, it follows that prices are likely to remain stable during depression periods but not during boom and inflationary periods. Our analysis shows that whether we use kinked demand curve of the type postulated by Sweezy, or Hall and Hitch prices are unlikely to be stable during the boom periods.

19.8 SUMMARY

Oligopoly is a market structure in which a small number of firms has the large majority of market share. An oligopoly is similar to a monopoly, except that rather than one firm, two or more firms dominate the market. There is no precise upper limit to the number of firms in an oligopoly, but the number must be low enough that the actions of one firm significantly impact and influence the others. A diversity of specific market situations works against the development of a single, generalized explanation of how an oligopoly determines price and output.

Pure monopoly, monopolistic competition and perfect competition, all refer to rather clear cut market arrangements; oligopoly does not.

It consists of the 'tight' oligopoly situation in which two or three firms dominate the entire market and the 'loose' oligopoly situation where six or seven firms occupy the maximum share of the market.

Other firms share the balance. It includes both differentiation and standardization. It encompasses the cases in which firms are acting in collusion and in which they are acting independently. Therefore, the existence of various forms of oligopoly prevents the development of a general theory of price and output. The element of mutual interdependence in oligopolistic market further complicates the determination of price and output.

19.9 GLOSSARY

Oligopoly: When there are few (two to ten) sellers in a market selling homogeneous or differentiated products, oligopoly is said to exist.

Kinked Demand Curve: The price remains unchanged for a long time due to fear of retaliation and price tend to be sticky and inflexible. The sticky price is explained by the kinked demand curve.

Price Rigidity: It refers to a situation where the price of a good does not change immediately or readily to the new market-clearing price when there are shifts in the demand and supply curve.

19.10 SELF ASSESSMENT QUESTIONS

1. What do you mean by oligopoly market? List out its main characteristics.

2. Discuss the reasons of price rigidity in oligopoly by quoting practical examples in market.

19.11 LESSONS END EXERCISE

1. Explain price-output determination under oligopoly market?

2. Explain in detail how price is determined with the help of kinked demand curve?

19.12 FURTHER READINGS

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PRICING STRATEGIES AND METHODS

STRUCTURE

20.1 INTRODUCTION

Once a firm has established its pricing objectives and analyzed the factors that affect how it should price a product, the company must determine the pricing strategy (or strategies) that will help it achieve those objectives. As we have indicated, firms use different pricing strategies for their offerings. And oftentimes, the strategy depends on the stage of life cycle the offerings are in currently. Products may be in different stages of their life cycle in various international markets. Next, we'll examine three strategies businesses often consider when a product is first introduced and then look at several different pricing approaches that companies utilize during the product life cycle.

20.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand introductory pricing strategies.

ii. Explain different methods of pricing.

20.3 MEANING OF PRICING STRATEGIES

Pricing is the process of determining what a company will receive in exchange for its product or service. A business can use a variety of pricing strategies when selling a product or service. The price can be set to maximize profitability for each unit sold or from the market overall. It can be used to defend an existing market from new entrants, to increase market share within a market or to enter a new market.

20.4 METHODS OF PRICING : Following are the various methods of pricing

20.4.1 Penetration Pricing

Penetration pricing is a strategy employed by businesses to structure the pricing of its product to build its market share quickly at the expense of a greater profit margin, which the business hopes to make up with sales volume. The strategy works well with products that are consumed quickly, like groceries, but not so well with products that are not consumed quickly, like cars.

You can use a couple of different approaches with penetration pricing. One approach is to offer a free sample of your product along with a discount for the purchase of the full-sized product. For example, you may have received a small packet of perfume in the mail along with a coupon offering a 20% discount on the purchase of a bottle of it. The discount will usually make the product somewhat cheaper than the full-price of competing products of the same quality. The idea is to get you to try the product, hope that you like it and then further entice you to purchase it by offering a discount. Another approach you can use is to storm into the market with your new product at a discount price that is well below the price of your competition. This strategy may be employed when you are entering into an entirely new market without any brand recognition and there is a significant degree of competition. Eventually, once you gain market share and customer loyalty, you'll start to gradually increase the price.

Advantages of Penetration Pricing

1. **Adoption and Diffusion:** Diffusion is the process of acceptance of a new product or service by the consumers. Adoption is similar to diffusion here the focus is on the psychological acceptance of the product by the consumer. Rate of diffusion or adoption is the speed at which it is accepted. Both adoption and diffusion rates are

high when penetration policy is adopted.

2. **Not much competition in the initial phase:** When penetration pricing is introduced the competitors are caught unaware. Most importantly it leaves them with very little reaction time. So in the initial phase not much competition is faced.

3. **Good will among early customers:** Happy at having struck a profitable deal the customers are ready to come back to the manufacturer in future. This goodwill created also leads to further promotion of the product through "word of mouth".

4. **Cost efficiency:** The emphasis on keeping the price low helps in controlling the cost thereby cost efficiency is achieved.

5. **Competitors are kept at bay:** If a manufacturer adopts penetration pricing and lowers the price of his products or services he may stop competitors from entering the market. This happens because now the competitors will have to enter the market at lower than existing prices. This reduces their profit not to mention the risk they face as new entrants in acquiring market share.

Disadvantages of Penetration pricing

1. The customer expects the prices to remain low for a long term. They are not ready for the subsequent rise in the price and when it happens they might switch to a competitor's product. Thus subsequent price hike leads to loss of market share gained.

2. It is believed that penetration pricing cannot create strong customer relationship and only attracts customers on the lookout for a profitable deal.

There are two ways by which the subsequent price rise can take place. Either a onetime price hike or over the years a steady increase in price. None of these methods are foolproof. To overcome this situation the manufacturer can keep the short-term and long-term price the same and introduce introductory discounts instead. In this way the customer is aware of the price of the product and is also eager to seize the introductory offer.

20.4.2 Price Skimming

Price skimming is the practice of selling a product at a high price, usually during the introduction of a new product when the demand for it is relatively inelastic. This approach is used to generate substantial profits during the first months of the release of a product. By doing so, a company can recoup its investment in the product. However, by engaging in price skimming, a company is potentially sacrificing much higher unit sales that it could garner at a lower price point.

Eventually, a company that engages in price skimming must drop its prices, as competitors enter the market and undercut its prices. Thus, price skimming tends to be a short-term strategy designed to maximize profits.

When you engage in price skimming, the market size is small, since only early adopters are willing to pay the high price. Once early adopters have bought the product, sales volume usually declines, since the remaining potential customers are not willing to purchase at the price set by the seller. The only situation in which price skimming can be extended for a longer period is when the seller has also created a strong brand image, for which customers are willing to pay a higher price.

Example of Price Skimming: ABC International has developed a global positioning system that can lock onto GPS satellite signals even from several feet underwater. This is a substantial improvement over existing technology, so ABC feels justified in pricing the product at $1,000, even though it only costs $150 to construct. ABC holds this price point for the first six months, while it earns back the $1 million development cost of the product, and then drops the price to $300 to deter competitors from entering the market.

Advantages of Price Skimming

The following are advantages of using the price skimming method:

1. **High profit margin:** The entire point of price skimming is to generate an outsized profit margin.

2. **Cost recovery:** If a company competes in a market where the product life span is short or the market niche is small, price skimming may be the only viable method available for ensuring that it recovers the cost of developing products.

3. **Dealer profits:** If the price of a product is high, then the percentage earned by distributors will also be high, which makes them happy to carry the product.

4. **Quality image:** A company can use this strategy to build a high-quality image for its products, but it must deliver a high-quality product to support the image created by the price.

Disadvantages of Price Skimming

The following are disadvantages of using the price skimming method:

1. **Competition:** There will be a continual stream of competitors challenging the seller's extreme price point with lower-priced offerings.

2. **Sales volume:** A company that uses price skimming is limiting its sales, which means that it cannot lower costs by building sales volume.

3. **Consumer acceptance:** If the price point remains very high for too long, it may defer or entirely prevent acceptance of the product by the general market.

4. **Annoyed customers:** Early adopters of the product may be highly annoyed when the company later drops its price for the product, thereby generating bad publicity and a very low level of customer loyalty.

5. **Cost inefficiency:** The very high profit margins engendered by this strategy may cause a company to avoid making the cost cuts required to keep it competitive when it eventually lowers its prices.

Evaluation of Price Skimming

This approach is useful for earning back an investment in short order, but does not position a company to compete in the industry over the long term, since it never lowers costs by building unit volume. Thus, this approach may work best for companies that focus on research and development, and produce a constant stream of new products without any intention of becoming the low-cost provider.

