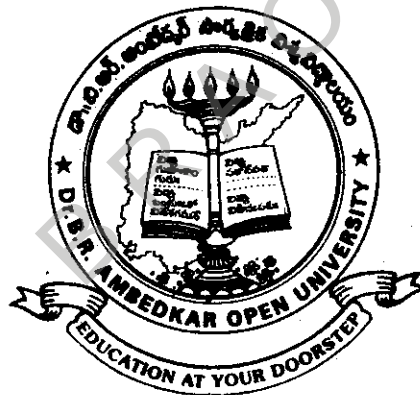


BUSINESS ECONOMICS

We may forgo material benefits of civilization, but we cannot forgo right and opportunity to reap the benefits of the highest education to the fullest extent....."

-Dr. B.R. Ambedkar



**Dr. B.R. AMBEDKAR OPEN UNIVERSITY
HYDERABAD**

2003

114 866
12-4-05

COURSE TEAM

COURSE DEVELOPMENT TEAM

(Principles of Economics and
Economic Development: 1985)

Editors

Prof. C.H. Raghuram
Prof. C. Sivarama Krishna Rao

Associate Editors

Prof. V. Nagaraja Naidu
Prof. V. Venkataiah
Sri G. Malla Reddy

Writers

Dr. T. Divakar Rao

Dr. M. Atchi Reddy
Miss. Prabha Panth
Sri G. Ramakrishna
Dr. N. Lingamurthy
Sri P. Rajesham
Sri M. Ramachandra Rao

Cover Design

Sri Chandra

COURSE REVISION TEAM

Editor

Prof. M. Gangadhara Rao

Associate Editor

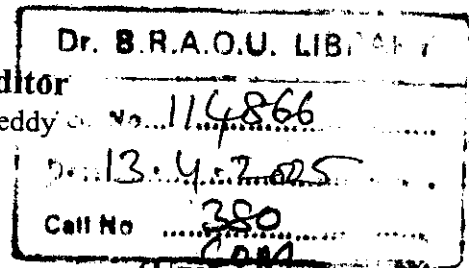
Sri G. Malla Reddy

Writers

Sri G. Malla Reddy (4,7,8,9,10,11,
12,13,17,19,22,23)
Dr. A. Narasimha Rao (5,6,14,15)
Sri V.V. Ramana Murthy (1, 2,3, 20)
Dr. B. Srinivas (16,18,21)

Cover Design & Graphics

Sri M. Ramesh



First Published : 2002 2003

Dr. B.R. Ambedkar Open University, Hyderabad, A.P. India

All rights reserved. No part of this book may be reproduced in any form without permission in writing from Dr. BRAOU.

This text forms part of U.G. Programme of Dr. B.R. Ambedkar Open University.

Further information on Dr. B.R. Amedkar Open University Programmes/Courses may be obtained from the Director (Academic), Dr. B.R. Amedkar Open university, Prof. G. Ram Reddy Marg, Road No. 46, Jubilee Hills, Hyderabad-500 033 (A.P.).

Web: www.braou.ac.in

e-mail: info@braou.ac.in

Lr. No.204/ Dr. BRAOU / DMP / PTG / FNo. 62 / JO No.123/ 2003- 04 / dated 19.9.03 / Copies 2500

Printed at : Ajanta Art Printers, Hyderabad.

PREFACE

This book deals with the topics in Business Economics included in the syllabus for the Second Year B.Com course offered by the Dr.B.R.Ambedkar Open University. These topics generally cover the core area of the subject to be studied in the Second Year of the Three Year Degree Course in Commerce (B.Com.). The syllabus for the sake of convenience is divided into blocks, each of which comprises a number of units. Each block generally covers a specific area of the subject. The units are prepared by specialists in accordance with a format so designed as to enable the student to study and understand them without much difficulty. Each unit begins with aims and objectives followed by contents and has at its end model examination questions intended to test the student's comprehension of the subject matter. Technical terms with which the student may not generally be familiar are given at the end of each unit under the head "Glossary".

As the knowledge of Economics is highly essential to the students of commerce in view of the greater use of economic analysis in business situations, the subject of Business Economics is included in the core area of Commerce. Business Economics is essentially, the applied economics pertaining to business decision-making. The knowledge of economic tools of analysis is very useful to modern businessman in the decision-making process. An attempt has been made to incorporate the recent trends and developments in the subject.

The course material of Business Economics consists of 7 blocks, which are divided into 23 units. The first block deals with nature, scope and concepts of economics; definition and the subject matter of Business Economics; objectives of a business firm and decision making in business. The second block covers the demand analysis and demand forecasting. Block three deals with utility analysis, while the fourth block deals with production analysis. The fifth block is devoted to cost, revenue and profit analysis. Block six explains the market structure, pricing policies and methods. The last block covers the macro aspects of economics like national income, savings and investment, business cycles, economic development, inflation and unemployment.

The University hopes that this material will help the student to get acquainted with the principal issues in Business Economics, which make for its distinctiveness and significance.

BRAOU

CONTENTS

	Page No.
BLOCK-I : INTRODUCTION	
Unit - 1 : Nature, Scope and Significance of Economics	1
Unit - 2 : Business Firm and Its Objectives	28
Unit - 3 : Decision Making in Business	38
BLOCK-II : DEMAND ANALYSIS AND FORECASTING	
Unit - 4 : Theory of Demand	51
Unit - 5 : Elasticity of Demand	62
Unit - 6 : Demand Forecasting	82
BLOCK-III : UTILITY ANALYSIS	
Unit - 7 : Utility Analysis - An Introduction	99
Unit - 8 : Indifference Curve Analysis	114
BLOCK-IV : PRODUCTION ANALYSIS	
Unit - 9 : Production Function	137
Unit - 10 : Laws of Returns of Scale	146
Unit - 11 : Supply Function	155
BLOCK-V : COST, REVENUE AND PROFIT ANALYSIS	
Unit - 12 : Cost Analysis	169
Unit - 13 : Revenue Analysis	182
Unit - 14 : Break Even Analysis	193
Unit - 15 : Profit Analysis	208
BLOCK-VI : MARKET STRUCTURE AND PRICING	
Unit - 16 : Types of Markets	223
Unit - 17 : Price and Output Determination	238
Unit - 18 : Pricing Policies and Methods	267
BLOCK-VII : MACRO ECONOMICS	
Unit - 19 : National Income : Concepts and Measurement	279
Unit - 20 : Savings and Investment	293
Unit - 21 : Business Cycles	306
Unit - 22 : Economic Development	315
Unit - 23 : Inflation and Unemployment	332

BRAOU

BLOCK-I : INTRODUCTION

Unit-1 : Nature, Scope and Significance of Economics

Unit-2 : Business Firm and Its Objectives

Unit-3 : Decision Making in Business

BRAOU

UNIT-1: NATURE, SCOPE AND SIGNIFICANCE OF ECONOMICS

Contents

- 1.1 Aims and Objectives
- 1.2 Introduction
- 1.3 Subject Matter of Economics
- 1.4 Factors of Production
- 1.5 Basic Economic Problems
- 1.6 Scope of Economics
 - 1.6.1 Economic Theory
 - 1.6.2 Economic Policy
- 1.7 Definition of Economics
- 1.8 Wants
- 1.9 Basic Concepts in Economics
- 1.10 Micro Vs. Macro Economics
 - 1.10.1 Micro Economics
 - 1.10.2 Macro Economics
 - 1.10.3 Interdependence
- 1.11 Positive Economics and Normative Economics
 - 1.11.1 Positive Economics
 - 1.11.2 Normative Economics
- 1.12 Relationship between Economics and Social Sciences
- 1.13 Business Economics or Managerial Economics
- 1.14 Definitions of Business Economics
- 1.15 Subject Matter of Business Economics
- 1.16 Business Economics and its Relationship with other Subjects
 - 1.16.1 Business Economics and Economics
 - 1.16.2 Business Economics and Operations Research
 - 1.16.3 Business Economics and Accounting
 - 1.16.4 Business Economics and Econometrics
- 1.17 Summing Up
- 1.18 Check Your Progress : Model Answers

1.19 Model Examination Questions

1.20 Recommended Books

1.21 Glossary

1.1 AIMS AND OBJECTIVES

The purpose of this unit is to acquaint you with the subject matter of economics, explain the meaning and scope of economics, its relationship with other social sciences and various approaches to the study of economics.

Once you are familiar with economics, you are introduced to managerial or business economics which is the subject of our study. The nature and significance of BUSINESS ECONOMICS, its relationship with other subjects such as Economics, Operations Research, Accounting, Econometrics are explained in this unit.

After studying this unit, you should be able to:

- explain what Economics is;
- list out basic economic problems;
- distinguish between economic theory and economic policy;
- differentiate Positive Economics from Normative Economics;
- explain Micro Economics and Macro Economics;
- explain the nature and meaning of Business Economics;
- distinguish between Business Economics and Economics;
- explain the relationship between Business Economics and other subjects such as Economics, Accounting, Operations Research and Econometrics.

1.2 INTRODUCTION

The basic question for the beginner is what the subject is and what it is about. If we start with the definition of Business Economics, which is the subject of our study, at the very beginning, in technical terms, he will not be able to understand anything. He may not be having any idea about what Economics is. Unless he has some idea of what economics is, unless he has some understanding of the subject 'Economics', he will not be able to grasp the nature and scope of 'Business Economics'.

Therefore, the subject matter of 'Economics' is introduced first to the beginner in simple terms and then the nature and significance of Business Economics is explained clearly.

It is probably not a surprise that no one can have all that he or she wants of everything. Yet, that is the first lesson of 'Economics'. Things are SCARCE and desires are unlimited and it means, a choice is to be made.

1.3 SUBJECT MATTER OF ECONOMICS

Economics teaches us how a person tries to satisfy his unlimited desires with the limited resources at his disposal. In other words, it teaches us how to use the available scarce resources to meet our unlimited desires. Here the question of choice comes in. The need for choice arises in the context of SCARCITY.

The discipline of economics studies the problem of scarcity and shows how choices should be made. It helps in understanding what is gained and what is sacrificed each time a choice is made. Because choice is so pervasive, it is not surprising that a great deal of intellectual effort has gone into its studying. The result of this effort is the field of economics.

Hence, **economics is the study of the allocation of scarce resources among alternative and competing ends.** In less elegant language, economics is the study of how best to use what is available to get what is wanted. Choice is not done in a vacuum. The process of choice is a part of culture and society and hence there are always limits on what can be decided. Most of the personal decisions are made within limits imposed by time, laws and customs. Within these limitations how to use scarce resources to get the greatest amount of satisfaction possible is the domain of economics.

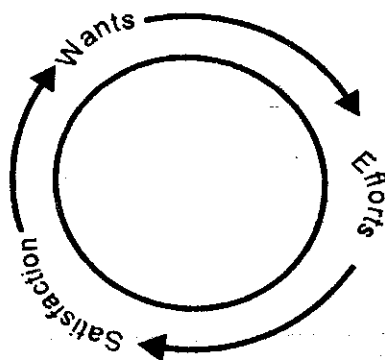
Recent thinking on the subject of economics is that besides studying the behaviour of an individual deriving maximum satisfaction from the use of his limited resources, economics is concerned with the levels of income and employment in a country as well as the causes of their fluctuation. Its study is, thus, intended to promote economic stability. And in respect of underdeveloped economies, it concerns itself with the study of economic growth and development and the theory of income and employment are recent additions to the study of economics. It means the subject matter of economics is widening as days pass by.

A distinguished economist on being asked to define economics, once replied, "economics is what economists do". There is truth in this, for the boundaries of any branch of study are seldom quite clear and topics which it contains at one time may be excluded at another and new topics may be included. Consequently, any short definition of the boundaries of economic analysis is unavoidably inadequate.

We can say that Economics studies man's life and work not the whole of it, but only one aspect of it. It is concerned with only the ECONOMIC BEHAVIOUR of an individual. It means it tells us how a man uses his limited resources in order to satisfy his unlimited wants to the best possible extent.

If we look at the society, we see the farmer tilling his field, the labourer working in the factory, the clerk at his desk, the doctor in the hospital, the teacher in the school or college and so on. They are all engaged in economic activities. They earn incomes to satisfy their wants. The purpose behind all the economic activity is the desire to purchase goods to satisfy human wants. Neither goods nor money is an end in itself. But they are needed for satisfaction of human wants which promotes human welfare.

A person wants food, clothing and shelter. To get these things he must possess money. For earning money, he must work or make an effort. This effort leads to satisfaction. By making of the efforts, man earns money with the help of which he satisfies his needs which gives satisfaction. Thus, **wants, efforts, and satisfaction, sum up the subject matter of Economics.** It can be shown in the form of a circle



In the primitive societies, the connection between wants, efforts and satisfaction was close and direct. When a man was hungry, he picked up some fruit or hunted an animal or caught a fish, ate it and was satisfied. But in a modern society, things are not so simple. Here a man produces what he does not consume and consumes what he does not produce. The weaver produces cloth but he cannot use it all himself. He sells it in the market for money with which he buys things, which he needs. This act of selling what you do not want and buying what you want is called '**exchange**.' Today the process of exchange comes in between wants, efforts and satisfaction.

Thus, economics, especially neo-classical economics, asserts the existence of a universal economic problem which is unaffected by-history. It is the common feature of every form of society, slave-feudal, capitalist and socialist. In all societies, according to the above view, **means fall short of ends**, since wants are assumed unlimited by nature while the means by which they can be satisfied are always limited by definition.

Thus, the definition of the economic problem as one of the scarcity turns neo-classical economics into an exclusively quantitative analysis. It directs its attention to such questions as 'How much does a country produce?' What is the level of per capita income? and so on. Perhaps, the father of economics, Adam Smith has given a correct lead to the subject when he defined economics as "a science of wealth". The historical process of the development of a society is of interest to the economists and the industrial revolution beginning with 1760 is a turning point in the subject matter of economics.

Check Your Progress – 1

'Economics is the study of the allocation of scarce resources among alternative and competing ends'. Explain

.....

.....

.....

.....

1.4 FACTORS OF PRODUCTION

After the Industrial Revolution, machine-made production came into existence. Now-a-days most of the goods are produced in factories. To produce, them the labourer gives his labour, the landlord his land, the capitalist his capital, while the entrepreneur organises the work of all these factors. Labour, land, capital and entrepreneurship

all these four are termed as **factors of production**. **Factors of production are any resources that are used up in the process of producing goods or services**. Today some economists prefer to call them inputs. Factors (or inputs) can be as tangible as a piece of coal or as intangible as the thought process of an entrepreneur.

Land

It includes not only surface area, but also water, minerals, coal, soil fertility, air and any other natural endowments associated with the geographic territory. This factor could accurately be called natural resources. Rent is the return for utilising land.

Labour

It is a factor that includes a variety of qualities. It refers not only to physical labour but also to skills and talents that differentiate one person from another. Labour includes a worker's ability to execute specialised tasks, to read and to use past experience in performing a job. A physician practice of his or her profession is labour just as a machine cleaner's efforts are labour. Labour gets wage as its return.

Capital

Capital is a produced wealth that is used for further production. A factory is capital. It has been produced by those who built it but is not directly consumed. It is a produced means of production which is used to produce other items. Trucks are capital as they contribute to more production. Machines are capital as they are used to make both capital and consumer goods. Office buildings and hydroelectric dams are capital. Capital gets interest as its return.

Organisation

An organiser or entrepreneur is one who organises, manages, operates and takes the risks associated with a business venture. Entrepreneurship is distinguished from labour because it is a special class of labour that includes the capacity and willingness to take such risks. The returns to a factor possessing this quality are called profits. The organiser or the entrepreneur is the one who takes risks by introducing both new ways of making old products and new products.

The above factors of production together produce goods and services. Goods are tangibles like tables, cars, shoes, etc., and services are intangibles like haircutting, education, etc. Goods and services are not regarded as desirable in themselves. They are needed for the satisfaction of the consumer. The act of making goods and services is called by the economist **Production** and the act of using these goods and services to satisfy wants is called **Consumption**.

Because the above factors contribute to production, they earn rewards when the products are sold. Land earns rent, labour receives wages and capital receives interest. The Labourer earns wages, the Landlord gets rent, the Capitalist gets interest, while the entrepreneur's reward is considered profit. Economics studies how these incomes—wages, rent, interest and profits are determined. This process is called distribution. Thus, the subject matter of economics is **Consumption** (i.e. the satisfaction of wants), **Production** (i.e., producing goods and services or creating utilities or making an effort to satisfy our wants), **Exchange** (i.e. money, credit, banking, etc.) and **Distribution** (i.e., sharing of all that is produced in the country among labourers, landlords, capitalists and entrepreneurs).

Check Your Progress – 2

Explain the concept of organisation as a factor of production.

.....

.....

.....

.....

Check Your Progress – 3

What is the subject matter of economics?

.....

.....

.....

.....

1.5 BASIC ECONOMIC PROBLEMS

There are three basic problems called central problems of an economy. Whatever may be the type of economic system, i.e., whether it be capitalist or socialist these problems are common. Economists are interested to find out how decisions on these questions are arrived at in various types of societies.

What goods are being produced and in what quantities?

This question arises out of the scarcity of resources in relation to human wants. It also concerns the allocation of scarce resources among alternative uses. Further, an economy has to decide how much resource-allocation should be made for the production of consumer goods and how much for capital goods. The choice between consumer goods and capital goods involves the choice between the present and the future. If a society decides to produce more capital goods now, the production of consumer goods will be cut down. But in future it enables the economy to produce more consumer goods.

By what methods are these goods produced?

This involves the choice of techniques. Once the society has decided what goods and services are to be produced, it must then decide how the selected goods are produced. There are various alternative methods of producing goods and the economy has to choose among them. Broadly, we can divide the techniques of production into two categories, namely, (a) Labour-intensive technique, where more labour is employed and (b) Capital-intensive technique, where the use of machinery is more. The choice between different methods would depend upon the factor supplies, the prices of the factors of production and the goals of the economy.

For whom shall goods be produced?

6

For whom to produce means how the national product is to be distributed among the

members of the society. Economists have asked what governs the division of the national product between various groups such as labourers, capitalists and land owners. The great classical economists Adam Smith and David Ricardo made significant contributions to the Theory of Distribution. The distribution of national product depends again on the objectives of the economic system.

The above three problems are fundamental and common to all types of economic systems. But different economic systems try to solve them differently. For example, a capitalist society will leave everything to be decided in the market place and all these societies are labelled as market-oriented economies. On the contrary, in a socialist society, everything is taken care of by the Government and all these societies are labelled as state controlled economies. But even the market-oriented economies, where everything is sought to be decided in the market place – LAISSEZ-FAIRE economies, have run into trouble often resulting in depression where the economic activity is at the lowest ebb. Hence, we find, now-a-days, even in capitalist societies, state intervention to regulate economic activity, perhaps to a limited extent in comparison with the state intervention in socialist societies.

1.6 SCOPE OF ECONOMICS

Scope means the sphere of study. Economics is a discipline of two general bodies of analysis, namely, economic theory and economic policy.

1.6.1 ECONOMIC THEORY

Economic theory consists of a set of principles which are useful to analyse and describe the relationship among the more important economic variables. The part of the theory which takes care of consumption, production, distribution and exchange with reference to individual units (consumers, firms, etc.) is referred to as **micro economic theory**. However, it is also necessary to study the behaviour of groups or an entire economy with respect to consumption, investment and saving, etc. This is studied in **macro economic theory**. Macro theory also studies how the economy as a whole grows or develops. In the open economic systems, the theory of international trade plays a crucial role in studying the possibility of ways of generating economic surplus from the foreign sector for the growth of the domestic economy.

Traditional economic theory deals directly or indirectly with individual units, basic economic functions, i.e., consumption, production, exchange and distribution. Modern economic theories take up these activities in the broader perspective of a macro world economic setting where correlation of world forces affecting these fundamental activities are analysed and the implications for the economies are interpreted. In doing so, economic theory cannot be ignorant of the roles played by politics, sociology and so on. The approach of our study has got to be, in other words, interdisciplinary and international.

1.6.2 ECONOMIC POLICY

Economic theory essentially has more useful counterpart – the economic policy. Economic theories will remain as useless intellectual exercises, if they do not suggest any positive policy implications. Thus, the proper scope of economics is not merely to satisfy intellectual curiosity by means of theorising but to formulate useful economic policies.

In fact, it is not surprising to observe that every important economist and every major school of economic thought has had important elements of theory of economic policy. 7

The theory of economic policy, which is within the jurisdiction of economics, studies the organisation and the structures of economic system as a whole with or without the market mechanism. According to Frank Knight, the central issue of economic policy is the distribution of power among different economic units. To Schumpeter, "economic policy is politics, such that the state becomes an active variable".

The literature on economic development is replete with the issues of economic policy considerations which have their impact on growth and development. Different schools of economic thought advocated different types of economic policies. For example, the classical school, in addition to building a body of economic theory, had also a coherent theory of economic policy. In the scope of economics, the classical writers included not only theories of value and growth but also a theory of capitalism as a theory of the economic order. The classical theory of economic policy also included the roles of market mechanism and of government as a social controlling force. Marxism can be interpreted as a theory of economic policy and also as an example of economic theory (theory of value, theory of capitalist development and so on). Marx's theory of economic policy encompasses his theory of capitalist development and theory of capitalist organisation and so on. Thus, the scope of economics includes both economic theory and economic policy. To be meaningful, economic science must bring within its jurisdiction both economic theory as well as appropriate policy making.

1.7 DEFINITION OF ECONOMICS

There are a large number of definitions of Economics given by various economists. Some of the definitions given by some well known economists are discussed here.

Adam Smith's Definition

Adam Smith, the first among the classical economists and the "father of economics" published a book in 1776: '**An inquiry into the Nature and Causes of Wealth of Nations**'. In this book he defined economics as 'a science of wealth'. The other early economists also accepted this definition. But this definition received severe criticism as it exclusively paid its attention to wealth as if wealth was everything. Attention was not paid to man for whom the wealth is really meant. Writers like Carlyle and Ruskin dubbed it as the worship of Mammon (the god of wealth). They also accused it as the science that taught selfishness and meanness and hence it is dubbed as the dismal science.

Alfred Marshall's definition

Marshall shifted his emphasis from wealth to welfare. Wealth, according to him, was not the end but only a means to an end, the end being human welfare.

He observes "Political economy, or economics, is a study of mankind in the ordinary business of life. It examines that part of individual and social action which is most closely connected with the use of the material requisites of well being". As Marshall himself put it, Economics is, on the one side a study of wealth, and on the other, and more important side, a part of the study of man. When Marshall said that economics is a science of ordinary business of life, it means that it tells us about a man's way of living, that is how he earns his income and how he spends it. An individual has several aspects of his life, viz., social, religious, political and economic. Economics has no concern with the social, religious and political aspects of human life. **It is concerned**

purely with the economic aspect of human life. It means those actions which relate to wealth i.e., how a man produces his wealth and how he uses it; how wealth is exchanged and distributed among individuals in the society. Economics, according to Marshall, studies human welfare-not the whole of human welfare but only a part of it, namely, economic or material welfare. Thus, the focus of study is shifted from wealth to the welfare of man.

In spite of all this, Marshall's definition was also criticised. Prof. Lionel Robbins has objected to the 'welfare' definition on the ground that it includes within its purview only material welfare. It ignores or excludes non-material welfare of human beings. Further, it is not possible to divide in a clear-cut manner the material and non-material welfare aspects of human beings as is assumed by this definition. The two are so closely mixed up with each other that it is impossible to separate them.

Lionel Robbins Definition

Prof. Robbins rejected the definition given by Marshall and others and substituted a definition of his own. In 1932, Robbins published his famous essay entitled 'An Essay on the Nature and Significance of Economic Science' which broke new ground and completely altered the definition of economics. According to him, 'economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses'.

The above definition lays down three important propositions. They are ends, scarce means and their alternative applications. Ends here refer to human wants and as we know that our wants are unlimited in number. The satisfaction of one want gives rise to another. Although our wants are unlimited, the means at our disposal to satisfy these wants are scarce or limited. If these means were also unlimited, no economic problem would have arisen. The word 'scarcity' is relative in the sense that the resources are scarce in relation to their demand. These scarce resources or means have alternative uses. Not only are our means scarce but they can be put to a number of uses. This makes them all the more scarce. If a commodity or a service could be put to one or few uses only, no economic problem would have arisen. After the commodity had been put to that use, the remainder of it shall become a free commodity with little economic significance. But in actual life, we find that a commodity can be put to several alternative uses.

Paul A. Samuelson's Definition

According to Samuelson, 'economics is the study of how people and society end up choosing, with or without the use of money, to employ scarce productive resources that could have alternative uses – to produce various commodities or distribute them for consumption, now or in the future, among various persons and groups in society. thus, Samuelson's definition presents the problem of choice in a dynamic setting and widens the scope of the subject.

Another explanation of the subject matter of economics consists of the way in which the productive forces should be organised for their unfettered growth. For this unfettered growth of productive forces, the concept of equality in human relations has to be brought in and therefore Economics should be concerned with the social relations that men enter into when they engage in economic activity

There is a good list of definitions as discussed above. Yet the scholars can go on extending it many times more. But it is always difficult to compress into a few lines an exact

definition of a subject that differentiates its boundaries very clearly from other disciplines. Instead of defining a subject in a few lines, it is always better to go on discussing its range.

1.8 WANTS

As we have already discussed, ends or human wants are unlimited and to satisfy these wants means are scarce. In this connection, let us discuss about human wants in detail.

Human being is a bundle of wants. His wants are infinite in number and variety. As civilisation increased, human beings were not satisfied with bare necessities of life. This struggle is continuing for comforts and joys of life. All persons do not have the same wants. They vary from individual to individual and they are also relative to one's social and economic position.

CHARACTERISTICS OF WANTS

The following are the chief characteristics of wants :

- i) **Human Wants are unlimited** : There is no end to human wants. When one want is satisfied, another takes its place. This never-ending cycle of wants goes on rotating in the human mind.
- ii) **Any particular want is satiable** : Although wants on the whole are unlimited, it is possible to satisfy a particular want provided one has the means. If a man wants a car, he can have it and be satisfied. If he is hungry, he takes food and the want is satisfied. This can be done only when one has the required money.
- iii) **Wants are complementary** : Very rarely a single commodity by itself satisfies a want. Usually it calls for something else to help it. If we want to write a letter, we must have a pen as well as ink and paper. The pen alone is not enough. Thus coffee needs milk, sugar and coffee power, shoes need laces and so on. Therefore wants are complementary.
- iv) **Wants are competitive** : As we cannot satisfy all our wants at a time, there will be competition among them. All of us will have limited amount of money at our disposal. Whereas we want many things at the same time. We cannot buy all of them. We must therefore, choose between them by accepting some and rejecting others. Thus, there is competition among various things we could buy.
- v) **Wants are alternative** : There are several types of goods for satisfying a particular want. If we are thirsty, we can have water, lemon juice, lassi or any other cool drink in summer. In winter if we want to take something hot, we can have tea, coffee or hot milk etc. Thus, there are several alternatives to satisfy our needs. But the final choice depends on their relative prices and the money at our disposal.
- vi) **Wants vary with time, place and person** : Wants are not always the same and they are not the same with everyone all the time. Different people want different things and the same person wants different things at different times and in different places.
- vii) **Wants vary in urgency and intensity** : all wants of individuals are not equally urgent and they do not possess the same intensity. Some wants are more urgent and important than others. These are generally satisfied first while others are postponed.

CLASSIFICATION OF WANTS

The goods and services that we require in order to satisfy your wants are generally classified as necessities, comforts and luxuries. Let us consider them one by one.

a) Necessaries : There are the goods without which human being cannot exist in this world. They are also called minimum needs of life namely, food, shelter and clothing.

b) Comforts : After satisfying the necessities of life, human beings crave for comforts. Human beings are born not only to live but to live well. Comforts make for a fuller life of human beings. For a student, a book is a necessary, a table and a chair are necessities of efficiency but a cushioned chair is a comfort.

c) Luxuries : Human beings never stop with comforts. After, comforts are satisfied, he wants luxuries too. Luxury has been defined as something superfluous, something we could easily do without. Luxury cars, jewelry, silk cloths, cushioned beds are used in order to increase one's status in the society.

The above classification is only a tentative one and we cannot attach permanent and fixed labels of necessities, comforts and luxuries to commodities. We cannot say that a car is always a luxury and a shirt is always a necessity. The same thing may be a necessity under one set of conditions and luxury under others. A car may be luxury for a villager who goes for cultivation, but for a busy official or doctor in a city, it is a necessity. Similarly, what may be regarded as a luxury in India may be a necessity in England. Overcoats and electric heaters are luxuries in India but necessities in England. Hence, we may conclude that goods are necessities, comforts or luxuries according to the climate, country and the people we are considering. They are relative to a person, time and place.

1.9 BASIC CONCEPTS IN ECONOMICS

There are certain basic concepts in economics namely, utility, value, price and wealth. These are discussed below :

1.9.1 Utility

We know that goods and services satisfy human wants. This want satisfying power or quality in goods or services is called utility. It is essentially a subjective or introspective concept. It relates to inner sentiments and emotions of human beings. It has no physical or material existence. It resides in the mind of consumer. The same commodity may have different degrees of utility to different consumers. Mr.A may enjoy eating mango but Mr.B may not like mango. There is a difference between utility and usefulness. A thing may possess utility but it may not be useful. For example, liquor is harmful to health, yet it may have a high degree of utility for an alcoholic. Utility is also not synonymous with pleasure. A thing may possess utility but it may not give pleasure when consumed, eg. Poison.

The main forms of utility are as follows :

- a) Form Utility :** By changing the form of an Article, we can give it greater utility. For example, the transformation of a log of wood into pieces of furniture.
- b) Place Utility :** By transporting a thing from one place to another, we can add utility. When wood is in the forest it does not possess any utility. But when it is

UNIT – 2 : BUSINESS FIRM AND ITS OBJECTIVES

Contents

- 2.0 Aims and Objectives
- 2.1 Introduction
- 2.2 The Concept of 'Firm'
- 2.3 Objectives of a 'Firm'
- 2.4 Profit Maximization Theory
- 2.5 Sales (Revenue) Maximization Theory
- 2.6 Wealth or Value Maximization
- 2.7 Long-run Survival
- 2.8 Size Maximization
- 2.9 Managerial Utility Maximization
- 2.10 Satisficing
- 2.11 Summing Up
- 2.12 Check Your Progress: Model Answers
- 2.13 Model Examination Questions
- 2.14 Recommended Books
- 2.15 Glossary

2.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain what a firm is, what its objectives are and various theories of the firm evolved by economists.

After studying this unit, you should be able to:

- Explain the meaning of the firm;
- List out the objectives of a firm; and
- Discuss the different theories about the objectives of the firm.

2.1 INTRODUCTION

In economics, firm refers to a unit of control. It controls productive operations by hiring factors of production. It sells services to other firms. It takes decision to produce any commodity. It also decides the nature and quality of the product. It plans to adopt the method of producing the commodity. In this context it becomes important to note that economic theory makes a fundamental assumption that maximizing profits is the basic objective of every firm. But in recent years, profit maximization has been increasingly

they represent titles to property. Hence, they are sometimes called representative wealth. But free goods like air, water and sunshine are not wealth as they are not scarce. Personal qualities like honesty, skill, ability and intelligence too are not wealth. They are a source of wealth but are not wealth in themselves as they are not transferable.

Wealth and welfare

Wealth and welfare are closely interrelated. Wealth is the means and welfare is the end. Wealth can be used to make people happier and comfortable. But all wealth does not bring welfare. It may actually be harmful as in the case of a bad book, poisonous drugs, wine, tobacco, etc. Though the above goods are part of wealth, they do not promote human welfare. Hence, increase in wealth does not necessarily mean an increase in welfare.

Thus, wealth and welfare do not go together under all circumstances. But, on the whole, wealth is a powerful means of promoting human welfare.

Check Your Progress – 4

“All goods do not have value”. Explain.

.....

.....

.....

.....

Check Your Progress – 5

Explain the concept of wealth.

.....

.....

.....

.....

1.10 MICRO VS. MACRO ECONOMICS

There is an important distinction in economics between micro and macro economics.

1.10.1 MICRO ECONOMICS

Micro economics looks at what happens in individual units of the economy. It is the study of particular firms, households, and commodities. It is concerned with what determines the prices of individual goods. It also considers what determines the incomes of particular factors of production. It attempts to explain the working of the markets for individual commodities and the behaviour of individual consumers and producers. It recognizes interdependent relationships both competitive and complementary between micro markets.

As small objects get magnified under the microscope, in micro economic theory, we study all the facets of problems like the behaviour of a consumer, equilibrium of a firm, price determination in a single market which are small when compared to wholesale business, population in general, large scale business dealers, etc. For example, micro economics seeks to explain how the single firm decides the sale price for a particular product, what amount of output will maximize its profits, and how it determines the lowest cost combination of labour, materials, capital equipment, and other inputs with which to produce this output. It is also concerned with how the individual consumer determines the distribution of his total spending among the many products and services available to him so as to maximize his satisfaction or utility.

1.10.2 MACRO ECONOMICS

Macro economics looks at the economy as a whole. It is concerned with the overall performance of the economic system rather than individual parts. It deals with total or aggregates e.g., total national income, total employment, output and total investment. It is aggregative economics which studies the interrelations among various aggregates and examines their nature and behaviour, their determination and causes of fluctuations in them.

It deals with the economic affairs in general, instead of studying the prices of individual commodities. It is concerned with the general price level. Similarly, the level of employment in the economy, the aggregate consumption, aggregate investment are all macro economic variables. Here, you may get a doubt about the term 'aggregate' when we are using it in explaining macro economics. It is nothing but an **abstraction** that people find convenient in describing some salient features of economic life. For example, while we observe the prices of edible oil, power, telephone calls, movie tickets, vegetables, every day, we never observe "the price level". Yet many people (not only economists) find it both meaningful and natural to speak of "the cost of living" – so natural, in fact that the Bureau of Economics and Statistics, and other bodies attempt at measuring it and are widely publicized by the print media.

Among the most important of these abstract notions is the concept of **national product**, which represents the total production of a nation's economy. The process by which real objects like ballpoint pens, basket balls, cigarettes, cinema tickets get combined into an abstraction called national product is called **aggregation**, and it is one of the foundations of macro economics.

Macro economics seeks to explain why at some times as little as 2 per cent of the labour force is unemployed and at other times as much as 12 per cent or even more, and why at sometimes there is full utilization of the economy's productive capacity as measured by its workers, factories, equipment, and technological know-how and why at other times a good part of this capacity to produce goes to waste. It also seeks to explain why the total of goods and services produced (in other words, Gross National Product) grows at an average rate of 6 per cent per year in one decade and at an average of only 1.5 per cent in another, and why in some time periods the price level rises sharply, while during some other time periods, it remains stable or even falls. In the words of Edward Shapiro, macro economics attempts to answer the truly "big" questions of economic life—full employment or unemployment, capacity or under capacity of production, a satisfactory or unsatisfactory rate of growth, inflation or price-level stability.

- 14 In contrast, micro economics is concerned, not with total output, total employment, or

total spending for all goods and services combined, but with the output of particular goods and services by single firms or industries and with the spending on particular goods and services by single households or by households in single markets. The unit of study is the part rather than the whole.

1.10.3 INTERDEPENDENCE

There is no rigid analytical demarcation between micro and macro economics. Both of them are interdependent and interconnected, for the parts affect the whole and the whole affects the parts. Changes in the macro economic variables ultimately affect the micro economic variables. Thus changes in individual output, income and employment lead to similar changes in national output, income and employment and vice-versa. After all, the whole consists of parts. Hence, a general theory should integrate both the wings of analysis as they are complementary but not contradictory to each other. They cannot be looked at as watertight compartments. They are like Siamese twins.

Check Your Progress – 6

i) What is Micro Economics?

.....

.....

.....

.....

ii) what is Macro Economics?

.....