20.4.3 Cost- Based Pricing

Cost-plus pricing is the simplest pricing method. A firm calculates the cost of producing the product and adds on a percentage (profit) to that price to give the selling price. This appears in two forms: the first, full cost pricing, takes into consideration both variable and fixed costs and adds a % markup. The other is direct cost pricing, which is variable costs plus a % markup. The latter is only used in periods of high competition as this method usually leads to a loss in the long run. This method, although simple, does not take demand into account, and there is no way of determining if potential customers will purchase the product at the calculated price.

Cost-plus pricing is a method used by companies to maximize their profits. There are several varieties, but the common thread is that one first calculates the cost of the product, and then adds a proportion of it as markup. Basically, this approach sets prices that cover the cost of production and provide enough profit margin to the firm to earn its target rate of return. It is a way for companies to calculate how much profit they will make.

Cost-plus pricing is used primarily because it is easy to calculate and requires little information; therefore it is useful when information on demand and costs is not easily available. This additional information is necessary to generate accurate estimates of

marginal costs and revenues. However, the process of obtaining this additional information is expensive. Therefore, cost-plus pricing is often considered the most rational approach in maximizing profits. This approach relies on arbitrary costs and arbitrary markups.

Advantages of Cost Plus Pricing

The following are advantages to using the cost plus pricing method:

1. **Simple:** It is quite easy to derive a product price using this method, though you should define the overhead allocation method in order to be consistent in calculating the prices of multiple products.

2. **Assured contract profits:** Any contractor is willing to accept this method for a contractual agreement with a customer, since it is assured of having its costs reimbursed and of making a profit. There is no risk of loss on such a contract

3. **Justifiable:** In cases where the supplier must persuade its customers of the need for a price increase, the supplier can point to an increase in its costs as the reason for the price increase.

Disadvantages of Cost Plus Pricing

1. **Ignores competition:** A company may set a product price based on the cost plus formula and then be surprised when it finds that competitors are charging substantially different prices. This has a huge impact on the market share and profits that a company can expect to achieve. The company either ends up pricing too low and giving away potential profits, or pricing too high and achieving minor revenues.

2. **Product cost overruns:** Under this method, the engineering department has no incentive to prudently design a product that has the appropriate feature set and design characteristics for its target market (see the target costing method). Instead, the department simply designs what it wants and launches the product.

3. **Contract cost overruns:** From the perspective of any government entity that hires a supplier under a cost plus pricing arrangement, the supplier has no incentive to curtail its expenditures - on the contrary, it will likely include as many costs as possible in the contract so that it can be reimbursed. Thus, a contractual arrangement should include cost-reduction incentives for the supplier.

4. **Ignores replacement costs:** The method is based on historical costs, which may have changed. The most immediate replacement cost is more representative of the costs incurred by the entity.

Evaluation of Cost Plus Pricing

This method is not acceptable for deriving the price of a product that is to be sold in a competitive market, primarily because it does not factor in the prices charged by competitors. Thus, this method is likely to result in a seriously overpriced product. Further, prices should be set based on what the market is willing to pay - which could result in a substantially different margin than the standard margin typically assigned using this pricing method.

Cost plus pricing is a more valuable tool in a contractual situation, since the supplier has no downside risk. However, be sure to review which costs are allowable for reimbursement under the contract; it is possible that the terms of the contract are so restrictive that the supplier must exclude many costs from reimbursement, and so can potentially incur a loss.

20.4.4 Cost-Push Pricing

Under this method, producers tend to pass on increase in cost of production to consumers in the form of higher prices. This may happen due to:

(a) Wage increases higher than output;

(b) Inadequate investment in plant may reduce output;

(c) Shortages of factors of production; and

(d) Increase in price of basic raw materials.

20.4.5 Peak Load Pricing

Peak Load Pricing is the pricing strategy wherein the high price is charged for the goods and services during times when their demand is at peak. In other words, the high price charged during the high demand period is called as the peak load pricing. It is a pricing technique applied to public goods which is a particular case of a Lindahl equilibrium. Instead of different demands for the same public good, we consider the demands for a public good in different periods of the day, month or year, then finding the optimal capacity (quantity supplied) and, afterwards, the optimal peak-load prices.

This has particular applications in public goods such as public urban transportation, where day demand (peak period) is usually much higher than night demand (off-peak period). By subtracting the marginal costs of operation from the original demands we find the marginal benefits of capacity, which must then be vertically aggregated and equated to the marginal cost of increasing capacity. For example, cell phone use during peak usage time is more expensive than during off peak time. The higher peak price also encourages customers with flexibility of usage to shift the usage to off peak

time where there is excess separable capacity available.

With the optimal capacity found, the optimal peak-load prices are found by adding the marginal costs of operation to the marginal benefit generated, in each period, by the optimal capacity.

It may happen, however, that the optimal capacity is not fully used during the off-peak period. In that case, the capacity expansion will be totally supported by the peak demanders.

20.4.6 Price Bundling

The product bundle pricing strategy is a fairly commonly used marketing ploy. Although more of a marketing tactic, it's also a pricing tactic. It's a technique of combining several products and offering the bundle at a reduced price.

In other words, it is a marketing policy in which several products are offered for sale in one combined unit that is often marked at a reduced price compared to the sum of their separate purchase prices. Product bundle pricing is often actively used by the marketing departments of companies that produce computer software products, fast food meals and cable television connections that involve putting multiple products together to make a more attractive or economical whole.

For example, mobile phone retailers frequently bundle the prices of several products and services together for their new customers. They offer the phone itself with a package that also includes the 2-year phone plan, internet access, and phone charger. This bundle benefits the customer because it provides them with all the tools they need for their phone all at once and it benefits the mobile phone retailer because they are selling the customer supplementary products and services other than just a phone.

20.4.7 Transfer Pricing

Transfer pricing is a method of pricing goods and services transferred within a multinational or **trans-national** company in order to reduce tax burdens and maximize profits. It is one of the reasons why **globalization** has increased and why operating in more than one territory can be beneficial for firms looking to minimize their overall tax liability. The purpose of transfer pricing is to push profits into territories where either the tax rates are more favorable, or where more loopholes exist to be exploited.

In other words, **Transfer pricing** is the setting of the price for goods and services sold between controlled (or related) legal entities within an enterprise. For example, if a subsidiary company sells goods to a parent company, the cost of those goods paid by the

parent to the subsidiary is the transfer price. Legal entities considered under the control of a single corporation include branches and companies that are wholly or majority owned ultimately by the parent corporation. Certain jurisdictions consider entities to be under common control if they share family members on their boards of directors. Transfer pricing can be used as a profit allocation method to attribute a multinational corporation's net profit (or loss) before tax to countries where it does business. Transfer pricing results in the setting of prices among divisions within an enterprise.

In principle, a transfer price should match either what the seller would charge an independent, arm's length customer, or what the buyer would pay an independent, arm's length supplier. While unrealistic transfer prices do not affect the overall enterprise directly, they become a concern for government taxing authorities when transfer pricing is used to lower profits in a division of an enterprise located in a country that levies high income taxes and raise profits in a country that is a tax haven that levies no (or low) income taxes.

Transfer pricing is a major tool for corporate tax avoidance also referred to as base erosion and profit shifting (BEPS). The OECD has adopted (subject to specific country reservations) fairly comprehensive guidelines. These guidelines have been adopted with little modification by many countries. Notably, the United States and Canada have adopted rules which depart in some material respects from OECD guidelines, generally by providing more detailed rules.

Transfer Pricing Methods

Here are a number of ways to derive a transfer price:

1. **Market rate transfer price:** The simplest and most elegant transfer price is to use the market price. By doing so, the upstream subsidiary can sell either internally or externally and earn the same profit with either option. It can also earn the highest possible profit, rather than being subject to the odd profit vagaries that can occur under mandated pricing schemes.

2. **Adjusted market rate transfer price:** If it is not possible to use the market pricing technique just noted, then consider using the general concept, but incorporating some adjustments to the price. For example, you can reduce the market price to account for the presumed absence of bad debts, since corporate management will likely intervene and force a payment if there is a risk of non-payment.

3. **Negotiated transfer pricing:** It may be necessary to negotiate a transfer price between subsidiaries, without using any market price as a baseline. This situation arises when there is no discernible market price because the market is very

small or the goods are highly customized. This results in prices that are based on the relative negotiating skills of the parties.

4. **Contribution margin transfer pricing:** If there is no market price at all from which to derive a transfer price, then an alternative is to create a price based on a component's contribution margin.

5. **Cost-plus transfer pricing:** If there is no market price at all on which to base a transfer price, you could consider using a system that creates a transfer price based on the cost of the components being transferred. The best way to do this is to add a margin onto the cost, where you compile the standard cost of a component, add a standard profit margin, and use the result as the transfer price.

6. **Cost-based transfer pricing:** You can have each subsidiary transfer its products to other subsidiaries at cost, after which successive subsidiaries add their costs to the product. This means that the final subsidiary that sells the completed goods to a third party will recognize the entire profit associated with the product.

20.4.8 Competitor Pricing

Competitive pricing generally is where firms must be able to offer the best price in the market and meet price erosion without compromising quality. This is normally met whenever a firm finds acceptable a prices-production combination such that: a. At these prices, there is no other production plan yielding higher profits and using fewer capital goods; namely, firms behave as constrained profit maximizes at given prices; and, b. There is no price vector satisfying "a." with higher prices for capital goods. In other words, the prices of capital goods are maximal within those satisfying constrained profit maximization. It is also called strategic pricing, this method involves looking at the prices set by other businesses in the same sector, and then adopting those numbers, plus or minus a few percent according to how your product looks that day. The dartboard gets smaller, because there's more data here, allowing you to rely on your competitors to do the work for you (as long as you trust they actually know what's going on in the market).

Another way to think about it: imagine stacking all of your competitors on a totem pole with the most premium or luxury brand on top and the bargain brand on the bottom. You then decide where on the pole you fit, place yourself in there, and set your price accordingly. Wait though, isn't that a bit arbitrary? Of course it is, which is why we'll take a look at the pros and cons of competitor based pricing next.

Advantages of competitor based pricing

Some of the advantages of competitor based pricing are:

1. **It is a simple method:** If you're in an industry with even one or two direct competitors you can implement a reasonable competitor based pricing strategy. In most industries, marketing and product managers will then have to do relatively little research to find a price. It is also possible to make adjustments in prices by following tweaks made by competitors. It should be kept in mind though that this gets much more complicated when you're not comparing congruent goods, which is often what happens in the software space.

2. **It involves low risk:** It's rare to royally screw up using this form of pricing. If you have a fairly solid grasp on your product's quality, target audience and cost of production, this method will most likely never lead to bankruptcy. It's kept your competitors afloat, so similarly, it should do the same for you.

3. **It can be accurate:** In saturated industries like retail, competitor based pricing can be fairly accurate. After all, for most consumer products there are millions of customers and enough data to move pricing closer towards a market based methodology. Unfortunately, software doesn't tend to have this same luxury.

Disadvantages of competitor based pricing

1. **It leads to large missed opportunities:** The most common ways businesses raise profits are by increasing sales, decreasing cost of production, and lowering overhead. Pricing is often neglected, which is a shame, because it's their main consideration (sometimes an incentive but more often a barrier) before purchasing your product. Simply copying your market's prices leads to a lot of wrong prices and lost profits, even if you do think you're doing well. The goal of your business should be to maximize revenue and profits, even if it does take a little bit of extra work on the pricing front.

2. **It's done by everyone, which creates pricing group think:** Competitor based pricing operates off the assumption that businesses already in the market have the correct answer and that every decision competitors' make is intelligent. This can be a fair strategy if only one business determines its price after taking into consideration the variety of prices existing at the time. However, if a large portion of companies all use this tactic, then with time competitor based pricing can lead to the entire industry losing touch with demand. You'll end up either keeping the same price forever, because competitor A hasn't changed her price or you'll simply raise or lower prices in response to trigger happy competitors.

3. **It can lead to tunnel vision and a race to the bottom:** Maintaining a lower

price than your competitors isn't always the best way to attract consumers, but competitor based pricing exacerbates that idea by simplifying price as a barrier that constantly must be lowered. Yet, the lowering of prices in most industries leads to doubts about quality and lower revenue from tiny profit margins even though customers would be willing to pay more.

20.5 SUMMARY

Both external and internal factors affect pricing decisions. Companies use many different pricing strategies and price adjustments. However, the price must generate enough revenues to cover costs in order for the product to be profitable. Cost-plus pricing, peak load pricing, transfer pricing, price bundling, penetration pricing, skimming pricing and competitor pricing are just a few of the strategies used. Organizations must also decide what their policies are when it comes to making price adjustments, or changing the listed prices of their products. Some companies use price adjustments as a short-term tactic to increase sales.

20.6 GLOSSARY

Penetration Pricing: Penetration pricing is the practice of offering a low price for a new product or service during its initial offering in order to lure customers away from competitors.

Price Skimming: An approach under which a producer sets a high price for a new high-end product (such as an expensive perfume) or a uniquely differentiated technical product

Cost- Based Pricing: A pricing method in which a fixed sum or a percentage of the total cost is added (as income or profit) to the cost of the product to arrive at its selling price.

Peak load Pricing: Peak Load Pricing is a pricing strategy that implies price will be set at the highest level during times when demand is at a peak.

Price Bundling: It is a technique of combining several products and offering the bundle at a reduced price.

Transfer Pricing: It is the setting of the price for goods and services sold between controlled (or related) legal entities within an enterprise.

Competitor Pricing: It is the method of setting the price of a product or service based on what the competition is charging.

20.7 SELFASSESSMENT QUESTIONS

1. Write a short note on:

i. Penetration Pricing

ii. Price Skimming

iii. Cost-based pricing

iv. Peak-load Pricing

v. Transfer Pricing

20.8 LESSON END EXERCISES

1. Explain in detail the various pricing strategies. Illustrate your answer with suitable examples.

2. Distinguish between Penetration Pricing and Price Skimming.

20.9 FURTHER READINGS

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

Chopra,P.N., "Principles of Economics", 2000, Kalyani Publishers, New Delhi.

Jhingan, M.L., "Micro –Economic Theory", 2002, Vrinda Publishets (P) Ltd., Delhi.

Seth,M.L., Advanced Economic Theory.

BUSINESS CYCLES AND BUSINESS POLICY

STRUCTURE

21.1 INTRODUCTION

The business cycle is the periodic but irregular up-and-down movement in economic activity, measured by fluctuations in real gross domestic product (GDP) and other macroeconomic variables. A business cycle is typically characterized by four phases—recession, recovery, growth, and decline—that repeat themselves over time. Economists note, however, that complete business cycles vary in length. The duration of business cycles can be anywhere from about two to twelve years, with most cycles averaging six years in length. Some business analysts use the business cycle model and terminology to study and explain fluctuations in business inventory and other individual elements of corporate operations. But the term "business cycle" is still primarily associated with larger (industry-wide, regional, national, or even

international) business trends.

Business policy is what business organization intends to do. It aims at assisting the organization to deliver services to meet the needs and expectations of the goals of the organization. Policies are plans in that they are general statements or understandings that guide or channel thinking in decision making. In actual business situation, not all policies are "statements"; they too are often merely implied from the action of managers. The president of a company (organization), for example may strictly follow-perhaps for convenience rather than as policy-the practice of promoting from within; the practice may be interpreted as policy and carefully followed by subordinates. To be candid, it is incumbent upon the managers to ensure that subordinates do not interpret as minor managerial decisions that are not intended to serve as patterns.

21.2 OBJECTIVES

After going through this chapter you will be able to:

i. Understand the meaning of business cycle.

ii. Give an insight into phases of business cycle.

iii. Highlight causes and effect of business cycle.

iv. Define business policy

v. Highlight features of business policy.

vi. Discuss objectives of business policy.

vii. Distinguish between policy and strategy.

21.3 MEANING OF BUSINESS CYCLES

A study of fluctuations in business activity is called business cycle. Business cycle can be defined as a periodically recurring wave like movements in aggregate economic activity (like national income, employment, investment, profits, prices) reflected in simultaneous, fluctuations in major macro economic variables.

R A Gordon defined business cycle as consisting of "recurring alteration of expansion and contraction in aggregate economic activity, the alternating movements in each direction being self-reinforcing and prevailing virtually all parts of the economy".

In other words, the term business cycle refers to economy-wide fluctuations in production, trade, and general economic activity. From a conceptual perspective, the business cycle is the upward and downward movements of levels of GDP (gross

domestic product) and refers to the period of expansions and contractions in the level of economic activities (business fluctuations) around a long-term growth trend.

21.4 FEATURES OF BUSINESS CYCLES

Following are the main features of trade cycles:

1. Industrialized capitalistic economies witness cyclical movements in economic activities. A socialist economy is free from such disturbances.

2. It exhibits a wave-like movement having regularity and recognized patterns. That is to say, it is repetitive in character.