.....

.....

.....

1.11 POSITIVE ECONOMICS AND NORMATIVE ECONOMICS

Now we will distinguish between positive economics and normative economics.

1.11.1 POSITIVE ECONOMICS

It is concerned with things as they are. It studies as to how the economic system works. Here one is concerned with observing the world as it is. A greater part of economics is of this kind. Positive economics attempts to describe and analyse the existing situation rather than suggesting how to change it. It is not based on any ethical considerations. It seeks to explain and predict the economics phenomena. For example, we may be interested in increasing the revenue of the State and the production of alcohol may be encouraged. Here the positive economist may not be seriously bothered whether production of intoxicants will be detrimental to the interests of the people or not. He is merely interested in seeking ways and means by which the total revenue of the State can be increased. The theories in positive economics are based on a set

15

Dr. BRAOD
LIBRARY

Acc. No:
Class No:

114866
380
com

of assumptions. It is also called **theoretical economics**.

1.11.2 NORMATIVE ECONOMICS

Normative or welfare economics is concerned with '**what ought to be**' rather than with '**what actually is**'. It provides economic policies. It is based on our judgements about what is good and what is bad and hence it is mixed up with our philosophical, cultural and religious positions. It is based on our value judgements. In discussing economic problems with our friends, we suggest what the government's economic policy ought to be, how Government should act to increase the level of employment; how to change the tax system and so on. However, the subject of welfare economics is concerned with the well-being of the people as consumers and producers. A normative economist may plead for prohibition on ethical grounds even though the State may be losing some revenue. The important task of normative economics is to define an ideal economy as an economy that can give maximum satisfaction to individuals from the available resources.

The distinction between positive and normative economics can be explained with an example. The questions like 'what government policies will reduce unemployment?' and 'what policies will prevent inflation?' are positive ones, while the question 'ought we to be more concerned about unemployment than inflation?' is a normative one. In other words, positive economics deals with **description**, whereas normative economics deals with **prescription**-what a firm should do and how it should achieve its objectives.

Check Your Progress – 7

What do you mean by Positive Economics ?

.....

.....

.....

.....

1.12 RELATIONSHIP OF ECONOMICS WITH OTHER SOCIAL SCIENCES

Economics is what Samuelson calls "the queen of social sciences". A social science basically deals with human behaviour and so does economics. Economics being one of the social sciences, is closely related to other sister social sciences.

i) Economics and Politics

Originally Economics was called as Political Economy. The relationship between politics and economics is the closest. All political problems have their roots in economic causes. Political institutions affect the economic conditions and economic conditions in turn affect the nature and form of democratic institutions in an economy. Colonialism for a long time was responsible for the misery and poverty of Indian masses. Therefore, there is a close connection between economics and politics.

ii) Economics and History

16 History is a record of past events. It studies the social, political and economic conditions

of people at different periods of time. Hence, economic conditions are a part of History. For understanding the present-day economic problems, we need their background history. History is also useful in establishing or verifying economic laws. It does not merely tell us the stories of kings and queens. The closeness between History and Economics can be expressed as follows:

"Economics without history has no root. History without Economics has no fruit"

iii) Economics and Ethics

Ethics is concerned with morals. It tells us what is right and what is wrong. Ethical or moral considerations govern all economic activities. An economist cannot say "right" what is morally wrong. Economists like Robbins, however, think that economics is a pure science and as such it is not concerned with right or wrong. It is said to be neutral with regard to ends.

Economics also draws heavily from subjects such as psychology and anthropology. Knowledge of mathematics is also needed to understand the basic economic principles. (But logical reasoning is the key to success in understanding, interpreting and solving basic economic problems and principles and issues). Economics is also related to statistics. Government and business frequently collect and issue vast amounts of numerical information. These are used to study such things as per capita income, tax rates, corporate profitability, agricultural production, industrial growth, etc. This type of information is immensely helpful in policy formulation.

1.13 BUSINESS ECONOMICS OR MANAGERIAL ECONOMICS

The economic, political and business environment is undergoing a sweeping change throughout the world. The world is shrinking at an amazingly rapid pace, and the countries are becoming borderless. The revolution in communications, the unification of Europe, the collapse of communism in Eastern Europe and former Soviet Union, the disappearance of licence-permit raj in India, gigantic flows of foreign capital and direct foreign investment throughout the world including countries such as China, and the movement toward a market economy in former communist and socialist countries, all leading towards a truly global economy.

In such a rapidly changing world, managers of firms today are facing a difficult task. They cannot bank on their commonsense and experience only while taking decisions. They have to equip themselves with necessary skills to enable them to take the right decisions. Resources – men, material and money are scarce and managers have to make the best use of these resources to achieve the firm's objectives. The profitability or otherwise of a firm depends upon the decision-making capacity of the managers.

A study of Business or Managerial Economics helps the managers in taking proper decisions.

1.14 DEFINITIONS OF BUSINESS ECONOMICS

Managerial Economics or Business Economics is a growing subject and it is an interdisciplinary subject. Eventhough it is difficult to bound the scope of the subject which is still growing, in a few lines, several managerial economists tried to define it and we give below some of the definitions.

Spencer and Siegelman : "Managerial Economic is the integration of economic theory with business practice to facilitate decision-making and forward planning".

W.W.Hayness : "Managerial Economics is the study of the allocation of the resources available to a firm or other unit of management among the activities of that unit".

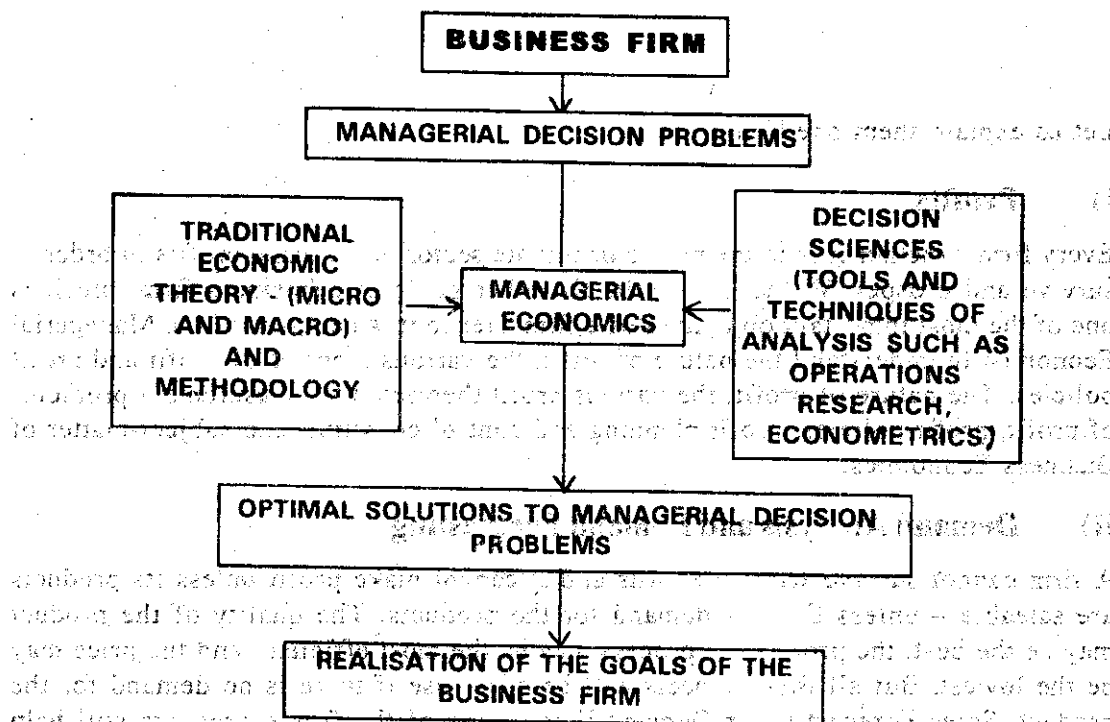
Prof. Evans J.Douglas : "Managerial Economics is concerned with the applications of economic principles and methodologies to the decision-making process within the firm or organisation under conditions of uncertainty. It seeks to establish rules and principles to facilitate the attainment of the desired economic goals of management. These economic goals relate to costs, revenues and profits, and are important within both the business and the non-business institutions"

James Pappas and Eugene Brigham : "Managerial Economics is the applications of economic theory and methodology and tools and techniques of decision sciences to business administration practice".

Dominick Salvatore : "Managerial Economics refers to the applications of economic theory and the tools of analysis of decision science to examine how an organisation can achieve its aims or objectives most efficiently".

A critical analysis of the above definitions reveals that managerial economics means different things to different authorities and defining managerial economics is like describing an elephant by eight blind men. However, the following features which are common in several definitions may be drawn to understand somewhat clearly what managerial economics appears to be:

- i) Managerial economics is concerned with decision problems of business firms. It deals with identification of the decision problem which is mostly economic in nature, and the choice of alternatives to allocate resources which are scarce, in the most efficient manner. In other words, it is concerned with optimal allocation of scarce resources.
- ii) Managerial economics is goal-oriented and it is prescriptive and not descriptive. It deals with how decisions should be made in order to realise organisational goals.
- iii) Managerial economics is pragmatic. It is concerned with those analytical tools which are useful in improving decision-making. It liberally draws the necessary tools from decision sciences.
- iv) Managerial economics helps the managers of the business firms to solve decision problems in the most efficient way and realise the objectives of the firms. Which means Managerial Economics draws heavily from Micro Economics which deals with economic problems of business firms. Among the definitions discussed above, the definitions given by Pappas and Brigham and Salvatore seem to be most appealing. Managerial economics in fact provides a link between traditional economics and the decision sciences such as Quantitative Techniques or Mathematics and Statistics, Econometrics, Operations Research, for managerial decision-making and such a link may be explained through the following chart



Check Your Progress - 8

Define Managerial Economics ?

1.15 SUBJECT MATTER OF BUSINESS ECONOMICS

As discussed already, Business Economics is a developing subject and it is interdisciplinary in nature. Eventhough there is no unanimity among Managerial Economists regarding its scope, the following aspects may be considered as the subject-matter of Business Economics:

- i) Profits
- ii) Demand Analysis and Demand Forecasting
- iii) Production and Cost Analysis
- iv) Market Structure and Competition
- v) Pricing Policy, Methods and Pricing Practices
- vi) Capital Budgeting Decisions
- vii) Regulation : The Government and Economy

Let us explain them one by one.

i) Profits

Every firm, whether it is in the public or private sector, must make profits in order to survive and prosper. Whatever may be the other goals of a business firm, profit is one of the most important objectives of a firm. Hence it is necessary for a Managerial Economist to understand the nature of profit, the various theories of profit and profit policies. The nature of profit, the various profit theories, the measurement problems of profit, profit policies, profit planning and control constitute the subject-matter of Business Economics.

ii) Demand Analysis and Demand Forecasting

A firm cannot survive without profits and it cannot make profit unless its products are saleable – unless there is demand for the products. The quality of the product may be the best, the production process may be the most efficient, and the price may be the lowest. But all these aspects will be of no use if there is no demand for the product. Sales Forecasting or Demand Forecasting of the firm's products will help the firm in planning for production and in controlling its costs. Demand analysis helps the Managerial Economist in making reasonably good estimation of demand and a good sales forecast. Thus demand analysis – the nature of demand, the kinds of demand, demand distinctions, elasticities of demand, methods of demand forecasting and the criteria of a good forecasting method constitute the subject matter of Business Economics.

iii) Production and Cost Analysis

An analysis of production processes and costs will help the business firm in arriving at optimal input-output decisions (i.e., the most efficient input-output decisions). Only those firms, which are able to control costs, can meet competition effectively. There are certain costs, which are relevant for decision making. An understanding of various cost concepts is essential for decision making. Proper classification of costs will help in making use of certain tools and techniques such as Cost-Volume-Profit Analysis and Incremental Costing for profit planning and pricing decisions. Hence Production and Cost Analysis will constitute the subject matter of Business Economics.

iv) Market Structure, Competition and Pricing

The pricing strategies and pricing policies of a business firm depend among other things, on the kind of competition a firm faces. If the firm is virtually in a monopoly position, it may adopt one particular pricing policy. It is necessary to understand the different kinds of competition, for pricing decisions. Market Structure, Competition, Pricing Policies and Pricing Methods form the subject matter of Business Economics.

v) Pricing Policy, Methods and Pricing Practices

A firm which is in an oligopoly market (a market where a few firms operate, each having a substantial share of the total market), may adopt a stable pricing policy. A firm which is facing stiff competition against a large number of firms in the market on the other hand, may indulge in frequent price cuts and it may find favour with incremental pricing technique. A firm which is virtually in a monopoly position, may adhere to what is called 'full cost or cost plus' pricing. A firm introducing a new product, may fix a low penetration price expecting rapid expansion of demand in the near future (and hence manufacture on a large scale, having low margins while fixing the price). Pricing

policy of a firm is based on the very philosophy of a firm. The pricing policies and practices of a firm depend on various factors – the competitive situation – actual and potential, the objectives of the firm-both short run and long run and so on.

Pricing objectives, pricing policies, pricing methods and pricing practices form the subject matter of Business Economics.

vi) Capital Budgeting Decisions

Once a decision to make investment on capital projects is taken by a firm, and once the investment is made, the costs are sunk and the decision is irreversible. Any wrong decision made will have adverse impact on the firm and the consequences will be far reaching. The significance of capital budgeting, the need for investment on capital projects and different methods of appraisal of capital projects constitute the subject matter of Business Economics.

vii) Regulation : the Government and Economy

Government intervenes in many ways in business, industry, trade and profession. For example, a license is generally required to enter and remain in many businesses such as operating a liquor shop or a medical store. Patent granted by the Government to an inventor is another example of how the Government intervenes to protect inventor who has the exclusive right to use of the invention for a specified number of years. The patent holder can use the patent directly or grant a license for others to use the invention in exchange for royalty payments.

Government also intervenes in the economy in order to protect consumers against unfair trade practices, workers against hazardous working conditions and the environment against pollution and degradation.

These governmental regulations also form the subject matter of Business Economics.

1.16 BUSINESS ECONOMICS AND ITS RELATIONSHIP WITH OTHER SUBJECTS

As is already mentioned, Business Economics is linked to traditional economic theory and it draws liberally from decision sciences such as Operation Research.

1.16.1 BUSINESS ECONOMICS AND ECONOMICS

Business Economics is basically normative in nature and a Business Economist has to provide prescription for managerial decision problems of the firm. He has to advise the business firm – what it should or should not do in order to realise its goals. Business Economics also draws on positive economics by utilising the relevant economic theories as a basis for prescribing choices. The roots of Business Economics are well entrenched in Micro Economic Theory. Price theory, demand analysis, market structure and competition, production and cost analysis are essential elements of Micro Economics which Business Economics liberally draws upon. Macro Economics is also useful for Business Economics. Since a business firm is a sub-system in the economic system and since it is not operating in isolation or in a vacuum, since macro-economic policies of the government such as bank rate, import and export policies, tariff rates, effect the functioning of the firm, it is necessary for the Business Economist to study carefully the macro economic environment. A knowledge of Macro economic issues and policies will help the Business Economist in giving sound advice to the firm and enable it to realise its goals.

1.16.2 BUSINESS ECONOMICS AND OPERATIONS RESEARCH

Operations Research as a specialized subject has evolved during the Second World War. Both operations research and economic theory are concerned with model building. Some of the Operations Research models such as queuing theory, linear programming, game theory are widely used in Business Economics. While economic theory has dealt with the problems involving maximization of profits and minimization of costs, operations research focussed attention on the concept of optimization and the concept of optimization has been used widely in Business Economics. This concept of optimization used in Business Economics is in fact borrowed from operations research. Incremental reasoning widely used in Business Economics is closely related to the logic underlying the models of Operations Research.

1.16.3 Business Economics and Accounting

The focus of Accounting is fast changing from the concept of "scorekeeping" to that of "managerial decision making". This trend has led to the evolution of a new specialization known as "Managerial Accounting" and the Cost and Revenue information generated by Managerial Accounting is found to be relevant for Managerial Economics. There is much commonality between Business Economics and Managerial Accounting and some of the techniques such as Cost-Volume-Profit Analysis and Incremental or Differential Costing are commonly used in Business Economics as well as Managerial Accounting.

1.16.4 BUSINESS ECONOMICS AND ECONOMETRICS

Mathematical Economics is used to express in equational form, the economic models postulated in economic theory such as demand function. Econometrics applies statistical tools (particularly regression analysis) to real-world data to estimate the models postulated by economic theory and forecasting. Thus some of the methods of demand forecasting in Business Economics make use of Mathematical Economics and Econometric models. The statistical tools such as Correlation and Regression techniques, Time Series Analysis, are made use of in Business Economics for Demand Estimation and Demand Forecasting.

1.17 SUMMING UP

This unit has begun with the basic question regarding the subject matter of economics. As resources are scarce, satisfaction of unlimited wants leads to the problem of choice. Economics deals with the problem of scarcity and shows how choices should be made. Economics studies the economic aspect of man's life and work.

Factors of Production — land, labour, capital and entrepreneurship — are used in the process of producing goods or services. Economics is concerned with the human behaviour. Hence it is called a social science. In fact it is the queen of social sciences. The subject matter of economics deals with the basic problems such as what to produce, how to produce, for whom to produce and how much to produce. Economics consists of economic theory and economic policy.

According to Adam Smith, the father of economics, economics is a science of wealth. According to Marshall, economics studies the economic welfare of human beings. Lionel Robbins gives a scientific definition of economics. His definition gives importance to unlimited wants, scarce means and alternative uses. Other economists also tried to define economics in their own way.

No human being can satisfy the unlimited wants which vary with time, place and person. Wants are not only competitive but also complementary to each other. A commodity or service can have utility if it satisfies human wants. Value of a commodity, which is scarce, possesses utility and it is transferable. If we express value in terms of money, we call it as price. Wealth, which is also scarce, possesses utility and it is transferable from one place to another. So, anything which has value is wealth.

Positive economics studies the working of the existing economic system. It is concerned with 'what actually is' whereas, 'what ought to be' is dealt by normative economics. It is based on value judgement.