3. Almost all sectors of the economy are affected by the cyclical movements. Most of the sectors move together in the same direction. During prosperity, most of the sectors or industries experience an increase in output and during recession they experience a fall in output.

4. Not all the industries are affected uniformly. Some are hit badly during depression while others are not affected seriously. Investment goods industries fluctuate more than the consumer goods industries. Further, industries producing consumer durable goods generally experience greater fluctuations than sectors producing nondurable goods. Further, fluctuations in the service sector are insignificant in comparison with both capital goods and consumer goods industries.

5. One also observes the tendency for consumer goods output to lead investment goods output in the cycle. During recovery, increase in output of consumer goods usually precedes that of investment goods. Thus, the recovery of consumer goods industries from recessionary tendencies is quicker than that of investment goods industries.

6. Just as outputs move together in the same direction, so do the prices of various goods and services, though prices lag behind output. Fluctuations in the prices of agricultural products are more marked than those of prices of manufactured articles.

7. Profits tend to be highly variable and pro-cyclical. Usually, profits decline in recession and rise in boom. On the other hand, wages are more or less sticky though they tend to rise during boom.

8. Trade cycles are 'international' in character in the sense that fluctuations in one country get transmitted to other countries. This is because, in this age of globalization, dependence of one country on other countries is great.

9. Periodicity of a trade cycle is not uniform, though fluctuations are something in the range of five to ten years from peak to peak. Every cycle exhibits similarities in its nature and direction though no two cycles are exactly the same. In the words of Samuelson: "No two business cycles are quite the same. Yet they have much in common. Though not identical twins, they are recognizable as belonging to the same family."

Every cycle has four distinct phases: (a) depression, (b) revival, (c) prosperity or boom, and (d) recession.

21.5 PHASES OF BUSINESS CYCLE

Business cycles are characterized by boom in one period and collapse in the subsequent period in the economic activities of a country.

These fluctuations in the economic activities are termed as phases of business cycles.

The fluctuations are compared with ebb and flow. The upward and downward fluctuations in the cumulative economic magnitudes of a country show variations in different economic activities in terms of production, investment, employment, credits, prices, and wages. Such changes represent different phases of business cycles.

The different phases of business cycles are shown in the following figure:

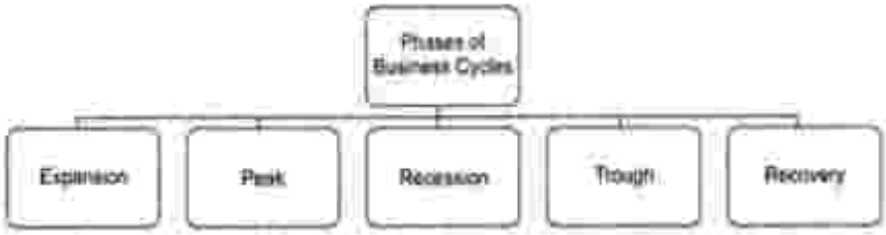

Fig: Different phases of business cycle

There are basically two important phases in a business cycle that are prosperity and depression. The other phases that are expansion, peak, trough and recovery are

intermediary phases.

The following figure shows the graphical representation of different phases of a business cycle:

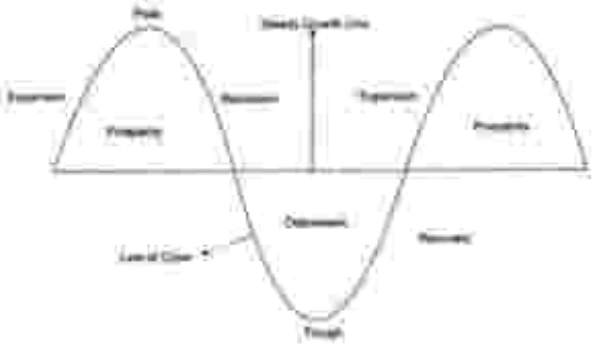

Fig: Representation of different phases of business cycle

As shown in the above figure, the steady growth line represents the growth of economy when there are no business cycles. On the other hand, the line of cycle shows the business cycles that move up and down the steady growth line. The different phases of a business cycle (as shown in the above figure) are explained below:

1. **Expansion:** The line of cycle that moves above the steady growth line represents the expansion phase of a business cycle. In the expansion phase, there is an increase in various economic factors, such as production, employment, output, wages, profits, demand and supply of products, and sales.

In addition, in the expansion phase, the prices of factor of production and output increases simultaneously. In this phase, debtors are generally in good financial condition to repay their debts; therefore, creditors lend money at higher interest rates. This leads to an increase in the flow of money.

In expansion phase, due to increase in investment opportunities, idle funds of organizations or individuals are utilized for various investment purposes. Therefore, in such a case, the cash inflow and outflow of businesses are equal. This expansion continues till the economic conditions are favorable.

2. **Peak:** The growth in the expansion phase eventually slows down and reaches to its peak. This phase is known as peak phase. In other words, peak phase refers to

the phase in which the increase in growth rate of business cycle achieves its maximum limit. In peak phase, the economic factors, such as production, profit, sales, and employment, are higher, but do not increase further. In peak phase, there is a gradual decrease in the demand of various products due to increase in the prices of input.

The increase in the prices of input leads to an increase in the prices of final products, while the income of individuals remains constant. This also leads consumers to restructure their monthly budget. As a result, the demand for products, such as jewellery, homes, automobiles, refrigerators and other durables, starts falling.

3. **Recession:** As discussed earlier, in peak phase, there is a gradual decrease in the demand of various products due to increase in the prices of input. When the decline in the demand of products becomes rapid and steady, the recession phase takes place.

In recession phase, all the economic factors, such as production, prices, saving and investment, starts decreasing. Generally, producers are unaware of decrease in the demand of products and they continue to produce goods and services. In such a case, the supply of products exceeds the demand.

Over the time, producers realize the surplus of supply when the cost of manufacturing of a product is more than profit generated. This condition firstly experienced by few industries and slowly spread to all industries.

This situation is firstly considered as a small fluctuation in the market, but as the problem exists for a longer duration, producers start noticing it. Consequently, producers avoid any type of further investment in factor of production, such as labor, machinery, and furniture. This leads to the reduction in the prices of factor, which results in the decline of demand of inputs as well as output.

4. **Trough:** During the trough phase, the economic activities of a country decline below the normal level. In this phase, the growth rate of an economy becomes negative. In addition, in trough phase, there is a rapid decline in national income and expenditure.

In this phase, it becomes difficult for debtors to pay off their debts. As a result, the rate of interest decreases; therefore, banks do not prefer to lend money. Consequently, banks face the situation of increase in their cash balances.

Apart from this, the level of economic output of a country becomes low and unemployment becomes high. In addition, in trough phase, investors do not invest in stock markets. In trough phase, many weak organizations leave industries or rather dissolve. At this point, an economy reaches to the lowest level of shrinking.

5. **Recovery:** As discussed above, in trough phase, an economy reaches to the lowest level of shrinking. This lowest level is the limit to which an economy shrinks. Once the economy touches the lowest level, it happens to be the end of negativism and beginning of positivism.

This leads to reversal of the process of business cycle. As a result, individuals and organizations start developing a positive attitude toward the various economic factors, such as investment, employment, and production. This process of reversal starts from the labor market.

Consequently, organizations discontinue laying off individuals and start hiring but in limited number. At this stage, wages provided by organizations to individuals is less as compared to their skills and abilities. This marks the beginning of the recovery phase.

In recovery phase, consumers increase their rate of consumption, as they assume that there would be no further reduction in the prices of products. As a result, the demand for consumer products increases.

In addition in recovery phase, bankers start utilizing their accumulated cash balances by declining the lending rate and increasing investment in various securities and bonds. Similarly, adopting a positive approach other private investors also start investing in the stock market As a result, security prices increase and rate of interest decreases.

Price mechanism plays a very important role in the recovery phase of economy. As discussed earlier, during recession the rate at which the price of factor of production falls is greater than the rate of reduction in the prices of final products.

Therefore producers are always able to earn a certain amount of profit, which increases at trough stage. The increase in profit also continues in the recovery phase. Apart from this, in recovery phase, some of the depreciated capital goods are replaced by producers and some are maintained by them. As a result, investment and employment by organizations increases. As this process gains momentum an economy again enters into the phase of expansion. Thus, a business cycle gets

completed.

21.6 CAUSES OF BUSINESS CYCLE

There are various causes of business cycle that are very common in a capitalistic economy. Sometimes there are periods of good trade (prosperity) followed by the periods of bad trade (depression). This tendency of business activity to fluctuate regularly between prosperity and depression is called Business Cycle. Following are important causes of business cycle in any country.

1. **Natural Factors:** Business cycles may take place due to certain natural reasons. For example during the period of legs rain falls agricultural productivity is badly affected. It causes shortage of industrial raw material and therefore industrial production also decreases. If this situation persists for some time it reduces economic activities in the whole economy. On the other hand, good weather helps increase in agricultural activities and expansion of economic activities.

2. **Wars:** During the war economic activities are slowed resulting, in recession whereas after end of war more investment is encouraged due to more demand in the economy. It helps to expand economic activities and period of recovery starts in.

3. **Political Factors:** In developing countries governments are changed frequently. The new government formulates new policies and abandons the policies of previous governments. This creates uncertainty in the economy and causes business activities to slow down. On the other hand when businessmen feel continuity of existing political setup, they build up confidence and make investment in new projects. This causes up turn in business cycle.

4. **Supply of Money:** Unplanned changes in supply of money causes business fluctuation in economy. An increase in the supply of money cases expansion in aggregate demand and economic activities. But excessive increase of credit and money also set off inflation in economy. On the other hand decrease in the supply of money initiate recession in economy.

5. **Future Expectation:** Expectations about future business is also a major cause of trade cycle. When businessmen are optimistic about future it triggers expansion in business activities where as pessimism about profits in future results in contraction of business activities which initiate recession in economy.

6. **Population Explosion:** An abnormal increase in population is also a major cause of economic problems. When population increases at higher rate than increase

in national output. It becomes difficult to provide employment to all the labor force. Limited national resources are put to non-developmental use. Such a situation usually brings about recession in economy.

7. **International Factors:** Now days all the countries of the world are economically interdependent. Any economic fluctuations in big economies like USA or Japan etc affect the economies of the rest of the world. A recession in USA will reduce its exports from Pakistan and therefore causing problems for export industries. On the other hand if there is boom in USA, Pakistan's export to USA will increase and it will trigger more production and more employment in Pakistan

8. **Economic Policies:** Sometimes businessmen consider Government's economic policies against their business interests. In such situation they may transfer their capital to other countries or make investment in nonproductive businesses. Due to these factors unemployment increases in the economy and business activities fall to cause recession.

9. **Reduction in Credit:** When banks reduce credit for business or increase the rate of interest, it definitely encourages new investment. Even existing business person start withdrawing their money from business. This situation brings down turn in business. On the other hand if credit is available at cheap interest. It encourages investment and brings about prosperity in economy.

In the above discussion only important reasons have been explained. In fact there are also so many other causes of business cycles. These causes are different in different countries and these also vary at different phases of trade cycle. For example an act of terrorism may cause recession in affected country. Similarly situation of law and order, level of literacy and social behavior of people are all different factors which determine prosperity or poverty of a nation.

21.7 MEANING OF BUSINESS POLICY

Business Policy defines the scope or spheres within which decisions can be taken by the subordinates in an organization. It permits the lower level management to deal with the problems and issues without consulting top level management every time for decisions.

Business policy is a guide and roadmap to create awareness and direction to the management of any organization. It publicizes the rights and obligations of different rung of the ladder horizontal and vertical- of the different capital be human resource

engagement, finance utilization etc. It ensures that organizations deliver better end product within a framework. It encourages, promotes and improves performance attainment in an organization. Policy provides the bedrock for vision and mission statement of the business organization along the corporate objectives and goal. Policy enables the business to be assessed and given an image by the way the carry out their responsibility along with their relationship with their clients/customers. It is the 'barometer' of playing by the rule and gives purpose to the strategy thrust of the organization.

Thus, Business policies are the guidelines developed by an organization to govern its actions. They define the limits within which decisions must be made. Business policy also deals with acquisition of resources with which organizational goals can be achieved. Business policy is the study of the roles and responsibilities of top level management, the significant issues affecting organizational success and the decisions affecting organization in long-run.

21.8 FEATURES OF BUSINESS POLICY

An effective business policy must have following features-

1. **Specific:** Policy should be specific/definite. If it is uncertain, then the implementation will become difficult.

2. **Clear:** Policy must be unambiguous. It should avoid use of jargons and connotations. There should be no misunderstandings in following the policy.

3. **Reliable/Uniform:** Policy must be uniform enough so that it can be efficiently followed by the subordinates.

4. **Appropriate:** Policy should be appropriate to the present organizational goal.

5. **Simple:** A policy should be simple and easily understood by all in the organization.

6. **Inclusive/Comprehensive:** In order to have a wide scope, a policy must be comprehensive.

7. **Flexible:** Policy should be flexible in operation/application. This does not imply that a policy should be altered always, but it should be wide in scope so as to

ensure that the line managers use them in repetitive/routine scenarios.

8. **Stable:** Policy should be stable else it will lead to indecisiveness and uncertainty in minds of those who look into it for guidance.

21.9 OBJECTIVE OF BUSINESS POLICY

The main objective of business policy is performance driven which ensures delivery of service or product depending on purpose of which the business was set up-service or product oriented. Business policy specific objectives ensure:

1. Efficiency and effectives in performance of duties Equal provision of services and treatment of customers.

2. Better management and provision of better quality services.

3. The utilization and application of resources.

4. The formulation mission statement.

5. The establishment of vision of the organization.

6. Policies are always aligned with the objectives of the enterprise if it is to be effective.

All policies follow parallel courses and directly related to objectives. If they cross or oppose objectives, collective effect is lost and disorder would prevail. Misunderstanding and confusion are often the cause of problems and poor results rather than faults in the stated policy.

21.10 DIFFERENCE BETWEEN POLICY AND STRATEGY

The term "policy" should not be considered as synonymous to the term "strategy". The difference between policy and strategy can be summarized as follows:

1. Policy is a blueprint of the organizational activities which are repetitive/routine in nature. While strategy is concerned with those organizational decisions which have not been dealt/faced before in same form.

2. Policy formulation is responsibility of top level management. While strategy formulation is basically done by middle level management.

3. Policy deals with routine/daily activities essential for effective and efficient running of an organization. While strategy deals with strategic decisions.

4. Policy is concerned with both thought and actions. While strategy is concerned mostly with action.

5. A policy is what is, or what is not done. While a strategy is the methodology used to achieve a target as prescribed by a policy.

21.11 REASONS FOR FORMULATING POLICIES

Many professionally managed businesses acknowledged that it is necessary to have policies in all the major functional areas of management. The focus areas will thus include production policy, purchasing policy, marketing policy, selling and promotional policy, etc. All these policies are expected to give support to the overall objectives of the organization as defined by the top management and they complement each other. The major reasons for having policies are as follows:

1. It is impossible and wrong to rely on expediency or precedents to solve problems which arise intervally or regularly. To that extent, decision-making is more consistent and detailed when policy is defined and known.

2. Policy provides continuity for the organization. They are more permanent than the individuals who are employed and later leave for greener pastures or are sacked; thereby providing an enduring foundation for continuity.

3. They help to facilitate expansion and integration of new businesses into the company so that when growth occurs, there is already a firm foundation policy to apply in the new situation.

4. They provide a yardstick with which to measure progress in the organization. For example, policy on issue of stock items – stipulating that no condition on which stock should be issued on verbal instruction. This may not be achievable instantly, but it sets a standard against which progress can be measured as the policy is implemented.

5. They stimulate action, because managers and supervisors have the knowledge and confidence to make decisions and take actions knowing full well that they are following the laid down policies.

6. Policies also save management time because the information is available and the procedures for carrying them out are known. This, of course, assumes that the policies are made freely available to those who require them.

7. They promote fairness in treating employee matters; provided the policies take account of the needs of the entire organization and are interpreted consistently.

8. Policies serve as bases for the defense of the various organization actions and activities in the event of challenges and litigation in the court of law.

21.12 SUMMARY

A business cycle relates to economic or production fluctuations during a period of months or years. Such fluctuations generally occur during a long-term trend, between periods of rapid economic growth and a decline. Using the growth rate of real gross domestic products, the fluctuations in business cycles do not follow a predictable pattern. The timing of a business cycle is random and occurs in four phases. The first phase involves a contraction or a period where economic activity begins to slow. The turning point of a contraction brings about an expansion phase, which relates to a quicker pace in economic activity. The peak of a business cycle is the period before economic activities face another contraction. If a contraction during a business cycle is severe enough and business activity bottoms out, a recession occurs. A policy is considered the general guideline for decision making. Policy is defined as the objectives, the mode of thought and the body of principle underlying the activities of an organization. In other words, a policy refers to what an organization or a person intends to do or does.