Economists have classified economic analysis into two branches i.e. Micro and Macro. Micro economics is concerned with the elements of economic activity—the firm and the consumer. In other words, it takes particular individuals, households, firms, industries or prices of different commodities as the unit of study. On the other hand, macro economics studies the economy as a whole. It deals with the ultimate determinants of the whole system of prices and produce.

After introducing the subject matter of economics, various definitions of economics, positive and normative approaches and the two branches micro and macro economics, the definition, scope and the subject matter of Business Economics, which is the subject of our study, is introduced. Business Economics and Managerial Economics are used as synonyms in our study. Business Economics is the application of economic theory and methodology and the use of tools and techniques of decision sciences such as operations research and econometrics for finding optimal or the most satisfactory solutions to the managerial decision problems at the level of the firm. The firm and the managerial decision problems of the firm are the focus of our attention in Business Economics.

The managerial decision problems of the firm mostly relate to choices and allocation of scarce resources (men, material and money) which are to be tackled by the management in an optimal (i.e., the most efficient) manner.

Since the subject matter of Business Economics is focussed on identifying and solving the decision problems at the managerial level, Business Economics draws that part of economic theory and methodology which is useful for decision making and it does not consider abstract economic theories and behaviour analysis. Business economics also draws liberally from other decision sciences such as operations research, econometrics and managerial accounting, even though it is rooted in economic theory. Business Economics draws predominantly from Micro Economic Theory such as demand theory, production and cost analysis, market structure and competition. Since a business firm does not operate in isolation, since it is a part of the economic system, it is effected by macro economic policies and changes. Hence, a Business Economist cannot afford to ignore macro economic environment.

Business Economics is basically normative in nature and a Business Economist has to provide prescription for managerial decision problems of the firm. Business Economics applies that part of micro economic theory and methodology which is useful for solving managerial decision problems. Business Economist also uses positive economic theories for analysis and application. The roots of Business Economics are well entrenched in micro economic theory. Price theory, demand analysis, market structure and competition, production and cost analysis are essential elements of Micro Economics which Business Economics liberally draws upon. But the knowledge of macro issues and policies will help the Business Economist in giving sound advice to the firm and enable it to realise its goals.

The subject matter of Business Economics consists of:

- (i) Profits
- (ii) Demand Analysis and Demand Forecasting
- (iii) Production and Cost Analysis
- (iv) Market Structure and Competition
- (v) Pricing Policy, Methods and Pricing Practices
- (vi) Capital Budgeting Decisions
- (vii) Regulation : The Government and Economy

1.18 CHECK YOUR PROGRESS : MODEL ANSWERS

1. The discipline of economics studies the problem of scarcity and shows how choices should be made. It helps in understanding what is gained and what is sacrificed each time a choice is made. Because choice is so pervasive, it is not surprising that a great deal of intellectual effort has gone into studying it. The result of this is the field of economics. Hence, economics is the study of the allocation of scarce resources among alternative and competing ends.
2. It has been customary to classify factors of production into three: Land, Labour and Capital. But in recent times, economists have begun to speak of entrepreneurship or management as a fourth factor of production. It is popularly called as organisation. It takes risks by introducing both new ways of making old Products and new Products.
3. The subject matter of economics is : (i) Consumption; (ii) Production; (iii) Exchange and (iv) Distribution.
4. All goods do not possess value. In economic sense only economic goods have value . These goods should possess three qualities to have value. They are (i) They must possess utility; (ii) They must be scarce; and (iii) They must be transferable or marketable.
5. In the ordinary language, 'wealth' is meant by people as money. But in economics, money is not the only form of wealth. Anything which has value is wealth in economics. In economics, the term wealth is synonymous with economic goods. Economic goods are scarce and command a price in the market. In order to call anything as wealth, it must possess three attributes. They are: (a) It must possess utility (b) It must be scarce in relation to its demand (c) It must be transferable from one person to another.
6.
 - i) Micro economics looks at what happens in individual units of the economy. It is the study of particular firms, households, and commodities. It is concerned with what determines the prices of individual goods. It also considers what determines the incomes of particular factors of production. It attempts to explain the working of the markets for individual commodities and the behaviour of individual consumers and producers.
 - ii) Macro economics looks at the economy as a whole. It is concerned with the overall performance of the economic system rather than individual parts.

It deals with total or aggregates eg., National Income, total employment, total savings and total investments. It is aggregative economics which studies the interrelations among various aggregates and examines their nature and behaviour, their determination and causes of fluctuations in them. It deals with the economic affairs in general. Instead of studying the prices of individual commodities, it studies the general price level.

7. Positive economics is concerned with the things as they are. It describes or analyses the existing situation rather than suggesting how to change it. The theories in positive economics are based on a set of assumptions. It is also called theoretical economics.
8. Managerial Economics is a developing subject. It is interdisciplinary subject. Some economists opine that it is applied micro economic theory. Defining managerial economics is like defining an elephant by eight blind men. However, the following definition appears to be a satisfactory one: Managerial Economics is the application of economic theory and methodology and the use of tools and techniques of decision sciences to find out optimal solutions to managerial decision problems and to realise the objectives of a business firm. Eventhough managerial economics helps in solving decision problems of a business firm, the concepts, tools and techniques of managerial economics can be used fruitfully to solve the decision problems of a non-business organisation as well.

1.19 MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. What are the basic economic problems of an economy? Discuss.
2. Define economics and explain its nature and scope.
3. What is the purpose of economic theory? How can it be useful to economic policy?
4. Explain the nature and scope of Business Economics. How is Business Economics related to Economics?
5. Explain the scope of economics by analysing the definitions of it. How is Business Economics related to Economics?
6. Explain the relationship between Micro Economics and Macro Economics. How is Business Economics different from traditional economics?
7. Explain the significance and the chief characteristics of Business Economics.
8. How is Business Economics related to traditional economics ? Discuss the subject matter of Business Economics.
9. Define Business Economics. What is its significance? What is the subject matter of Business Economics?
10. Explain the characteristics of wants and classify them.

II. Answer the following in about 15 lines each.

1. Explain the factors of production.
2. What is meant by utility? Explain the main forms of utility.
3. What is meant by positive economics and normative economics? Is business economics positive or normative in nature?
4. Distinguish between Micro and Macro Economics.
5. Define Business Economics.
6. Explain the relationship between Economics and History.
7. What is the subject matter of economics?
8. Explain the relationship between economics and business economics.
9. What do you mean by Business Economics?
10. Explain the scope of economics.
11. Explain in brief the basic concepts in economics.

1.20 RECOMMENDED BOOKS

1. James Pappas and Eugene Brigham : **Managerial Economics**
2. Dominic Salvatore : **Managerial Economics**
3. V.G.Mankar : **Business Economics**
4. P.L. Mehta : **Managerial Economics**
5. Varshney and Maheshwari : **Managerial Economics**
6. D.N. Dwivedi : **Managerial Economics**

1.21 GLOSSARY

Consumption	: The total expenditure on goods and services.
Goods	: Commodities or services for which there is a demand.
Macro Economics	: That part of economics which is primarily concerned with the study of relationship between the broad economic aggregates.
Micro Economics	: That part of economics which is concerned with the study of the individual decision units.
Normative Economics	: It is concerned with 'what ought to be' rather than with what 'actually is'. It is based on value judgements.
Price	: Value expressed in terms of money.
Production	: The Process of making goods and services.

- Positive Economics** : It is concerned with things as they are.
- Utility** : The satisfaction, pleasure or need-fulfilment derived from consuming some quantity of a good.
- Value** : Purchasing power of a commodity in exchange for other goods and services.
- Wealth** : Anything which has value.

BRAOU

UNIT – 2 : BUSINESS FIRM AND ITS OBJECTIVES

Contents

- 2.0 Aims and Objectives
- 2.1 Introduction
- 2.2 The Concept of 'Firm'
- 2.3 Objectives of a 'Firm'
- 2.4 Profit Maximization Theory
- 2.5 Sales (Revenue) Maximization Theory
- 2.6 Wealth or Value Maximization
- 2.7 Long-run Survival
- 2.8 Size Maximazation
- 2.9 Managerial Utility Maximization
- 2.10 Satisficing
- 2.11 Summing Up
- 2.12 Check Your Progress: Model Answers
- 2.13 Model Examination Questions
- 2.14 Recommended Books
- 2.15 Glossary

2.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain what a firm is, what its objectives are and various theories of the firm evolved by economists.

After studying this unit, you should be able to:

- Explain the meaning of the firm;
- List out the objectives of a firm; and
- Discuss the different theories about the objectives of the firm.

2.1 INTRODUCTION

In economics, firm refers to a unit of control. It controls productive operations by hiring factors of production. It sells services to other firms. It takes decision to produce any commodity. It also decides the nature and quality of the product. It plans to adopt the method of producing the commodity. In this context it becomes important to note that economic theory makes a fundamental assumption that maximizing profits is the basic objective of every firm. But in recent years, profit maximization has been increasingly

questioned by economists and several alternative theories of the firm have been evolved.

2.2 THE CONCEPT OF 'FIRM'

A firm is that which mobilises resources such as raw-materials, labour, etc., to produce goods and services. It sells goods and services to individuals and to other firms. The firm is an individual organising unit of control of business activity.

Considering the legal commitment, the firm may be an individual unit, which is owned and controlled by a single person (popularly known as sole proprietorship), or it may be a partnership firm (where two or more persons agree to share the profits of a firm carried on by all or any one of them acting for all, governed by Indian Partnership Act of 1932), or a Company (registered as per the Companies Act, 1956), or a statutory corporation (created by an Act of Parliament or State Legislature), or a Cooperative Society (formed and registered under the Cooperative Societies Act). Irrespective of the form of ownership a business firm is a purposive organisation whose aims are directed towards achieving identifiable ends, purposes or objectives. A firm without clear objectives is like a rudderless ship.

Check Your Progress – 1

Define a firm.

.....

.....

.....

.....

2.3 OBJECTIVES OF A FIRM

According to Peter Drucker, a world renowned management consultant and author of several books on management, the purpose of a business is to create a customer, and a business enterprise has only two basic functions – marketing and innovation. According to him, the aim of marketing is to know and understand the customer so well that the product or service fits him and sells itself. He defines innovation as the task of endowing human and material resources with new and greater wealth-producing capacity. He strongly feels that innovation is crucial to economic development. Drucker states that objectives must be derived from “what our business is, what it will be and what it should be”

Objectives, according to him are the fundamental strategy of a business and they must be capable of becoming the basis as well as the motivation for work and achievement.

While traditional economic theory states that the basic objective of a business firm is to maximize profits, modern theorists opine that there must be multiple objectives. There is no unanimity regarding the objectives of a business firm and economists have evolved several theories about the objectives of a firm.

Some of the important theories are:

- a) Profit maximization theory of the firm

- b) Sales (Revenue) Maximazation subject to some satisfactory level of profit.
- c) Wealth or Value Maximazation theory of the firm
- d) Long-Run Survival .
- e) Size Maximization
- f) Managerial Utility Maximization

2.4 PROFIT MAXIMIZATION THEORY OF THE FIRM

According to Joel Dean, a distinguished managerial economist, **a business firm is an organization designed to make profits and profits are the primary measure of its success.** Traditional economic theory as already mentioned, makes a fundamental assumption that the primary objective of a firm is to maximize profits. For a long time, this assumption was accepted without any criticism and the entire micro economic theory was evolved based on this assumption. But the theory gradually faced increasing criticism from modern economists. Perhaps, during the times of classical economists, when most of the firms were managed by single owners or sole proprietors, the assumption was relevant and valid to a great extent. The owner-manager of the firm was assumed to strive hard to maximize the firm's short-run profits.

The modern economy is dominated by giant firms. Most of the firms are Joint Stock Companies. The owners are the shareholders dispersed over several regions of the country/world and the decision-makers are the paid executives who professionally manage the firm.

There is separation of ownership from management in the Company form of organisation, where the paid executives may set standards or targets of reasonable profits, rather than attempting to maximize profits. No one denies that profit is an important objective of a business firm without which the firm cannot survive. But there is disagreement regarding the goal of "maximization of profits".

Critics point out that to maximize profits, the firm needs full information on the prices of factor inputs, future demand, competitive conditions, etc. Future is uncertain and information is inadequate and hence it is not possible to attain the goal of profit maximization in a dynamic, uncertain world.

2.5 SALES (REVENUE) MAXIMIZATION THEORY

Economists like William Baumol have evolved 'Sales (Revenue) Maximization' theory as an alternative to profit maximization theory. Baumol opines that a firm strives to achieve certain level of profit and within the profit constraint, aims at maximum sales. The 'certain level of profit' is generally the profit level that keeps shareholders happy. Sales are in terms of revenues (Rupees/ Dollars) and not in terms of physical units of goods and services. Baumol made an empirical study of several large firms and found that sales maximization was the primary objective of these large firms and not profit maximization. These large firms were joint stock companies, where there is separation of ownership and management and it is the managers (who are paid executives) and not owners (shareholders) who are the decision-makers.

30 The shareholders who are collectively supposed to be the owners are hardly involved in decision-making. The reasons why the managers were aiming at sales maximization

subject to profit constraint appear to be as follows:

- a) The salary and other perks of the managers are related to sales revenue
- b) Banks and other leading agencies take into consideration the sales revenue of the firm while financing.
- c) The trend in sales revenue is considered to be a good indicator of the performance of the firm
- d) Managers find it difficult to achieve profit maximization objective year after year. Profits may fluctuate with changing conditions – economic, political, social, technological and competitive. Environment may change from time to time and it is difficult to maximize profits in an uncertain world. Moreover, the managers may not be rewarded if they are successful in maximizing profits in a year but in an attempt to maximize profits, if they fail and if the firm suffers losses, they may be blamed and their jobs may be at stake.
- e) Growing sales strengthens the competitive spirit of the firm and larger sales and higher market share will enhance the image of the firm. Promotions of the managers are linked to growth in sales and increase in market share of the firm.

But Baumol's sales maximization theory subject to profit constraint may be relevant to some extent in the case of large firms in an oligopoly market but empirical validity of sales maximization objective is not conclusive.

2.6 WEALTH OR VALUE MAXIMIZATION THEORY

Firms exist in the society because of their usefulness. They produce goods and services needed by the society and distribute them. They pay taxes when they make profits. They provide employment to the people. Shareholders, managers, workers, customers, suppliers, and creditors are directly related to the firm. If several firms in the society do well, the society prospers and if many firms fail, the society is doomed.

The basic model of the firm is derived from what economists term 'the theory of the firm'. Traditionally, the objective of the firm was assumed to be profit maximization (as was already discussed) – the owner-manager of the firm was assumed to aim at maximization of profits in the short-run. With the advent of the company form of organisation, and with increasing criticism against 'profit maximization' concept, an alternative model of the firm was evolved and the primary objective now is assumed to be wealth or value maximization of the firm. It is assumed that the firm continues to operate for a long period of time and it is not going to be liquidated or wound up. It is also assumed that it is possible to estimate expected future profits of the firm throughout its life. The expected future profits are discounted to the present value by using appropriate discount rate. The appropriate discount rate depends upon the risk and uncertainty faced by the firm. The greater the risk and uncertainty, the higher will be the discount rate. A firm engaged in finance business faces greater risk and uncertainty and the discount rate hence, will be higher whereas a firm engaged in the distribution of domestic gas faces less risk and uncertainty and therefore the discount rate will be much lower.

The discount rate also depends upon the present rate of inflation and the expected future rate of inflation. If the price level is stable, and when the rate of inflation is negligible, the discount rate will be lower. On the other hand, if the expected rate of inflation is higher, and when the present rate of inflation is significant, then the discount

rate will be higher because the discount rate will be adjusted to the inflation rate.

The value of the firm is its present value which is the value of its expected future profits discounted back to the present at an appropriate discount rate (discounting is converse to compounding).

$$\left. \begin{array}{l} \text{VALUE OF THE FIRM OR} \\ \text{WEALTH OF THE FIRM} \end{array} \right\} = \begin{array}{l} \text{Present Value of expected future profits} \\ \text{of the firm} \end{array}$$

If expected future profits of a firm over a period of its life of say, 'n' years are $P_1 + P_2, P_3 + \dots + P_n$

$$\begin{aligned} PV &= \frac{P_1}{(1+r)^1} + \frac{P_2}{(1+r)^2} + \dots + \frac{P_n}{(1+r)^n} \\ &= \sum_{t=1}^n \frac{P_t}{(1+r)^t} \end{aligned}$$

(The above equation assumes that you are familiar with the concept of discounting and PV which is discussed in the next chapter).

Where,

PV = Present Value of the future profits of the firm

r = The appropriate rate of discount used to discount the future profits to the present value

n = the number of years

P_1, P_2 , and so on and so forth represent the expected profits in each of the years 't'. It is the sum of the PV of future of profits of each of the years from 1,2,3... to 'n' years.

Many critics have questioned wealth or value maximization theory of the firm. They point out that managers of the firm may be more interested in power, prestige, leisure, employees' welfare, greater control than in maximizing the wealth. They may strive to achieve satisfactory profits rather than maximizing the value.

Check Your Progress - 2

Explain wealth or value maximization theory.

.....

.....

.....

.....

2.7 LONG RUN SURVIVAL

Some economists such as Rothschild have suggested that firms aim to survive over a long period of time. The dividends of the shareholders, the safety of their capital, the present and future compensation in the form of salaries and perks and promotions of the managers and their job security depends upon the continued existence of the firm. But the objective of long-run survival is difficult to measure. No firm would like to face bankruptcy and every firm would like to survive and prosper. This cannot be considered as the primary or specific objective. Long-run survival at best may be considered as one of the several objectives of the firm and not the only objective of the firm.

2.8 SIZE MAXIMIZATION THEORY

Some economists such as Pensore suggested growth or size maximization in terms of sales, assets and/or the number of employees as an alternative objective of the firms. Managers have great interest in growth because they gain prestige, personal satisfaction and better position. Growth gives them a feeling of achievement and a sense of pride.

2.9 MANAGERIAL UTILITY MAXIMIZATION

Berle-Means, Galbraith and Williamson have suggested alternative theory of the firm. In large corporate firms, the ownership and managerial control are vested with different kinds of persons – ownership with shareholders and managerial control with management team, consisting of paid executives. Eventhough, theoretically shareholders have the ultimate power to direct and control the firm, the actual powers are vested with professional managers, who are paid executives. The professional managers have no personal interest to maximize profits. They are free to pursue their own goals once they have achieved a desirable level of profits that will provide satisfactory dividends to the shareholders.

The managers may try to expand the staff under their control; the more the number of staff that report to the manager, the more happy he or she feels. Increase in the number of subordinates will enhance the status of the manager. The managers also would like to enjoy perks in the form of expenditure for entertainment, luxurious office, luxurious car, etc. Expenditure of this nature, to a great extent will enhance the power, prestige and status of the manager and he will have the feel of having a large empire of which he is the ruler. Berle-Mean-Galbraith-Williamson Models of Managerial Utility theories are perhaps more relevant to the large firms.

- i) The opportunity cost concept
- ii) The incremental Principle
- iii) The discounting principle
- iv) The concept of time perspective

i) The Opportunity Cost Concept

The 'opportunity cost' is the value that must be foregone in using a resource for one specific purpose or in undertaking one specific activity. In other words, it is the value of the next best alternative sacrificed. It arises because of the fact that resources are scarce. A resource that is used for one purpose cannot be used for something else at the same time.

For example, A student completed B.Tech and he got a job offer of Rs. 2,00,000 p.a. He turned down the offer and joined a two year MBA course. The opportunity cost of doing MBA for him is the salary foregone for two years by not taking up the job.

Opportunity Costs are the costs which are not incurred and hence easy to overlook but the costs which are not incurred also play a significant role in decision making.

ii) The Incremental Principle

When a decision has to be made, regarding a change in the volume of business, some costs will change as a result of the decision, but some other costs will not change. **The only costs that are relevant to the decision are those that would change as a result of the decision and such costs are called incremental costs. Those costs that do not change as a result of the decision are called sunk costs and they are irrelevant for decision making.** For example, a decision to add another shift of workers in order to increase output would increase relevant variable costs such as wages, raw materials, etc., but it would not change the cost of land, building, machinery and other fixed assets. If the decision to add another shift of workers is not taken, then there will not be additional costs of wages, raw materials, etc. Incremental cost is the change in total cost (increase or decrease) that results from a decision. Incremental revenue is the change in total revenue that results from a decision. The incremental principle states that, profit being the main objective of a business firm, a decision is rational only if it leads to increase in profit which would arise in either of the following cases:

- (i) If it causes total revenue to increase more than the total cost
- (ii) If it causes total revenue to decline less than the total cost.

For example, XY Firm takes a decision to increase output by 10,000 units during the year. The added costs of the decision are:

Wages	Rs. 2 per unit	Rs. 20,000
Raw Material	Rs. 3 per unit	Rs. 30,000
Other Expenses	Rs. 0.50 per unit	Rs. 5,000
		<u>Rs. 65,000</u>

Whatever may be the form of ownership of a firm, a business firm is a purposive organisation whose aims are directed towards identifiable ends, purposes or objectives. Objectives are the fundamental strategy of a business and they must be capable of becoming the basis as well as the motivation for work and achievement.

While traditional economic theory states that the basic objective of a firm is to maximize profits, modern theorists opine that there must be multiple objectives. Joel Dean, one of the contemporary business economists states "economic theory makes a fundamental assumption that maximizing profits is the basic objective of every firm. But in recent years, profit maximization has been extensively qualified by theorists to refer to the long run; to refer to management's rather than to owners' income; to include non-financial income such as increased leisure for high-strung executives and more congenial relations between executive levels within the firm; and to make allowance for special considerations such as restraining competition, maintaining management control, warding off wage demands, etc. The concept has become so general and hazy that it seems to encompass most of men's aims in life. This trend reflects a growing realization by theorists that many firms, and particularly the big ones, do not operate on the principle of profit maximizing in terms of marginal costs and revenues..."

Thus the above statement sums up contemporary thinking regarding the objectives of a business firm.

Thus, several alternative theories of the firm are evolved such as:

- a) Sales (Revenue) Maximization Theory which states that a firm after achieving a certain level of profits to keep the shareholders happy, aims to maximize sales revenue. The wage enhancements and promotions, the bank financing to the firm and the success of the firm depend more on sales. This theory emphasizes on the sales and states that the firm aims to maximize sales.
- b) Wealth or Value Maximization Theory states that a firm aims to maximize its value or wealth. The value of the firm is the sum of the future profits discounted back to the present at an appropriate discount rate. In other words, the value of the firm is its present value.
- c) Simons' satisficing theory states that time and information constraints compel the firm to achieve a satisfactory level of profit rather than achieving maximum profits.
- d) Managerial Utility theories state that the divorce between ownership and management leads to maximizing the utility of the paid executives after attaining a certain level of profit. The paid executives who are the decision-makers try to expand their staff, go for luxurious office and get more perks rather than maximizing profit.

There have been several alternative theories evolved by economists. In spite of several criticisms against the theory of profit maximization, profit maximization theory and wealth or value maximization theory are the base on which the theory, concepts and issues of business economics are evolved.

2.12 CHECK YOUR PROGRESS: MODEL ANSWERS

1. A firm is that which mobilises resources such as raw-materials, labour, etc., to produce goods and services. It sells goods and services to individuals and to

other firms. It is an individual organising unit of control of business activity. It is a purposive organisation and its aims are directed towards identifiable ends, purposes or objectives.

2. Traditionally, the objective of the firm was assumed to be profit maximization. With the advent of the company form of organisations, and with the increasing criticism against profit maximization concept, an alternative model of the firm was evolved and the primary objective now is assumed to be 'Wealth or Value Maximization' of the firm. It is assumed that the firm continues to operate for a long period of time and it is not going to be liquidated or wound up. It is also assumed that it is possible to estimate expected future profits of the firm throughout its life. The expected future profits are discounted to the present value by using appropriate discount rate. The appropriate discount rate depends upon the risk and uncertainty faced by the firm. The greater the risk and uncertainty, the higher will be the discount rate. The value or the wealth of the firm is its present value which is the value of its expected future profits discounted back to the present at an appropriate discount rate.

If expected future profits of a firm over a period of its life of say, 'n' years are $P_1 + P_2 + P_3 + \dots + P_n$

$$PV = \frac{P_1}{(1+r)^1} + \frac{P_2}{(1+r)^2} + \dots + \frac{P_n}{(1+r)^n}$$

$$= \sum_{t=1}^n \frac{P_t}{(1+r)^t}$$

Where, PV = Present Value of the future profits of the firm

r = The appropriate rate of discount used to discount the future profits to the present value

n = the number of years

P_1, P_2 , and so on and so forth represent the expected profits in each of the years.

3. Herbert Simon, a nobel prize winner has introduced theory of the firm known as the 'satisficing' theory. According to him, future is uncertain and information and time are not adequate to achieve the goal of profit maximization. Due to time and information constraints, firms aim to achieve some satisfactory level of profit. Because of these constraints, and consequent problems, managers strive to achieve a satisfactory level of profit, a satisfactory level of growth, etc.
4. Traditional economic theory makes a fundamental assumption that the primary objective of a firm is to maximize profits. For a long time, this assumption was accepted without any criticism and the entire micro economic theory was evolved based on this assumption. But the theory gradually faced increasing criticism from modern economists. Eventhough 'profit maximization' theory is severaly criticised, an alternative theory has not yet found general acceptance. Business Economists have made 'Wealth or Value Maximization' theory the base for developing theories, concepts and issues of Business Economics. 'Wealth Maximization' theory is conceptually closer to 'Profit Maximization' theory. Sales Maximization theory of Baumol, Managerial Utility theories of Berle-Means-Galbraith-Williamson are

more relevant it appears to larger firms. 'Satisficing' theory of Simon is popular but it is difficult to be made a base for development of concepts and theories of Business Economics.

2.13 MODEL EXAMINATION QUESTIONS

I Answer the following in about 30 lines each.

1. Define a Firm and explain briefly the objectives of a firm.
2. Explain 'Profit Maximization' and 'Wealth Maximization' theories of a Firm. Which theory is being favoured by modern economists?
3. Explain 'Satisficing', 'Managerial Utility' and 'Sales Maximization' theories. Do you think that they are better alternatives to 'Profit Maximization' theory?

II Answer the following in about 15 lines each.

1. Explain the following
(i) Profit maximisation; and (ii) Wealth maximisation.
2. Explain the satisficing theory.
3. What do you mean by the term "firm"
4. Explain long-run survival as an objective of the firm.
5. List out the different objectives of the firm.

2.14 RECOMMENDED BOOKS

- | | | |
|----------------------------------|---|-----------------------------|
| 1. P.L.Mehta | : | Managerial Economics |
| 2. R.L.Varshney & K.L.Maheshwari | : | Managerial Economics |
| 3. G.S.Gupta | : | Managerial Economics |
| 4. D.N. Dwivedi | : | Managerial Economics |
| 5. V.G.Mankar | : | Business Economics |

2.15 GLOSSARY

Firm	:	A firm is that which mobilises resources such as raw-materials, labour etc., to produce goods and services. It is individual organising unit of control of business activity.
Marginal Cost	:	Additional cost of producing one more unit.
Marginal Revenue	:	Additional revenue earned by selling one more unit.
Company	:	A company registered under the Companies Act, 1956.

UNIT – 3 : DECISION MAKING IN BUSINESS

Contents

- 3.0 Aims and Objectives
- 3.1 Introduction
- 3.2 Meaning of 'Decision' and 'Decision Making'
- 3.3 The Process of Decision Making
- 3.4 Importance of Decision Making
- 3.5 Concepts which help in Decision Making
- 3.6 Summing Up
- 3.7 Check Your Progress : Model Answers
- 3.8 Model Examination Questions
- 3.9 Recommended Books
- 3.10 Glossary

3.0 AIMS AND OBJECTIVES

In this unit, you will be introduced to Decision Making in Business. After going through this unit, you should be in a position to:

- understand the meaning of 'Decision Making';
- explain the decision making process;
- discuss opportunity cost concept and its usefulness in decision making;
- define incremental principle; and
- appreciate the concept of time perspective.

3.1 INTRODUCTION

Business Economics is concerned with decision making at the level of the firm. Decision making is a complex process. Decisions taken by a firm have far reaching effects and decision making is easier said than done.

Since decisions relate to and depend on the objectives of the firm and have far reaching effects on the firm and its objectives, it is important to carefully determine the objectives of the firm. The objectives of the firm have to be defined clearly and unambiguously.

In the previous unit, we discussed the various objectives of the firm and explained the theories of the firm evolved by economists. In this unit we discuss the decision making process and the concepts which help in taking the right decision.

3.2 MEANING OF 'DECISION' AND 'DECISION MAKING'

Everyone is faced with decision problems almost everyday. It may be a simple problem on how to spend the evening after office hours or it may be a major decision of resigning the present job and taking up another job. As long as a choice is made out of two or more alternatives, it is a decision. Decision making is a 'choice-making' activity.

For a firm, the decision problem may be either to appoint a clerk-cum-typist or a computer programmer; whether to make a component all by itself or buy the component in the market; whether to drop a product and add a new one. Managers have to make several decisions everyday, some significant decisions and some routine decisions. The success of a decision depends upon the quality of judgement and careful thought.

Decision Making is defined as "the selection from among alternative courses of action".—Harold Koontz. Managers consider decision making as their central job because they must constantly choose what is to be done, who is to do it, and when, where, and occasionally even how it will be done.

For the purpose of taking decisions they must have clear understanding of the goals or objectives of the firm, which they would like to realise. They should also know the alternative courses of action by which a goal can be reached under the given circumstances. They must be aware of the limitations or constraints. They must have the necessary information and ability to analyse and evaluate alternatives in the light of the goals sought. They must have a desire to arrive at a solution by selecting the best alternative that satisfies goal achievement of the firm.

3.3 THE DECISION MAKING PROCESS

Once the objectives or goals of a firm are clearly known, the decision making process will take place. The following are the steps in the decision making process:

i) Identifying the Problem

The first step in the decision making process is identifying the problem. If the problem is not identified correctly, any solution to a wrong problem may create more problems. The problem once identified must be defined and formulated. Once the problem is diagnosed and defined, the next stage is to determine how urgent and important the solution is. How urgently the decision problem must be solved; how costly is the problem likely to be if not solved; how expensive is the solution; answers are to be found to the above queries.

ii) Collection of Necessary Information

In order to determine the scope and the root cause of the problem, necessary information must be collected. For example, if the firm is losing its market share, then external variables about the economy, availability of disposable income, competitors' promotional techniques such as advertising, trends in people's tastes and attitudes etc., can be studied through published reports or through surveys conducted by the firm. The effects of these variables can be studied on the internal variables of cost, quality and promotion of the given product. The relevant and timely information will help the manager in taking the right decision and enable him to contribute optimally to the realisation of the goals of the firm. Excessive information is costly and inadequate information will not help manager in taking the right decision. The information must be relevant, adequate

Check Your Progress – 1

What do you mean by 'decision making'? List out the steps involved in the decision making process.

.....

and timely. The collected information is subjected to a systematic indepth study. The quality of the decision depends upon the quality and preciseness of information. The information about the decision problem must be as accurate as possible. This helps in diagnosing the problem properly and in finding the very cause of the problem.

iii) Identifying Resources and Constraints

Before efforts are made to solve the problem, a critical look must be had at the resources available to be used in the solution as well as any constraints to the firm. There may be difficulty in finding a solution to the problem due to these constraints. The problems with no resource constraints are the easiest to solve. The manager must take into consideration the resources and constraints or limitations that are relevant to the decision problem. For example, the problem may be how to increase sales revenue in rupee terms. The sales revenue can be increased by increasing the price. But highly competitive market may be the constraint. If the price is increased, customers may be lost to the competitors and sales quantities may decline and the sales revenue may fall drastically instead of increasing. When there are a large number of firms supplying the product, it will be difficult for the firm to increase the price. The solution may be found in cutting the costs and in expanding the sales in physical units without increasing the price.

The resources available to the firm include time, money, personnel, expertise, materials and information. In other words, the resources may be men (managerial skills, manpower), money, machinery (technology), and materials. The optimal allocation of these resources is essential for effective decision making.

iv) Developing Criteria for Choosing the Best Course of Action

Criteria are generally developed so that the alternative courses of action can be compared against a set standard. The criteria should be established as early in the decision making process as possible so that alternatives that do not measure up can be discarded or omitted. This enables to design different courses of action and the best one can be selected. While selecting the best course of action, the objectives of the firm should be kept in mind. The solution should not go against the very objectives or goals of the firm.

v) Generation and Development of Alternatives

- i) The opportunity cost concept
- ii) The incremental Principle
- iii) The discounting principle
- iv) The concept of time perspective

i) The Opportunity Cost Concept

The 'opportunity cost' is the value that must be foregone in using a resource for one specific purpose or in undertaking one specific activity. In other words, it is the value of the next best alternative sacrificed. It arises because of the fact that resources are scarce. A resource that is used for one purpose cannot be used for something else at the same time.

For example, A student completed B.Tech and he got a job offer of Rs. 2,00,000 p.a. He turned down the offer and joined a two year MBA course. The opportunity cost of doing MBA for him is the salary foregone for two years by not taking up the job.

Opportunity Costs are the costs which are not incurred and hence easy to overlook but the costs which are not incurred also play a significant role in decision making.

ii) The Incremental Principle

When a decision has to be made regarding a change in the cost

The added revenues by way of sale are estimated to be Rs. 90,000. Since the added revenues are more than the added costs by Rs. 25,000, it is desirable to implement the decision.

Incremental principle is widely used in various decision making areas such as pricing decisions, make or buy decisions and so on. Knowledge of incremental principle will help the firm in finding the most efficient solution to managerial decision problems.

iii) The Discounting Principle

The discounting principle stresses the significance of the time value of money in decision making.

If we are offered Rs. 100 payable either now or after one year, we prefer to receive Rs. 100 now, perhaps for the following reasons:

- i) Rs. 100 if invested in a Bank or other organisation, it grows in value. Money has earning power and it multiplies over a period of time.
- ii) Future is uncertain and for inexplicable reasons, the offer perhaps may be withdrawn after one year and hence accept the offer of Rs. 100 now.
- iii) There may be changes in the general price level and if the general price level rises during the year, rupee value will fall and Rs. 100 receivable after a year may buy less quantity of goods than what it can buy today. Thus, a rupee today is worth more than a rupee tomorrow. A bird in hand is worth two in the bush.

Discounting principle is the opposite of (or converse to) compounding principle. The discounting principle is useful in measuring the value of the firm and in investment decisions. When making investment on capital projects, utmost care is to be taken. One wrong decision in this regard tends to disastrous consequences. Several important techniques such as Net Present Value (NPV) and Internal Rate of Return (IRR) are used in Investment or Capital Budgeting Decisions. And these techniques are based on the discounting principle.

As students of secondary school, you might have studied 'compound interest' in arithmetic. The formula for finding out the amount which is the sum of the 'principle' and 'interest' which is familiar to you is given below:

$$A = P(1 + r)^n$$

where P = Principal; r = rate of interest

$n = \frac{\text{number of years}}{100}$; A = Amount which is equal to $= P + I$

(I = interest amount)

Taking ' r ' in decimal terms, we may rewrite the formula as follows:

$$A = P(1 + r)^n$$

By using the term FV (Future Value) in the place of A ,

Business Economics is concerned with decision making at the level of the firm. The process of decision making comprises the following phases:

- a) Determine the objectives of the firm;
- b) Specify the decision problem;

PV (Present Value) in the place of P, we may rewrite the formula in a modified form as follows:

$$FV = PV(1 + r)^n$$

$$\text{Therefore, } PV = \frac{FV}{(1 + r)^n} \quad \text{OR} \quad PV = FV \left[\frac{1}{(1 + r)^n} \right]$$

The above formula is used to find out the present value of future cash flows/ earnings.