21.13 GLOSSARY

Business Cycle: relates to economic or production fluctuations during a period of months or years. Such fluctuations generally occur during a long-term trend, between periods of rapid economic growth and a decline.

Expansion: A new business cycle's expansion stage begins when certain economic indicators begin to rise after hitting their lowest points in the preceding cycle's trough.

Peak: A business cycle's peak can be thought of as the height, or highest level, of the cycle's expansion stage.

Recession: When the decline in the demand of products becomes rapid and steady, the recession phase takes place.

Trough: Just as a business cycle's contraction phase is the opposite of its expansion stage, the cycle's trough is the opposite of its peak.

Recovery: in trough phase, an economy reaches to the lowest level of shrinking. This lowest level is the limit to which an economy shrinks.

Business policy: It refers to the guidelines developed by an organization to govern its actions.

Strategy: It refers to the methodology used to achieve a target as prescribed by a policy.

21.14 SELF ASSESSMENT QUESTIONS

1. Define business cycle and also give the characteristics of business cycle?
2. Explain briefly factors affecting business cycle.
3. Write a short note on depression and recovery phase of business cycle.
4. Define business policy. List out the essential features of business policy.

21.15 LESSON END EXERCISE

1. Enumerate the various phases of business cycle with the help of suitable examples.
2. Distinguish between policy and strategy.
3. What considerations are to be kept in mind while formulating a business policy.

21.16 FURTHER READINGS

Chopra,P.N., "Principles of Economics", 2000, Kalyani Publishers, New Delhi.

Ahuja, H.L., "Advanced Economic Theory", 2000, Sultan Chand and Co.(Pvt.)Ltd., New Delhi.

Jhingan, M.L., "Micro –Economic Theory", 2002, Vrinda Publishers (P) Ltd., Delhi.

Seth,M.L., Advanced Economic Theory.

ECONOMIC INDICATORS

STRUCTURE

22.1 INTRODUCTION

If you've ever watched CNBC or read the business page in the newspaper, you might think you had landed in another country. Consumer price index, producer price index, gross domestic product, inflation, deflation! What are they talking about? It all sounds like Greek to me! How can I make sense of all this? Well, be assured that you are not alone. Most people struggle to make sense of this financial jargon. All these terms are called 'key economic indicators'. The good news is that, even though there are more economic indicators than you can shake a stick at, you don't need to understand them all!

22.2 OBJECTIVES

After going through this chapter, you will be able to:

i. Understand the meaning of economic indicators.

ii. Discuss types of economic indicators and their value to economic indicators

iii. Get an insight into application of economic indicators in developed nations

iv. Explain how to choose relevant economic indicators

22.3 MEANING OF ECONOMIC INDICATORS

Economic indicators are statistical measures of the economic conditions of a specific market or sector of the economy. They are produced to support economic analysis as snapshots of economic performance at a specific sector at a specific point in time. Good examples of popular indicators are employment reports and the consumer price index, which respectively gives helpful information on the employment situation and inflation. Through analyzing the history and economic theory behind such time series we can get an understanding of the current state of the US economy, and generate qualified expectations about the future

Simply put, economic indicators are statistics about the economy that give us some idea how the economy is doing right now and maybe some idea where it might be going in the near future. And there is only a handful you need to know about. An understanding of these indicators can help you grasp basic financial news and help you make wiser, more informed decisions about your personal finances. So let's try to cut through the static and explain them is terms everyone can grasp.

22.4 TYPES OF ECONOMIC INDICATORS AND THEIR VALUE TO ECONOMIC INDICATORS

There are 3 categories of economic indicators that can be used to analyze the foreign exchange market's direction, each with their own significance. Economic indicators involve a broad spectrum and they can be classified as:

1. Leading economic indicator
2. Coincident economic indicator
3. Lagging economic indicator

It is difficult to rank which types of indicators have the most weight in foretelling the course of the economy, and subsequently, its impact on currency market. With that said, leading economic indicators have been showing reliable foresights in the past to help investors make crucial investment decisions.

1. Leading economic indicators: These are major key markers that shift in advance ahead of the economy. Investorguide.com calls it "among the most closely watched pieces of news in the investment world" and they hit the bull's eye by pointing out "the Fed watches many of these indicators as it decides what to do about interest rates". A good example of a leading economic indicator is the stock market. A stock market provides an up-to-date data and is a direct reflection of a country's economy. Undoubtedly, the trend in stock market is parallel with the economy

although there are nine other components of leading economic indicators to give a thorough idea of where the economy is heading.

2. **Coincident economic indicators:** It covers a wide range of data and is handy to determine business cycle. A coincident economic indicator, as its name suggests, move at the same time as the economy. These can serve as a confirmation to business cycle turning points as far as forex investors are concerned.

3. **Lagging economic indicators:** These are not so much as an 'indicator' as they usually prevail three to twelve month after the economy. Lagging economic indicators are the evidence to define the peaks and troughs that occurred, to be used in estimating the course of the next business cycle. Perhaps the most powerful lagging economic indicator is unemployment rate. the role of unemployment rate as a key lagging economic indicator as it shows whether companies anticipate things getting better or worse. If companies believe things are bad and getting worse, unemployment will rise. If they are more optimistic, then unemployment will fall.

To the trained eyes, economic indicators are fundamental tools for their investment interests. Although economic indicators can be false, they are never wrong. Leading indicators have actually predicted '12 of the last 9 contractions. In other words, they predicted 3 contractions that never happened." However you look at it that is still an awfully attractive track record by any investor's standard.

Because we don't have any forecasting methods that with certainty can give us the exact date when the business cycle is going to experience a peak or a trough ahead of time, the institutions who date the different stages of the business cycles make their announcements with a considerable lag. The Business Cycle Dating Committee (BCDC) of NBER states that they never announce any dates without being perfectly sure that the economy has hit a turning point. This results in a 6-18 month lag on US business cycle dating. As the leading indicators are only suggesting that we might be heading towards a peak or trough in the future, without neither stating any specific date nor depth. coincident and lagging indicators can be of great importance when trying to estimate when the economy is actually turning. After receiving strong signs from the leading indicators, the forecaster will thus be waiting for the turning point to materialize in the coincident indicators. As the announcements from the BCDC also come with a considerable lag, understanding coincident and lagging indicators can give important information about whether the economy already has reached its top (bottom) and has in fact entered a recession (growth) stage. In other words the coincident and lagging indicators can be of great value also for forecasters, in terms understanding more exactly when the economy reaches its expected turning points. The indicators chosen in the following analysis will therefore not be solely leading indicators, but also indicators which normally move more coincident, or with a lag,

compared with the CI index.

22.5 APPLICATION OF ECONOMIC INDICATORS IN DEVELOPED NATIONS

The following indicators apply to the American economy but most developed nations have their equivalent.

1. **Balance of Payments:** The Balance of Payments indicator is a measure of the trade performance of the economy. Trade is simply the buying and selling of goods and services between countries. - The Balance of Payments indicator fluctuates from month to month and season to season but a long term deficit is generally not good for the economy. As domestic dollars flow out of the country and overseas, it funds employment, expansion and investment over there stimulating their economy. A trade surplus results in more money coming here for employment, expansion and investment helping to stimulate our own economy.

2. **Gross Domestic Product:** The Gross Domestic Product (GDP) is a basic measure of a country's economic performance. It is generally defined as the market value of all the goods and services produced by a country. While it is not an indicator of the standard of living, countries try to increase their GDP to increase their standard of living. Most countries try to maintain a 2-3% annual growth in the GDP to support increased economic activity. A GDP of 1% or less may not be enough to support increased economic growth and may lead to job cuts.

The GDP is released by the Bureau of Economic Analysis, a part of the the US Department of Commerce.

3. **Employment Report:** The Employment Report is usually released on the first Friday of the month and can have a significant impact on the markets. If the report is better than expected, it is generally considered good for the stock market. If it is weaker, this is generally considered good for the bond market.

4. **Housing Starts and Building Permits:** Housing starts is a measure of how many residential units began construction in the previous month. 'Start' in this context means excavation of the foundation for a building used primarily as a residence. This figure is released by the US Department of Commerce around the 16th of each month at 8:30 AM EST. Building permits are also a measure of housing starts. Because each state does not require a building permit before construction actually begins, housing starts is a better measure to follow.

Housing starts are a key economic indicator because it affects so many other areas of the economy (retail, manufacturing, utilities, employment, etc). When housing starts increase over time jobs are created, demand for utilities and building materials

increase, furniture is sold and much more. All this is good for the economy.