Here, in PV formula, 'r' is the appropriate rate of discount and the value of 'r' depends upon the risk factor involved. The higher the risk, the greater will be the value of 'r'. The discounting principle helps the business firm in taking appropriate investment decisions.

iv) The Concept of Time Perspective

This concept states that while taking a decision, the firm shall take into consideration the short-run benefits and the long-run consequences of the decision. A decision may be profitable in the short-run, but may have disastrous consequences in the long-run. For example, charging a high price when the demand for the product is more, may bring more profits in the short run, but the image and goodwill of the firm may be damaged over a period of time and the stability of the firm may be at stake in the long run. On the other hand, a decision to have low profit margins may affect the profits in the short run but such a decision may build goodwill and result in the long run stability of the firm.

A decision to invest Rs. 50,00,000 on Research and Development instead of expanding the current output may result in sacrifice of profits presently, but a strong Research and Development will increase the competitive strength of the firm in the long run.

Check Your Progress – 2

Give the meaning of 'Opportunity Cost' with an illustration.

the change in total costs that result from a decision. Incremental revenues are change in the total revenue as a result of a decision. Incremental principle is very useful in decision making especially in decisions such as 'make or buy'.

c) Discounting Principle

The discounting principle stresses the significance of the time value of money in decision making. This principle is used in investment decisions. When investment is to be made on capital projects, involving huge amounts, the discounting principle is used while taking the decision. Investment decisions are made by using NPV and IRR methods. These methods are popularly known as 'discounted cash flow' methods and the methods are based on discounting principle.

d) The Concept of Time Perspective

The concept states that while taking a decision, the firm shall take into consideration, the short-run benefits and the long-run consequences of the decision. For example, 25 per cent price discount to a big customer for bulk sales may increase the sales revenue in the short run, but the existing customers who are large in number may feel hurt and the sales in the long-run may decline.

3.7 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Decision making is defined as "the selection from among alternatives of a course

2. 'Opportunity cost' is the value of the next best alternative sacrificed. Resources generally have more than one use and hence have opportunity costs. The basis of choice or decision where opportunity costs are involved depends upon a comparison between what the firm is doing and what it could be doing.

The concept of opportunity cost and its application in decision making can be understood from the following illustration:

The cost of attending a private college for a two year MBA is Rs. 2,00,000 for tuition, Rs. 50,000 for the hostel and food, and Rs. 25,000 for books, etc. The student could also have earned Rs. 2,00,000 during these two years by getting a job instead of going to college.

Calculate the explicit or actual costs, the implicit or opportunity costs and the total economic costs of attending the college.

Explicit or actual costs

Tuition + hostel and food + books, etc

$$= \text{Rs. } 2,00,000 + 50,000 + 25,000 = 2,75,000$$

Implicit or Opportunity costs

Salary foregone by not taking up a job: Rs. 2,00,000

The total economic cost: Explicit cost + Implicit cost = Rs. 4,75,000

Thus, the cost of doing MBA is not just Rs. 2,75,000 (the actual costs) but it is Rs. 4,75,000. It is easier to ignore the opportunity costs of Rs. 2,00,000 which were not incurred but the costs which are not incurred are more important in decision making.

3. Discounting principle is converse to that of compounding principle. According to the discounting principle, a rupee receivable today is much more valuable than a rupee receivable after one year because it earns interest when invested.

The Present Value of Rs. 100 due in one year @ 10% discount is Rs. 90.53

The PV of Rs. 100 due in one year @ 20% discount is Rs. 81.95.

4. a) The PV of an annuity @ 10% discount for 4 years is 3.1699

The PV of an annuity at 10% discount rate for 6 years is 4.3553

The PV of Project I = Rs. 200000 X 3.1699 = Rs. 633980

The PV of Project II = 4.3553 X Rs. 150000 = Rs. 653295

Since the PV of project II is higher, it is advisable to choose Project II.

b) If the discount rate is 20%, then it is advisable to choose Project I.

PV of annuity at 20% for 4 years 2.5887

PV of annuity at 20% for 6 years 3.3255

PV of Project I = 200000 X 2.5887 = Rs 517740

PV of Project II = 150000 X 3.3255 = 498825.

4.1 INTRODUCTION

The purpose of the theory of demand is to determine the various factors which affect demand. It does not discuss the law of demand only, since it is misleading in the sense that it concentrates on price as the sole determinant of demand. However, demand is a multivariate relationship as it is determined by many factors simultaneously. Some of the important determinants of the market demand for a particular product are the price of the product itself, consumers, income, prices of other commodities in the market, consumers' tastes, income distribution, total population, consumers' wealth, credit availability, Government policy, past levels of demand and past levels of income. But the traditional theory of demand has discussed only four of the above determinants – the price of the commodity, the price of other commodities, incomes and tastes of the consumers. This unit discusses various aspects relating the demand like, meaning and kinds of demand, law of demand and its exceptions.

4.2 MEANING OF DEMAND

In our daily life, the word, 'demand', is used in a very loose sense to mean the desire of a person to purchase a commodity or service. But in the subject of economics it has a specific meaning. Demand implies more than a mere desire to purchase a commodity. It means that the consumer is both willing and able to purchase the commodity which he desires. His desire should be backed up by his purchasing power. A poor person's desire to travel by air from Hyderabad to Delhi has no significance, since he does not possess the ability to pay for it. On the other hand, another person's desire to travel by air backed by purchasing power constitutes 'demand'. Demand, thus, means the desire of the consumer for a commodity backed by purchasing power. If a consumer is willing to pay but is unable to pay, his desire will not become demand. Similarly, if the consumer has the ability to pay but is not willing to pay, his desire will not be called 'demand'.

Check Your Progress – 1

What do you mean by demand ?

.....

.....

.....

.....

4.3 KINDS OF DEMAND

There are three kinds of demand. They are:

- (a) Price demand;
- (b) Income demand; and
- (c) Cross demand

BLOCK-II : DEMAND ANALYSIS AND FORECASTING

Unit-4 : Theory of Demand

Unit-5 : Elasticity of Demand

Unit-6 : Demand Forecasting

BRAOU

UNIT – 4 : THEORY OF DEMAND

Contents

- 4.0 Aims and Objectives
- 4.1 Introduction
- 4.2 Meaning of Demand
- 4.3 Kinds of Demand
 - 4.3.1 Price Demand
 - 4.3.2 Income Demand
 - 4.3.3 Cross Demand
- 4.4 Demand Schedule and Demand Curve
- 4.5 Factors Determining Demand
- 4.6 Law of Demand
- 4.7 Exceptions to the Law of Demand
 - 4.7.1 Giffens' Paradox
 - 4.7.2 Prestige Goods
 - 4.7.3 Speculation
 - 4.7.4 Illusion
- 4.8 Summing Up
- 4.9 Check Your Progress: Model Answers
- 4.10 Model Examination Questions
- 4.11 Recommended Books
- 4.12 Glossary

4.0 AIMS AND OBJECTIVES

The aim of this unit is to explain what is demand, what are the determinants of demand and what is law of demand.

After going through this Unit, you should be able to:

- explain the meaning of demand;
- identify the kinds of demand;
- draw the demand curve;
- list out the factors determining the demand;
- define the law of demand; and
- state the limitations of the law of demand.

4.1 INTRODUCTION

The purpose of the theory of demand is to determine the various factors which affect demand. It does not discuss the law of demand only, since it is misleading in the sense that it concentrates on price as the sole determinant of demand. However, demand is a multivariate relationship as it is determined by many factors simultaneously. Some of the important determinants of the market demand for a particular product are the price of the product itself, consumers, income, prices of other commodities in the market, consumers' tastes, income distribution, total population, consumers' wealth, credit availability, Government policy, past levels of demand and past levels of income. But the traditional theory of demand has discussed only four of the above determinants – the price of the commodity, the price of other commodities, incomes and tastes of the consumers. This unit discusses various aspects relating the demand like, meaning and kinds of demand, law of demand and its exceptions.

4.2 MEANING OF DEMAND

In our daily life, the word, 'demand', is used in a very loose sense to mean the desire of a person to purchase a commodity or service. But in the subject of economics it has a specific meaning. Demand implies more than a mere desire to purchase a commodity. It means that the consumer is both willing and able to purchase the commodity which he desires. His desire should be backed up by his purchasing power. A poor person's desire to travel by air from Hyderabad to Delhi has no significance, since he does not possess the ability to pay for it. On the other hand, another person's desire to travel by air backed by purchasing power constitutes 'demand'. Demand, thus, means the desire of the consumer for a commodity backed by purchasing power. If a consumer is willing to pay but is unable to pay, his desire will not become demand. Similarly, if the consumer has the ability to pay but is not willing to pay, his desire will not be called 'demand'.

Check Your Progress – 1

What do you mean by demand ?

.....

.....

.....

.....

4.3 KINDS OF DEMAND

There are three kinds of demand. They are:

- (a) Price demand;
- (b) Income demand; and
- (c) Cross demand

4.3.1 PRICE DEMAND

It refers to the various quantities of a commodity or service that a consumer would purchase at a given time in a market at various hypothetical prices. It is assumed here that other things such as consumers' income, tastes and prices of interrelated goods remain unchanged. The quantity demanded of a particular commodity depends on the price of that commodity. Mathematically, this can be expressed in the following form:

$$D_x = f(P_x)$$

Where, D_x stands for demand for commodity 'X'

'f' denotes function, and ' P_x ' for price.

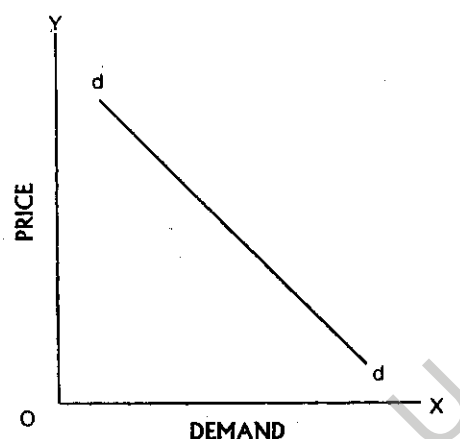


Fig. 4.1 Demand Curve

The functional relationship between price and quantity demanded is well accepted. Consumer behaviour is so consistent that economists feel justified in making the strongest possible generalisation concerning the relationship between price and demand. The relationship between price and demand is called inverse relationship. This relationship is generalised by the downward sloping demand curve.

The functional relationship between quantity demanded and price is illustrated with the help of a demand curve. In the diagram 4.1, price is taken on the vertical axis and the quantity demanded on the horizontal axis. The curve 'DD' is labelled as demand curve.

In this diagram, it is easy to visualise the inverse relationship between price and quantity from the demand curve which is sloping downwards from left to the right.

4.3.2 INCOME DEMAND

It refers to the various quantities of goods and services which would be purchased by the consumer at various levels of income. There is a critical functional relationship between income changes and change in consumption quantity. This functional relationship is defined mathematically as $D_x = f(y)$. It means the quantity of good 'X' purchased is a function of consumer's income. The functional relationship between income and quantity demanded may be inverse or direct. There is not a great consistency of response by consumers with respect of quantity variation for different goods as incomes change.

Consequently, it is difficult to make strong generalisations with respect to this functional relationship. In the case of superior or normal goods, the demand will increase with the increase in the incomes. The diagram 4.2 illustrates the relationship between income and the demand for a superior or normal good.

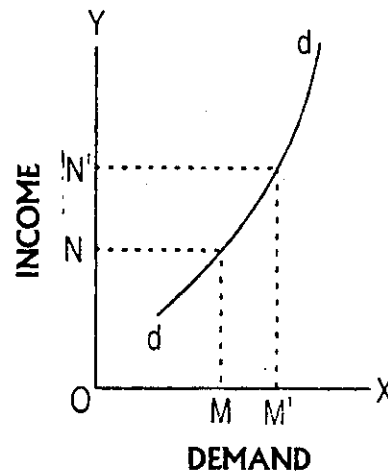


Fig. 4.2 : Demand for Normal Goods

In this diagram, 'OX' axis represents demand for superior or normal goods, while 'OY' axis represents income. When the consumer's income is ON, his demand is OM. But when his income increases from ON to ON_1 , the demand increases from OM to OM_1 .

As against this, the demand for the inferior commodity decreases with the increase in income. This relationship is called inverse relationship.

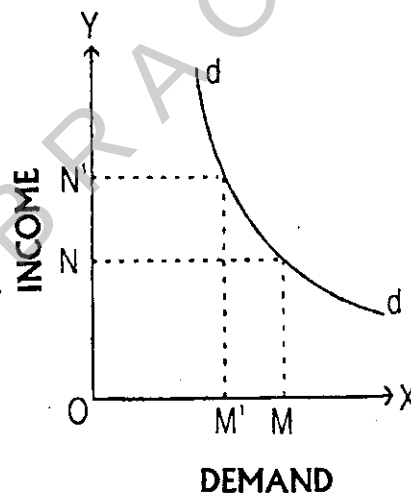


Fig 4.3 : Demand for Inferior Goods

In the diagram 4.3, at 'ON' income, the demand for the commodity is 'OM'. But when the consumer's income increases from ON to ON_1 , the demand of the commodity decreases from OM to OM_1 .

Thus, in the case of normal goods, the income and demand are positively related while in the case of 'Inferior' or 'Giffen Goods', the relationship is negative.

4.3.3 CROSS DEMAND

It means the various quantities of commodities or services which will be purchased with reference to changes in the prices not of this commodity but that of other interrelated commodities. These goods are either substitutes or complementary. The correlation between the demand for one commodity and the price of another may be positive or negative according to the manner in which these two commodities are related to each other.

If the two commodities are *substitutes* then obviously they satisfy the same want. The more the consumer buys of one, the less he requires of the other. For example, tea and coffee are good substitutes. If the price of tea increases, the consumers may buy less of it as they can buy more of coffee. Thus, a rise in the price of tea increases the demand for coffee. A fall in the price of tea on the other hand, may reduce the demand for coffee because the consumers will now increase their intake of tea. This relationship can be illustrated with the help of figure 4.4 A. When the price of tea increased from ON to ON_1 , the demand for coffee increased from OM to OM_1 .

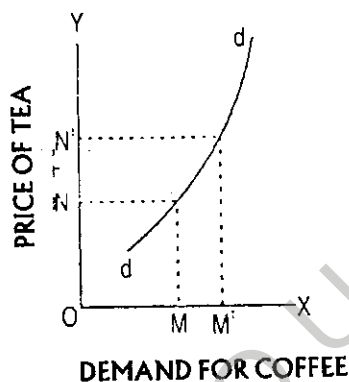


Fig. 4.4 A : Cross Demand - Substitutes

If the two commodities are *complementaries*, then the consumer requires both the commodities to satisfy his want. Bread and butter can be taken as complementary goods. If price of butter increases the consumer may buy less of bread as the price of bread also increases. Thus a rise in the price of butter decreases the demand for bread. The diagram 4.4 B explains this relationship. When the price of butter falls from ON_1 to ON , the demand for bread increases from OM_1 to OM .

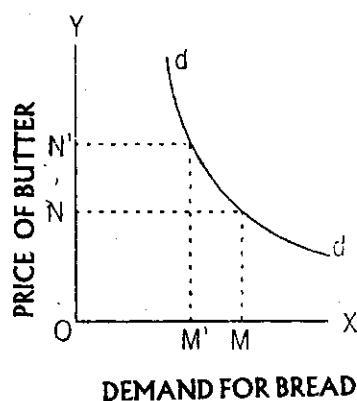


Fig. 4.4 B : Cross Demand - Complementaries

Check Your Progress – 2

Explain the relationship between demand for a commodity and (i) its price; (ii) prices of related goods; and (iii) income.

.....

.....

.....

.....

4.4 DEMAND SCHEDULE AND DEMAND CURVE

DEMAND SCHEDULE

A demand schedule can be constructed to any commodity if the list of prices and the quantities purchased at those prices are known. An individual demand schedule is a list of the various quantities of a commodity which an individual consumer purchases at various levels of prices in the market. A demand schedule, thus, states the relationship between the two variables of price and quantity demanded.

The following is an imaginary demand schedule for oranges:

Table 4.1 : Demand Schedule

Price (Per dozen) Rs.	Quantity demanded (In dozens)
1	15
2	12
3	10
4	7
5	5

On this basis of this schedule, we can draw the demand curve for oranges.

4.4.2 Demand Curve

In the diagram 4.5 the prices of oranges are given on 'OY' axis and the quantities demanded of oranges are given on the 'OX' axis.

When the price per dozen is Rs.1 only, 15 dozens are demanded. We plot this point on the diagram. We plot the other points in the same manner and by joining these points we get the curve. The demand curve 'DD' shows the direct relationship between the price of oranges and the quantity demanded of them.

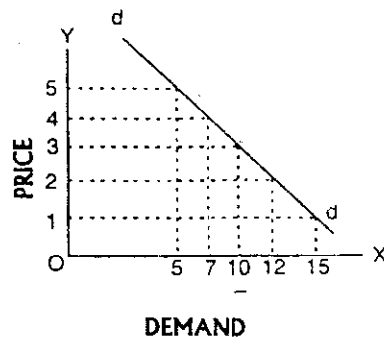


Fig 4.5 : Demand Curve

The demand curve has a negative slope from left to right. It represents an inverse relationship between price and demand. It indicates that more and more quantities of goods are demanded at lower prices.

Why does the demand curve slope downwards?

The following are the reasons for the negative slope of the demand curve or for the operation of the law of demand.

- (i) **The Law of Diminishing Marginal Utility :** According to this law (explained in detail in Unit-7) as a consumer consumes more of a particular commodity, the utility that he gets from additional units will diminish. The price of a commodity that a consumer is ready to pay will not be more than the utility of it. As such, a consumer will buy more units of a commodity when its price falls.
- (ii) **Substitution Effect:** When the price of a commodity goes down, it becomes cheap and is substituted for other goods. This part of a rise in the demand for a commodity due to a fall in its price is known as substitution effect.
- (iii) **Income Effect:** The real income of a consumer rises due to fall in the price of a commodity. In other words, if the consumer buys same quantity of goods, a part of his money income is saved. In the case of normal goods, he spends it on the same commodity and thus its demand is increased. This part of the increase in demand is known as the income effect.

Check Your Progress – 3

What do you mean by the law of demand ? Why does this law operate?

.....

.....

.....

.....

4.5 FACTORS DETERMINING DEMAND

In addition to the determinants of demand which we discussed above i.e., price of the commodity, income of the consumer and the prices of substitutes, there are some other factors which can bring about a change in demand. They are:

- i) **Change in wealth distribution:** If wealth is more evenly distributed, the demand for necessities and comforts by the poor people will increase as they were denied of them so far, while the demand for luxuries will decrease.
- ii) **Change in population:** A change in the size and total composition of population will bring about a change in demand. If the children are more in the total population, the demand for toys increases. On the other hand, if old people are more, the demand for walking sticks, false teeth and medicines will increase.
- iii) **Change in the quantity of money in circulation:** If the quantity of money under circulation in an economy increases, people will have more purchasing power. Consequently, demand for commodities will also increase.
- iv) **Technical progress:** Due to technical progress, new discoveries enter the market. Consequently, old goods are discarded and the demand for new goods increases.
- v) **Advertisement:** Advertisements in News Papers, Radio and Television will bring about changes in the demand for various commodities in the market.
- vi) **Change in fashions:** When fashions change, the goods that are out of fashion will be less in demand even though they may become cheap.
- vii) **Change in Weather:** Cotton clothes will have more demand in summer and woollen clothes will have more demand in winter. The changes in the prices of above goods in those seasons will have consequent change in the demand for them.
- viii) **Expectations about future prices :** When the consumer expects that there will be a rise in the prices in future, he may buy more at the present price and vice versa.

4.6 LAW OF DEMAND

Let us know the meaning of law of demand. The law of demand tells us the functional relationship between the price of a commodity and its quantity demanded in the market. It means that it shows us an inverse relationship between the above two variables. In the words of Alfred Marshall the law of demand can be stated, as "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". But the above law operates only under the assumption of "other things remaining constant". The above phrase implies that when we state the law of demand, we assume, (i) that the incomes of consumers do not change; (ii) the tastes and fashions of consumers remain unchanged; and (iii) the prices of their related commodities remain the same. The law of demand will operate only if the above things remain unchanged. A change in any one of them will make the law inoperative in the market.

4.7 EXCEPTIONS TO THE LAW OF DEMAND

The law of demand is only a general statement. There are a few exceptions to this general statement. They are:

4.7.1 GIFFEN'S PARADOX

According to the law of demand when the price of a commodity increases, its demand must decrease. But some times the demand curve instead of sloping downwards may

rise upwards. In other words, some times people may buy more when the prices are high. Though such occasions are rare, we can imagine about some of them. This type of situation was first discovered by Sir Robert Giffen (1837-1910). Goods of this type are known as 'Giffen Goods', after the name of the man who discovered it. The Giffen goods are those that violate the law of downward sloping demand.

This can be explained with the help of a small example. Let us take the case of a poor man who spends a major part of his income on an inferior commodity like 'bajra'. The remaining small amount he will be spending on other items. Now let us assume that the price of bajra rises, but the prices of other commodities remain the same. Let us assume that the poor man's income also remains unchanged. He would now be worse off than before. His real income will fall. Therefore, the monthly sum of money which he used to allot to bajra buys less than before due to price increase. If he buys the other commodities in the same quantities and spends the remaining amount only on bajra as before, he will be forced to starve. Hence, the consumer would readjust his expenditure cutting down on other items in order to not only maintain himself but also to increase the quantity he bought per month. As this strange phenomenon was first observed by Sir Robert Giffen, it has been named as 'Giffen's Paradox'. Giffen discovered in Britain that faced with an increase in the price of bread, the families in working class of Britain were compelled to curtail their consumption of meat in order to purchase more bread.

4.7.2 PRESTIGE GOODS

Sometimes, people purchase certain goods as their possession confers a higher social status on them. For example, diamonds and precious stones are purchased by the richer sections only to maintain high prestige in the society without caring for the high price of the goods.

4.7.3 SPECULATION

Sometimes, the price of a commodity might be increasing and it is expected to increase still further. The consumers will buy more of the commodity at the higher price than they did at the lower price. Thus an increase in price may not be accompanied by a decrease in its demand which is contrary to the law of demand.

4.7.4 ILLUSION

Sometimes, consumers develop a false idea that a high price good will have a better quality. When the price of such commodity falls, they feel that its quality also deteriorates and they do not buy it.

Check Your Progress – 4

What is the meaning of prestige goods?

.....

.....

.....

.....

4.8 SUMMING UP

As you have learnt, the term 'demand' implies a different meaning in economics. Demand for a commodity depends on the willingness of a consumer and his purchasing power. Three kinds of demand – price, income and cross demand – explain the major factors which determine the demand for a commodity. Demand also depends on other factors, such as, fashions, weather, velocity of money, population, advertisement, etc.

Demand is inversely related to price. Income affects the demand in a positive way for superior and normal goods and in a negative manner for inferior and giffen goods. The prices of other related commodities also affect the demand for a particular commodity.

Law of demand explains that, when other things remain constant, the price of a commodity and its quantity demanded are inversely related. There are certain important reasons for the operation of the law of demand like, law of diminishing marginal utility, substitution effect and income effect. There are certain exceptions to this law. They are Giffen's Paradox, prestige goods, speculation and illusion of consumers.

4.9 CHECK YOUR PROGRESS: MODEL ANSWERS

1. In our daily life, the word 'demand' is used in a very loose sense to mean the desire of a person to purchase a good or service. But in the subject of economics, it has a specific meaning. Demand implies more than a mere desire to purchase a commodity. It means that the consumer is both willing and able to purchase the commodity which he desires.
2.
 - (i) The demand for a commodity is inversely related to its price. The demand curve slopes downwards from left to right. That means it has a negative slope.
 - (ii) The related goods may be complementary or substitutes. In the case of complementary goods like bricks and cement, the demand moves in the same direction. Increase in the price of bricks will lead to decrease in its demand and also in the demand of cement. The demand curve has a negative slope. In the case of substitutes, the demand moves in the opposite direction. The demand curve has a positive slope, implying sloping upwards from left to right.
 - (iii) When the income increases, the demand for commodity also increases. That means the demand curve has a positive slope. But in the case of inferior goods like coarse cereals, after a certain level of income reached, further increase in income is accompanied by a fall in demand because of consumer's shift to superior goods.
3. The quantity demanded of a commodity varies inversely with its price being other conditions remaining unchanged (*ceteris paribus*). The important reasons for the operation of the law of demand are (i) operation of the law of diminishing marginal utility; (ii) substitution effect; and (iii) income effect.
4. Sometimes, people purchase certain goods as their possession confers a higher social status on them. These goods are called prestige goods. For example, diamonds and precious stones are purchased by richer sections only to maintain high prestige in the society without caring for the higher price of the goods.

4.10 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Distinguish between different kinds of demand.
2. What are the determinants of demand? Explain them.
3. What is the law of demand? Draw the demand curve with a demand schedule. Explain the limitations of law of demand.
4. State and explain the law of demand? Are there any exceptions to it?
5. Discuss the law of demand. What are the exceptions to the law of demand?

II. Answer the following questions in about 15 lines each

1. What is the meaning of Demand in Economics?
2. Explain the Law of Demand.
3. Explain the Giffen's Paradox.
4. Why does the demand curve slope downwards?
5. What is substitution effect.
6. What is Giffen's Paradox.
7. What are exceptions to the law of demand?
8. What is the income effect on normal and inferior goods?

4.11 RECOMMENDED BOOKS

- | | |
|---------------------------------|--------------------------------------|
| 1. Stonier and Hague | : A Text Book of Economic Theory |
| 2. H.S. Agarwal | : Micro Economics |
| 3. M.L. Seth | : Principles of Economics |
| 4. V.G. Mankar | : Business Economics |
| 5. D.M. Mithani & V.S.R. Murthy | : Fundamentals of Business Economics |

4.12 GLOSSARY

- | | |
|----------------------------|--|
| Demand | : The willingness and ability to pay a sum of money for some amount of a particular good or service. |
| Demand Schedule | : A table showing the quantities of a good demanded at varying prices. |
| Demand Curve | : A curve relating the price per unit of a product to the quantity of the product which the consumer wishes to buy. |
| Demand Function | : The relationship between the quantity of a good which a consumer wants to buy, and all the quantitative factors which determine this demand. |
| Complementary Goods | : Goods demanded together. |

UNIT – 5 : ELASTICITY OF DEMAND

Contents

- 5.0 Aims and Objectives
- 5.1 Introduction
- 5.2 Meaning of Elasticity of Demand
- 5.3 Kinds of Elasticity of Demand
 - 5.3.1 Price Elasticity of Demand
 - 5.3.2 Income Elasticity of Demand
 - 5.3.3 Cross Elasticity of Demand
 - 5.3.4 Promotional Elasticity of Demand
- 5.4 Measurement of Elasticity
 - 5.4.1 Total outlay or Expenditure Method
 - 5.4.2 The Point Method
 - 5.4.3 Arc Method
- 5.5 Significance of the Concept of Elasticity of Demand
- 5.6 Summing Up
- 5.7 Check Your Progress: Model Answers
- 5.8 Model Examination Questions
- 5.9 Recommended Books
- 5.10 Glossary

5.0 AIMS AND OBJECTIVES

The aim of this unit is to explain the elasticity of demand, its kinds and the measurement of elasticity. At the end of this unit, you should be in a position to:

- define elasticity of demand;
- explain price, income, cross and promotional elasticities of demand; and
- describe the determinants of elasticity and different methods of measuring elasticity of demand.

5.1 INTRODUCTION

Elasticity is a tool by which we measure the degree of a dependent variable's responsiveness to changes in an independent variable. For example, price of the commodity, income, advertising, prices of substitutes/complements, are independent variables and quantity demanded of the commodity is dependent variable. Although, elasticity has a wide variety

of applications, many of its most interesting and useful applications are found in the study of consumption demand.

The concept of elasticity of demand measures the responsiveness of demand for a commodity to changes in the variables in the demand function. The measurement of impact of changes in these variables is important in effectively forecasting the demand for that product.

5.2 MEANING OF ELASTICITY OF DEMAND

Elasticity of demand means sensitiveness or responsiveness of demand to the change in price. In other words "elasticity is a measurement of the percentage responsiveness of a dependent variable to percentage change in an independent variable." The responsiveness of demand may be small or great. Take the goods like vegetables, ghee, salt, etc., whose demand does not contract much with the rise in their prices. While there are goods like televisions, fridges, cars, etc, whose demand contracts much with the rise in their prices. The law of demand does not solve this problem of the degree of change in demand to a change in prices. The credit goes to Alfred Marshall who offered a solution by formulating the concept of price elasticity of demand. In his words, 'The elasticity (responsiveness) of demand in a market is great or small according as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price'. In the words of Prof. Lipsey, Elasticity of demand may be defined as, "the ratio of the percentage change in demand to the percentage change in price".

In general, demand elasticity is simply a measure of relative responsiveness of quantity demanded to changes in one of the determinants of demand, other determinants assumed as unchanged. More specifically, elasticity is defined as the ratio or the percentage change in quantity demanded to the percentage change in the demand determinant under consideration. Therefore:

$$\text{Elasticity} = \frac{\% \text{ change in quantity demand of 'X'}}{\% \text{ change in parameter 'A'}}$$

Where the parameter 'A' may be any one of the following:

- (i) current price of the commodity (P_x);
- (ii) current price of related good (P_r)
- (iii) current income (y); and
- (iv) the expected price of the commodity (EP_x);

The larger (absolute) the value of this elasticity measure, the more responsive is quantity demanded to changes in the parameter under consideration. In other words, larger would be the magnitude of the effect. While it is conceptually possible to consider the elasticity of demand with respect to each of the demand determinants, there are certain insurmountable problems in quantifying 'Tastes and Preferences' which make it virtually impossible to measure its elasticity. But the demand in the real world cannot be completely elastic or inelastic. That is why we say that the elasticity of demand is 'more or less'.

5.3 KINDS OF ELASTICITY OF DEMAND

There are as many elasticities of demand as its determinants. The most important of these elasticities are:

- (i) Price Elasticity of Demand --
- (ii) Income Elasticity of Demand
- (iii) Cross Elasticity of Demand
- (iv) Promotional Elasticity of Demand

5.3.1 PRICE ELASTICITY OF DEMAND

As we know, the law of demand states that quantity demanded and price are inversely related. If price falls, quantity demanded increases, while if price increases, quantity demanded decreases. But decision-makers are frequently interested in the effect that changes in price and quantity demanded have on the total revenue. The changes in price and quantity demanded tend to have the offsetting effect. If the percentage increase in price exceeds the percentage decrease in quantity demanded, total revenue will increase. On the other hand, if the percentage increase in price is less than the percentage decrease in the quantity demanded, the total revenue will decrease. Thus, the effect of a price change depends upon the relative responsiveness of quantity demanded to price.

The measure of relative responsiveness of quantity demanded to price is known as **price elasticity of demand**. It can also be expressed as the ratio of a relative change in quantity to a relative change in price. The formula for calculating the price elasticity of demand is:

$$E_p = \frac{\text{Percentage change in quantity demanded of 'X'}}{\text{Percentage change in the price of X}}$$
$$E_p = \frac{\frac{\Delta D_x}{D_x}}{\frac{\Delta P_x}{P_x}}$$

Where E_p stands for price elasticity; D_x for Demand of good X; and P_x on Price of good X.

If the percentages are known for quantities, then the numerical size of E can be easily calculated. Let us suppose that the percentage increase in the Quantity is 3 and the percentage fall in the price is 1. Then

$$E_p = \frac{3\%}{-1\%} = -3$$

Higher the elasticity of demand, greater will be the percentage change in quantity demanded for every percentage change in price. For example, if $E_p = 3$, it means that one percentage change in price will lead to the change in the quantity demanded by 3 percentage, and if $E_p = 0.5$, this implies the quantity demanded will change by

0.5 per cent when price of the good changes by 1 per cent. In the first case, it will benefit the businessman to reduce the price as it will increase the quantity demanded by three times; while in the second case, it will be beneficial for him to increase the price, as 1 per cent increase in price reduces the quantity demanded by only 0.5 per cent.

It is important to note that since the elasticity of demand is linked to the law of demand, the co-efficient of price elasticity of demand (e_p) will always have a negative sign. In other words, if the demand curve has negative slope / downward slope, the sign of its elasticity will also be negative. In order to avoid confusion in interpretation, most of the studies take only the absolute values of E_p i.e., they ignore the sign.

Kinds of Price Elasticity of Demand

Price elasticity of demand is generally classified into five categories. They are:

- i) Perfectly elastic demand ($e = \infty$)
- ii) Perfectly inelastic demand ($e=0$), where change in price, however large, causes no change in quantity demanded;
- iii) Unit elasticity of demand ($e=1$), where a given proportionate change in price causes an equally proportionate change in quantity demanded;
- iv) Relatively elastic demand ($e > 1$), where a change in price causes a more than proportionate change in quantity demanded;
- v) Relatively inelastic demand ($e < 1$), where a change in price causes a less than proportionate change in quantity demanded;

Let us explain these kinds one by one.

i) Perfectly Elastic Demand

It is a situation where the slightest rise in price causes the quantity demanded of the commodity to fall to zero. Similarly, the slightest fall in price causes an infinite increase in the quantity demanded of the commodity. This type of cases are exceedingly rare in the practical life. It can be shown with the help of a diagram (see Fig 5.1). Here, demand curve is a horizontal straight line.

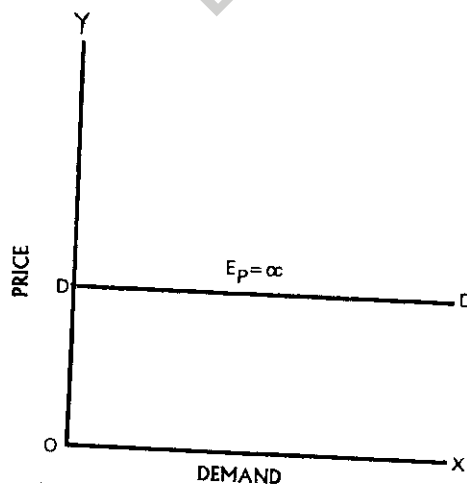


Fig. 5.1 : Perfectly Elastic Demand

ii) Perfectly Inelastic Demand

In this case even substantial change in the price will not bring about any change in demand. The demand in this case is insensitive or not responsive to changes in price. The elasticity of demand in this case is zero. Like perfectly elastic demand, cases of perfectly inelastic demand are also rare in real life. It can be shown with the help of a diagram also. See Fig. 5.2. In this case, the demand curve is a vertically straight line.

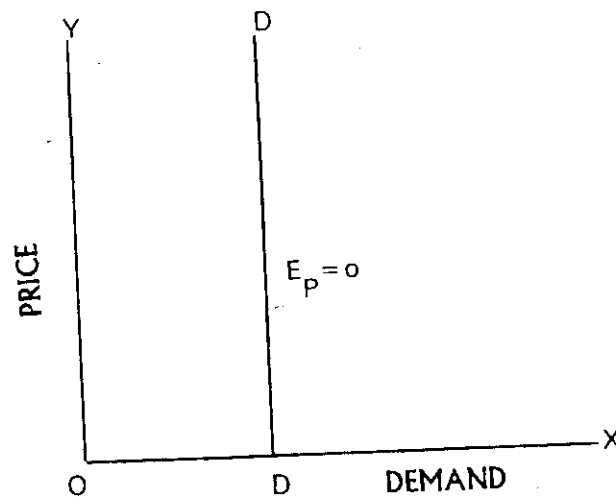


Fig. 5.2 : Perfectly Inelastic Demand

iii) Relatively Elastic Demand

It is a situation where a small proportionate change in the price of a commodity is accompanied by a larger proportionate change in its quantity demanded. Elasticity of demand here is said to be greater than unity. It is shown in the diagram 5.3.