5. **Producer Price Index:** The Producer Price Index (PPI) is actually a group of indexes that measure the average change over time of the prices that domestic producers receive for their goods and services. In other words, the PPI measures price changes from the perspective of the seller. The PPI is produced by the US Bureau of Labor Statistics. There are over 8000 PPI for separate products and groups of products released every month.

When the PPI goes up, it means that the producers of goods and services are paying more to produce their goods and services. Typically, these increased costs are passed on to the consumer in the form of higher prices. The PPI is a prime inflation indicator and is also used as an indicator of which way the CPI may move. The PPI is usually released at 8:30 AM EST around the 16th of each month.

6. **Consumer Price Index:** The Consumer Price Index (CPI) measures prices change of consumer goods and services from the perspective of the buyer. It measures the cost of a typical 'basket' of goods and services such as food, transportation and medical care for the average American household. When the CPI goes up, it means that you and I are paying more for the goods and services we purchase.

The CPI is one of the most often used measures for identifying inflationary or deflationary periods. Large rises in CPI during a short period typically indicate periods of inflation and large drops in CPI during a short period of time usually indicate periods of deflation.

7. **Retail Sales:** Retail sales are a measure of the total receipts (sales) from retail stores. It is a good indicator of consumer sentiment about the economy. If the public feels confident about their jobs and the future of the economy, they are more willing to spend and this will be reflected in this indicator. If the public is generally pessimistic about the economy, they will buy less and this indicator will go down.'

Positive retail sales numbers give the impression that consumers are going back to spending and stimulating the economy in the process. The markets will react positively to this scenario. Negative retails sales numbers indicate the consumer is hesitant to spend with the resultant negative effect on the economy. The markets tend to fall upon this news.

The retail sales figures for the previous month typically are released around the 13th of each month at 8:30 AM EST.

8. **Inflation:** Inflation is defined as a sustained increase in the level of prices for goods and services. It is measured as an annual percentage increase. Inflation

decreases the purchasing power of the dollar. For example, if the current inflation rate is 4%, then a $1 candy bar would cost $1.04 next year.

As prices for the raw materials and goods that manufacturers require rise, they must increase the prices of the goods and services to compensate. Of course, these price increases are passed along to you, the consumer.

Inflation is particularly hurtful to those, like retirees, on fixed incomes. Each year, inflation eats aware at the buying power of their fixed incomes. I am fortunate enough to work at a place that provides periodic COLA. COLA stands for Cost of Living Allowance and is a percentage pay increase equal to or near the current inflation rate. It helps eliminate or reduce the effect of inflation on income.

9. **Deflation:** Deflation is the opposite of inflation or a sustained decrease in the prices of goods and services. While this sounds good at first, it can be problematic. Sustained deflation can feed a deflationary spiral which can lead to recession.

When prices drop, consumers have reason to delay purchases looking for even better prices. This reduces overall economic activity. As purchasing drops, manufacturers reduce production, which causes a reduction in investment, which leads to layoffs, which leads to further reduction in demand. This 'deflationary spiral' can lead to recession, if left unchecked.

22.6 CHOOSING RELEVANT ECONOMIC INDICATORS

Some of the main factors behind the choice between the many available indicators for the different sectors of the economy.

1. **Accuracy:** The quality of the information within is an obvious and important attribute to consider when choosing indicators. Many indicators are offers for high levels of revisions or seasonality which creates uncertainty and biases to the information within. GDP which is one of the most popular economic indicators, are also well known for being offer for endless revisions. Other indicators such as the consumer sentiment survey hold much information about the behavior of the consumers and are only seldom offer for revisions. As the indicators are the basis of the predictions, it is vital that the data received in real time are as accurate as possible.

2. **Timeliness:** Some indicators are only made available with a significant lag. To make real time analysis you would need up-to-date information, and you should pay attention to indicators whose information are made available relatively early after the end of the relevant period. GDP is again an example of a popular indicator which comes with a considerable lag, while employment reports on the other hand normally are made available only shortly after the closing of a month. Although this

paper is written ex post the start of the 2007 recession, This means that both the timeliness and the accuracy will play a part in my choice of indicators, and the approximate release dates and amplitude of revisions will be stated in most of the descriptions of the respective indicators.

3. **The Business Cycle Stage:** Sometimes the amount of emphasis put on an indicator changes with the stage of the business cycle. For example, in periods of growth economist often put less consideration to the levels of auto sales. In these times of high growth and high employment, general consumption is normally high and analysts takes high sales numbers for granted. In recessionary periods on the other hand, such sales numbers might get more attention as it gives a good pointer on consumers' economic confidence and might be a good indication to whether the business cycle is getting closer to reaching a trough. The forecasting approach used in this paper will be general with the possibilities to be used in both forecasting peaks and troughs. But as stated in the problem formulation my main focus will be on the possibilities to forecast the 2007 recession. I will therefore give most attention to the indicators' abilities towards forecasting recessions.

4. **Predictive ability:** The predictive ability of the indicator is especially important when you are trying to forecast future developments. The problem with selecting predictive indicators is again that the economy changes over time. But despite this, there are some indicators that seem to be more consistent in their predictive abilities than others. The economic time series that represent the early stages of production and investment processes might help forecasting future levels of economic expenditures and output. For example popular indicators such as the number of new orders for durable goods or new housing starts might lead future economic output in the sense that it might take some time from the order of a good, or the building of a house before the actual sales and delivery takes place. Also market expectations can play an important role in the predictive abilities of the different economic indicators. Share prices are per definition dependent on future dividend payouts, and when stock prices fall it might be a sign that investors expect or know that the future corporate profits and dividends will fall in the future, and hence that the business cycle might be closing on its peak.

22.7 SUMMARY

Economic indicators are periodical releases by the government and private organizations that lay out the health of a country's economy. Because of the insights they contained that enable investors to predict future economic trends, economic indicators are instrumental in influencing the country's currency values. One can find

information on economic indicators such as unemployment rates, production figures and GDP growth on a quarterly, monthly, or even on a daily basis. There are 3 categories of economic indicators that can be used to analyze the foreign exchange market's direction, each with their own significance. Economic indicators involve a broad spectrum and they can be classified as Leading economic indicator, Coincident economic indicator and Lagging economic indicator. It is difficult to rank which types of indicators have the most weight in foretelling the course of the economy, and subsequently, its impact on currency market. With that said, leading economic indicators have been showing reliable foresights in the past to help investors make crucial investment decisions.

22.8 GLOSSARY

Economic indicator: are statistics about the economy that give us some idea how the economy is doing right now and maybe some idea where it might be going in the near future.

Leading economic indicators: are those with the best predictive qualities and therefore start the negative or positive trends of the business cycle ahead of the actual business cycle.

Coincident indicators: are those who move relatively parallel with the business cycle, and experience their up- and downtrends at the same time as the general economic activity.

Lagging indicators: are the ones who enter stages of growth or decline only after the actual business cycle has already changed its direction.

Gross domestic Product: It is generally defined as the market value of all the goods and services produced by a country.

Balance of Payment: It measures the money coming into the country from the sale of goods, services and investment overseas (exports) as well as the money leaving the country due to the purchase of goods, services and investments from overseas (imports).

Trade Deficit: When a country imports more goods and services than it exports it is running a trade deficit.

Trade Surplus: When a country exports more than it imports the country is running a trade surplus.

Producer Price Index: The Producer Price Index (PPI) is actually a group of indexes that measure the average change over time of the prices that domestic producers

receive for their goods and services.

Consumer Price Index (CPI) measures prices change of consumer goods and services from the perspective of the buyer.

Inflation: Inflation is defined as a sustained increase in the level of prices for goods and services.

Deflation: Deflation is the opposite of inflation or a sustained decrease in the prices of goods and services.

22.9 SELF ASSESSMENT QUESTIONS

1. What do you understand by the term economic indicators?

2. Write a detailed note on application of economic indicators in developed nations.

22.10 LESSON END EXERCISES

1. Discuss in detail the various types of economic indicators and their value to economic indicators.

2. Explain briefly the implications of various economic indicators in the economy.

22.11 FURTHER READINGS

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INPUT-OUTPUT ANALYSIS

STRUCTURE

23.1 INTRODUCTION

Input-output ("I-O") is a form of economic analysis based on the interdependence between economic sectors. This method is most commonly used for estimating the impacts of positive or negative economic shocks and analyzing the ripple effects throughout an economy.

23.2 OBJECTIVES

After going through this chapter you will be able to:

i. Understand the meaning of input-output analysis

ii. Get an insight into the working of input-output analysis.

23.3 MEANING OF INPUT-OUTPUT ANALYSIS

An input–output model is a quantitative economic technique that represents the interdependencies between different branches of a national economy or different regional economies. The model depicts inter-industry relationships within an economy, showing how output from one industrial sector may become an input to

another industrial sector. In the inter-industry matrix, column entries typically represent inputs to an industrial sector, while row entries represent outputs from a given sector. This format therefore shows how dependent each sector is on every other sector, both as a customer of outputs from other sectors and as a supplier of inputs. Each column of the input–output matrix shows the monetary value of inputs to each sector and each row represents the value of each sector's outputs.

Wassily Leontief (1906–1999) is credited with developing this type of analysis and earned the Nobel Prize in Economics for his development of this model.

23.4 IMPORTANCE OF INPUT-OUTPUT ANALYSIS

Some of the importance of input-output analysis is as follows:

1. A producer can know from the input-output table, the varieties and quantities of goods which he and the other firms buy and sell to each other. In this way, he can make the necessary adjustments and thus improve his position viz-a-viz other producers.

2. It is also possible to find out from the input-output table the interrelations among firms and industries about possible trends towards combinations.

3. The repercussions of a prolonged strike, of a war and of a business cycle on an industry can be easily understood from the input-output table.

4. The input-output model has come to be used for national income accounting because it provides a more detailed breakdown of the macro aggregates and money flows.

5. It provides for individual branches of the economy's estimates of production and import levels that are consistent with each other and with the estimates of final demand.

6. The input-output model aids in the allocation of the investment required to achieve the production levels in production programme.

7. The requirements for skilled labour can be evaluated in the same way.

8. The analysis of import requirements and substitution possibilities is facilitated by the knowledge of the use of domestic and import materials in different branches of an industry.

9. In addition to direct requirements of capital, labour and imports, the indirect requirements in other sectors of an industry can also be estimated.

23.5 LIMITATIONS OF THE INPUT-OUTPUT APPROACH

Although the field is widely practiced today, problems such as those Leontief encountered, still exist. The limitations of the input-output approach, according to the OECD document, Structural Change and Industrial Performance are:

1. **The basic input-output analysis assumes constant returns to scale.** The input-output model assumes that the same relative mix of inputs will be used by an industry to create output regardless of quantity.

2. **Each industry is assumed to produce only one type of product.** For example, the automobile industry produces only cars. The distribution and sale of this product is fixed.

3. **Each product within the industry is assumed to be the same.** Also, there is no substitution between inputs. The output of each sector is produced with a unique set of inputs.

4. **Technical coefficients are assumed to be fixed:** that is, the amount of each input necessary to produce one unit of each output is constant. The amount of input purchased by a sector is determined solely on the level of output. No consideration is made to price effects, changing technology or economies of scale.

5. **It is assumed that there are no constraints on resources.** Supply is infinite and perfectly elastic.

6. **It is assumed that all local resources are efficiently employed.** There is l no underemployment of resources.

7. **Timeliness of input-output data.** There is a long time lag between the collection of data and the availability of the input-output tables. The sporadic nature of input-output tables means that continuous time series are impossible to construct without estimating input-output tables for the years between benchmarks. In effect, input-output tables provide a snapshot of the complete economy and all of its industrial intereonneetions at one time.

23.6 CALCULATION OF THE INPUT-OUTPUT TABLE

As will become clear, input-output analysis emphasizes general equilibrium phenomena. It seeks to take account of production plans and activities of many industries which constitute an economy. This interdependence arises out of the fact that each industry employs the outputs of other industries as its raw material. Its output, in turn, is used by other industries as a productive factor.

Each row of the input-output table shows, in detail, the receipts of an industry from other sectors of the economy (ref: Leontief's tables). This table is known as the

transactions table. As we move across the table, we move from the sales to processing sectors and shipments to the final far right hand cell of final demand sectors such as consumers, investors, governments or foreign countries. It is assumed that this flow across the sectors is a fixed and constant proportion of the amount of the product being produced. Input-output tables used in practice are generally constructed in dollar terms. However, in theory they can be expressed in any physical unity. The first step of this calculation will allow the user to convert the dollar values into technical coefficients in order to come up with the total final output for each industry.

The following is a step-by-step analysis of the processes involved in the calculations of the input-output economist.

Step One

Just as Leontief did for the first time in 1919, the first step in the input-output analysis process is to systematically define all the transactions of each industry in the economy. In order to do this, a transactions table is required. The transaction table which will form the basis of these calculations is shown below.

Purchasing Sector				Final Demand			
From/ Into	Agriculture	Manufg	Trade	Service	Househ	Other	Total Output
Agriculture	200	182	16	47	100	200	541
Manufacturing	34	68	2	20	79	298	407
Trade	47	55	991	449	1300	66	2729
Service	86	59	265	230	1300	313	3033
Households	200	40	205	1250	200	1494	3389
Imports	172	63	1000	700	550	1057	1424
Total	741	467	2779	3033	3589	3424	

Reading down, the entries typically show first the purchases from other sectors of goods and services required by an industry to carry on its activities. With some minor adjustments, the GNP from the product side can be compiled from these right hand final demand sectors.11

Step Two

The direct requirements table follows from the transactions table. There is however,

some confusion in the title of direct requirements because this table deals solely with local inputs, imported goods are not represented. Nonetheless, rather than showing actual dollar transactions, this table shows, for the sector named at the top, what fraction of total expenditures was made to purchase inputs (what was required) from the sector named at the left. The technical co-efficient are found by the simple formula:

$$aij = xij / xj$$

where, the quantity of the output of sector i absorbed by sector j per unit of its total output j is described by the symbol aij and is called the input co-efficient of product of sector i into sector j.12 The technical coefficients allow us the determine how large the annual outputs of each sector must be in order to "satisfy not only given direct demand by the final users, the households, but also the intermediate demand depending in its turn on the total level of output in each of the two productive sectors.

Using the following direct requirements table, we can follow the steps and determine a technology matrix which will enable us to find out the final output required by each industry to meet both internal and final demands.

Purchasing Sectors

From/Into	Agriculture	Manufacturing	Trade	Service	Households
Agriculture	0.27	0.39	0	0.02	0.03
Manufacturing	0.05	0.15	0	0.01	0.01
Trade	0.06	0.07	0.36	0.15	0.35
Service	0.12	0.13	0.2	0.13	0.44
Households	0.27	0.08	0.07	0.43	0.07
Imports	0.23	0.18	0.36	0.24	0.1
Total	1	1	1	1	1

This direct requirements table or technology matrix is the heart of input-output analysis. The aim of this table is to establish the equilibrium conditions under which industries in an economy have just enough output to satisfy each other's demands in addition to final outside demands. Given the internal demands for each industry's output, we must determine the output levels for the various industries that will meet a given final level of demand as well as the internal demand.

Step Three

To develop equations for the model. These linear equations represent the interdependence among the sectors of the given economy. They express the balances between the total input and the aggregate output of each industry and service produced and used over the given time period:

x1 = Total output from the agriculture sector

x2 = Total output from the manufacturing sector

x3 = Total output from the trade sector

x4 = Total output from the services sector

From the table, the internal demands become:

0.27x1 + 0.39x2 + 0.00x3 + 0.02x4 = Internal demand for agriculture

0.05x1 + 0.15x2 + 0.00x3 + 0.01x4 = Internal demand for manufacturing

0.06x1 + 0.07x2 + 0.36x3 + 0.15x4 = Internal demand for trade

0.12x1 + 0.13x2 + 0.20x3 + 0.17x4 = Internal demand for services

Combining the internal demand with the final demand produces the following system of equations:

Total Output	Internal Demand	Final Demand
x1 =	0.27x1 + 0.39x2 + 0.00x3 + 0.02x4 +	d1
x2 =	0.05x1 + 0.15x2 + 0.00x3 + 0.01x4 +	d2
x3 =	0.06x1 + 0.07x2 + 0.36x3 + 0.15x4 +	d3
x4 =	0.12x1 + 0.13x2 + 0.20x3 + 0.17x4 +	d4

Generally, the values of final demand are considered to be exogenous variables, while the values of total output are considered to be endogenous variables. A point to keep in mind is that as Wassily Leontief has said in his 1985 paper on input-output analysis, in actual fact, the quantities of goods and services absorbed by households can be considered to be dependent on the total level of employment offered by the other sectors of the economy. This would mean that households would become endogenous variables of the model. For our purposes however, households will remain exogenous.