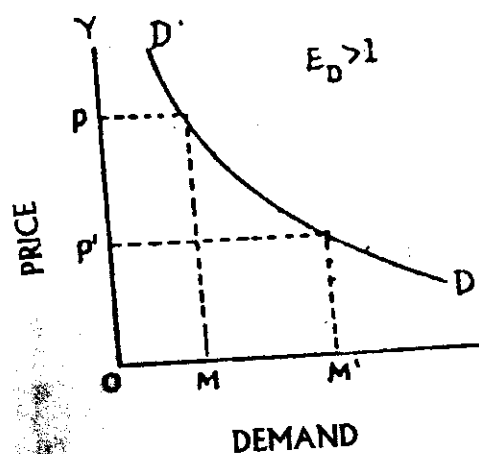


Fig. 5.3 : Relatively Elastic Demand

iv) Relatively Inelastic Demand

It is a situation where a substantial change in the price of a commodity is accompanied by a smaller proportionate change in its quantity demanded. Elasticity of demand here is said to be less than unity. It is shown in the diagram 5.4

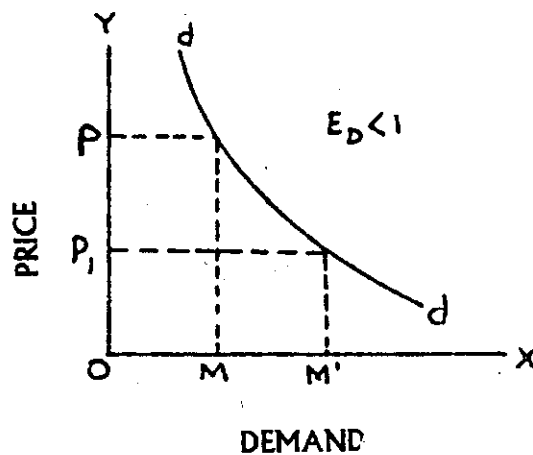


Fig. 5.4 : Relatively Inelastic Demand

v) Unitary Elastic Demand

It refers to a situation where a given proportionate change in price is accompanied by an equally proportionate change in the quantity demanded. Elasticity of demand here is said to be equal to unity. This is shown in the diagram 5.5.

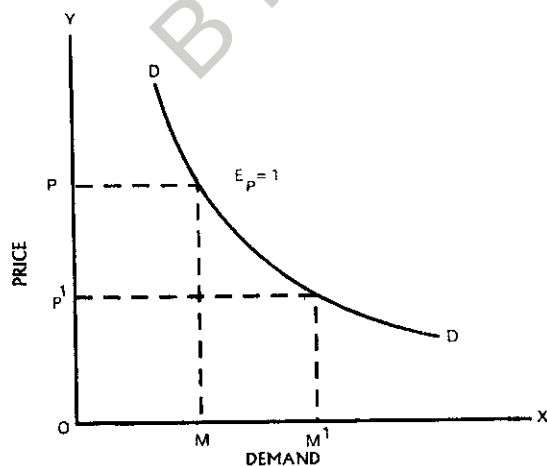


Fig. 5.5 : Unitary Elastic Demand

The entire discussion about the price elasticity of demand can be summarised in the following table:

Table 5.1 : Price Elasticity, Measures, Meaning and Nomenclature

Numerical Measure of Elasticity	Verbal Description	Terminology
1	2	3
Zero	Quantity demanded does not change as price changes.	Perfectly inelastic
Greater than zero but less than one	Quantity demanded changes by a smaller percentage than does price.	Inelastic
One	Quantity demanded changes by exactly the same percentage as does price.	Unit elasticity
Greater than one but less than infinity	Quantity demanded changes by a larger percentage than does price.	Elastic
Infinity	Purchasers are prepared to buy all they can obtain at some price and none at all at an even slightly higher price.	Perfectly elastic

Basic Determinants of Price Elasticity of Demand

A question normally arises as to what makes a demand for one commodity elastic and the demand for another inelastic, or the demand for the same commodity elastic at one price and inelastic at another price.

The basic determinants of the elasticity of demand of a commodity with respect to its own price are:

1. **The availability of substitutes:** The demand for a commodity is more elastic if there are close substitutes for it. If the price of the commodity is raised, consumers buy less of the commodity and buy more of its substitutes. Opposite will happen if the price of the commodity is reduced.
2. **The nature of the need that the commodity satisfies:** In general, luxury goods are price elastic while necessities are price inelastic. This is so because the use of the latter cannot be postponed or significantly reduced, while that of the former can be done so. It is to be noted here that there is no strict demarcation as to which commodities are necessities and which are luxuries. A commodity like car may be a necessity in USA, while it is a luxury in India.
3. **The time period:** Demand is more elastic in the long run. Longer the time period considered, greater will be the possibility of substitution for a cheaper good. For example, if the price of petrol increases (diesel price remaining the same), in the short-run it may not be possible to replace the petrol engines with diesel engines, but in the long run it is possible to replace because diesel is now relatively cheaper.

4. **The number of uses to which a commodity can be put:** The more the possible uses of a commodity, the greater its price elasticity will be. When the price of a commodity is very high, consumers will put the few units they buy only to the most important use of the commodity. At successively lower prices, more of the commodity is purchased to be devoted to the less important uses.
5. **The proportion of income spent on the particular commodity:** If the proportion of consumer's income spent on a particular commodity is very small, demand will tend to be inelastic. The commodities that belong to this category are salt, match boxes, etc.
6. **Habit forming goods:** In case of habit forming commodities like tobacco and alcohol, the demand for such goods will tend to be inelastic, since the consumer forms a habit for their use.

Check Your Progress – 1

Elasticity of demand is high for some goods and low for some other goods. Give examples.

.....

.....

.....

.....

5.3.2 INCOME ELASTICITY OF DEMAND

We know that consumer's income is also one of the determinants of demand. Income elasticity of demand for a commodity shows the extent of demand for the commodity changes as a result of a change in his income.

The responsiveness of demand to changes in income is termed as **income elasticity of demand**. It can also be expressed as the proportionate change in the quantity demanded resulting from a proportionate change in income.

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

Symbolically, we may write

$$E_y = \frac{\Delta D}{D} \div \frac{\Delta Y}{Y}$$

Where; ΔD = Change in demand

D = Original demand

ΔY = Change in income

Y = Original income

Example-1

Find the income elasticity of demand, if a consumer's demand for a commodity increases from 100 units to 200 units per month when his income rises from Rs. 2,000 to Rs. 3,000.

$$\text{We know, } E_y = \frac{\Delta D}{D} \div \frac{\Delta Y}{Y}$$

$$D = 100 \text{ units} \quad \Delta D = 200 - 100 = 100 \text{ units}$$

$$Y = \text{Rs. } 1000 \quad \Delta Y = 3,000 - 1,000 = \text{Rs. } 1,000$$

$$E_y = \frac{100}{100} \div \frac{1000}{2000}$$

$$= \frac{100}{100} \times \frac{2000}{1000} = 2$$

For normal goods income elasticity is positive. Some of the writers have used income elasticity in order to classify goods into "luxuries" and "necessities". A commodity is considered to be a luxury if its income elasticity is greater than unity. A commodity is a necessity if its income elasticity is small.

Kinds of Income Elasticity

Income elasticity of demand is generally classified into five categories. They are:

- (i) **High Income Elasticity:** When the percentage change in quantity demanded is greater than the percentage change in income, the income elasticity of demand is greater than unity. Thus, $E_y > 1$
- (ii) **Unitary Income Elasticity:** When the percentage change in demand is equal to the percentage change in income, the demand is unitary income elastic. Thus $E_y = 1$
- (iii) **Low Income Elasticity:** When the percentage change in demand is less than the percentage change in income, the income elasticity of demand is less than unity. Thus, $E_y < 1$
- (iv) **Zero Income Elasticity:** When the income changes in any proportion and carries no effect on demand, then the quantity demanded remains unchanged. Thus $E_y = 0$
- (v) **Negative Income Elasticity:** When an increase in income causes a decrease in the demand for a commodity, the demand is said to be negative income elastic. Thus $E_y < 0$.

Decision making with the help of Income Elasticity

The income elasticity of demand helps in the following manner to classify the commodities for taking business decisions:

- a) If income elasticity is positive and greater than one, the commodity is a luxury. For example the demand for cars, etc., is highly income elastic.
- b) If income elasticity is positive but less than one, the commodity is normal one. For example, the demand for food grains is income inelastic.

- c) If income elasticity is zero, the commodity is not influenced by income changes. For example, consumption of commodities like salt, match-box, etc.
- d) When income elasticity is negative, the commodity is inferior. For instance, cereals like jowar, bajra, etc., are inferior goods, so their income elasticity is negative.

Determinants of income elasticity

The main factors which determine income elasticity are:

1. **The nature of the need that the commodity covers:** The percentage of income spent on food declines as income increases. This is known as Engel's Law.
2. **The initial level of income of a country:** For example, a motorcar is a luxury in an underdeveloped country while it becomes a 'necessity' in a developed country.
3. **The time period:** Consumption patterns adjust with a time lag to changes in income.

Check Your Progress – 2

What is meant by income elasticity of demand?

.....

.....

.....

.....

5.3.3 CROSS ELASTICITY OF DEMAND

Commodities generally have substitutes and complements in the real life situations. You have learnt in demand function, that demand for a commodity is not only a function of its own price but also a function of the prices of related goods. The concept of elasticity of demand can also be applied in a situation where two commodities are related to each other. In this case, the elasticity is called cross elasticity of demand.

It is the responsiveness of demand to change in the price of other related commodities. It can also be defined as the proportionate change in the quantity demanded of X resulting from a proportionate change in the price of Y.

This change in the demand for one good due to a change in the price of some other good comes about because of the fact that the two goods may be either substitutes or complements to each other.

$$E_{xy} = \frac{\text{Percentage change in quantity demanded of X}}{\text{Percentage change in the price of Commodity Y}}$$

Example-2

The price of coffee increases from Rs. 50 per kg. to Rs. 70 per kg. and as a result the demand for tea increases from 5 kg. to 10 kg. Determine the cross elasticity of demand of tea for coffee.

$$\begin{aligned}
 P_{\text{coffee}} &= \text{Rs. } 50 \\
 \Delta P_{\text{coffee}} &= \text{Rs. } 20 \text{ (Rs. } 70 - \text{Rs. } 50) \\
 Q_{\text{tea}} &= 5 \text{ kg.} \\
 \Delta P_{\text{coffee}} &= 5 \text{ kg. (10 kg - 5 kg)}
 \end{aligned}$$

Here, ΔP_{coffee} = change in price of coffee, ΔQ_{tea} = change in quantity of tea.

$$\text{Cross}_e = \frac{\Delta Q_{\text{tea}}}{\Delta P_{\text{coffee}}} \times \frac{P_{\text{coffee}}}{Q_{\text{tea}}} = \frac{5}{20} \times \frac{50}{5} = 2.5$$

This sign of this measure of cross elasticity will depend upon the nature of inter-relationship between two goods. If the two goods are substitutes, it will be positive. In the case of complementary goods, the value of cross elasticity of demand will be negative, because changes in the price of one good cause opposite changes in the quantity demanded of the other good. For example, in case of substitute goods like Pepsi and Thums Up. The cross elasticity in such a case would, thus, be positive because the change in the demand for Thums Up and the change in the price of Pepsi move in the same direction. The closer the commodities as substitutes for each other, the greater is the cross elasticity of demand.

If two goods are complementary products, such as sugar and tea, their cross elasticity will be negative. If price of sugar goes up, its demand will reduce, and simultaneously the demand for tea will also fall. Since price of sugar and demand for tea move in the opposite direction, their cross elasticity will be negative.

In case, if the two goods are unrelated, i.e., they are neither substitutes nor compliments, the cross elasticity of demand in such a situation will be zero.

Cross-elasticity may vary from minus infinity to plus infinity. Complementary goods will have negative cross elasticities and substitute goods will have positive cross elasticities. The main determinant of the cross elasticity is the nature of the commodities. If two commodities can satisfy equally well the same need, the cross elasticity is high and vice-versa.

Check Your Progress – 3

Define Corss Elesticty of Demand.

.....

.....

.....

.....

5.3.4 PROMOTIONAL (ADVERTISING) ELASTICITY OF DEMAND

Advertising occupies an important place in the present day competitive market economy. It aims at creating or expanding demand for the product or the service. Advertising, thus, contributes to the total cost of the product and influences demand for the product.

The following features can be observed in understanding the relation between advertising and sales:

- (i) It is possible to make some amount of sales without any advertising. This means, no advertising is needed for minimum level of sales.
- (ii) There is a direct relationship between level of advertising expenditure and the volume of sales, beyond the minimum level of sales. This means that with an increase in advertisement expenditure the sales will increase.
- (iii) In the initial stages the sales will increase more than proportionate than the advertisement expenditure. But beyond a particular point the advertising expenditure will result in less than proportionate increase in sales. After some further expenditure or advertisement, a stage will come where no further increase in sales is possible with the help of advertisement.

How far, the demand for a product will be influenced by advertisement and other promotional activities may be measured by the promotional elasticity of demand. This may be defined as the ratio of proportionate change in sales to proportionate change in advertisement expenditure.

Mathematically –

$$E_a = \frac{(Q_2 - Q_1) / (Q_2 + Q_1)}{(A_2 - A_1) / (A_2 + A_1)}$$

- Where, Q_1 = Original quantity
 Q_2 = Changed quantity
 A_1 = Original advertisement expenditure
 A_2 = Changed advertisement expenditure

Where Q and A refer to sales and advertisement expenditure respectively.

It is important to note, in this context that some articles are more responsive to advertising, for example cosmetics. But promotional elasticity is not always considered with the price elasticity, particularly in case of luxury goods, which are more advertisement elastic than price elastic. The following are some of the important factors, which influence the advertising elasticity of demand :

- (i) Advertising elasticity is different for new and old products, and also differs between products with an established market and a growing market.
- (ii) The time lag in responsive advertisement varies. It may be delayed in some cases, depending on the general economic environment and the media chosen. It also depends upon the type of the product.
- (iii) The advertising elasticity of demand depends on effectiveness of advertising. The firm may resort to advertising to defend it against the other competitors' efforts to promote the sales of their products.

5.4 MEASUREMENT OF ELASTICITY

Elasticity of demand as a responsiveness of the quantity demanded to price change can be measured with the help of any one of the following methods. Depending on the information available, a particular measure can be applied.

There are three methods to measure elasticity of demand. They are:

- i) Total Outlay or Expenditure Method
- ii) Point Method
- iii) Arc Method

5.4.1 Total Outlay or Expenditure Method

This method is associated with the name of Alfred Marshall according to which we measure the elasticity the change in the total expenditure due to a change in price. This method refers to the total amount spent on the purchase of the good after the price changes. We can observe this in the following table.

Table – 5.2 : Elasticity of Demand and Total Outlay Method

	Price (Rs.)	Quantity demanded (units)	Total Outlay (Rs.)	Price elasticity of Demand (E_p)
I	20 16	100 125	2,000 2,000	} $E_p = 1$
II	20 16	100 150	2,000 2,400	
III	20 16	100 110	2,000 1,760	} $E_p < 1$

In the above table, the total amount spent remained the same at Rs. 2,000 even after a change in the price i.e., decreased from Rs. 20, to Rs. 16. In this case, the elasticity is said to be equal to unity ($E_p = 1$). Here the demand changes in the same proportion as the price. When the total amount of money spent increases (or decreases with a rise in price) with a fall in price, the elasticity is said to be greater than unity. The total money spent increased from Rs. 2,000 to Rs. 2,400 (case II) with a fall in price from Rs. 20 to Rs. 16. In this case, the proportion of change in demand is relatively greater than that of price. The total amount of money spent decreased (case III) from Rs. 2,000 to Rs. 1,760 with a fall in the price. In this case the elasticity is said to be less than unity. Thus, when the price and total outlay move in the same direction, the elasticity of demand is said to be in elastic. This method can also be represented with the help of a diagram.

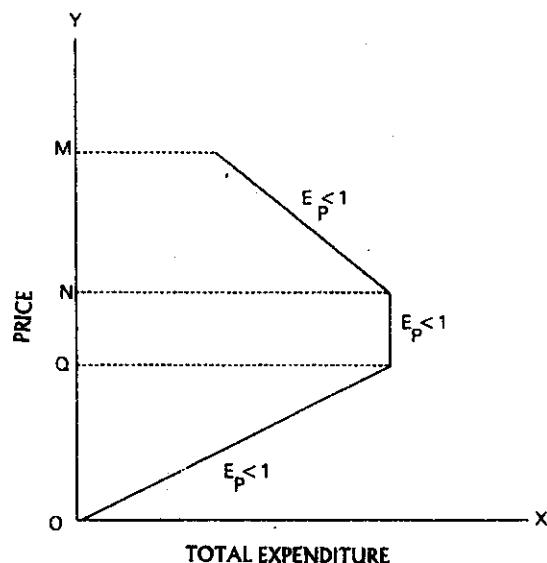


Fig. 5.6 : Measurement of Elasticity - Total outlay method

In Fig. 5.6, price is measured on Y axis and total outlay on X axis. The elasticity of demand is explained with the help of total outlay curve. This curve slopes downwards to the right with the fall in the price from OM to ON. Over the price range ON to OM, the elasticity of demand is elastic. The outlay curve is perpendicular and parallel to OY axis over the price range ON and OQ. It shows that outlay is constant and indicates that elasticity is unitary. Over the price range OQ the outlay curve slopes downwards to the left as the amount of money spent diminishes as the price falls. In this case, the elasticity of demand is less than unity i.e., inelastic.

The main drawback of the total outlay method is that it does not help us to measure the elasticity of demand numerically. It simply tells us that elasticity of demand is equal to, greater than or less than unity.

Check Your Progress – 4

What are the three types of elasticity of demand?

.....

.....

.....

.....

5.4.2 THE POINT METHOD

This method is also suggested by Alfred Marshall. In this method, we take a straight-line demand curve joining the two axes and measure the elasticity between two points Q and Q₁, which are assumed to be intimately close to each other.

Dr. BRACH
LIBRARY

Acc. No.
Class No.

114866
380
com

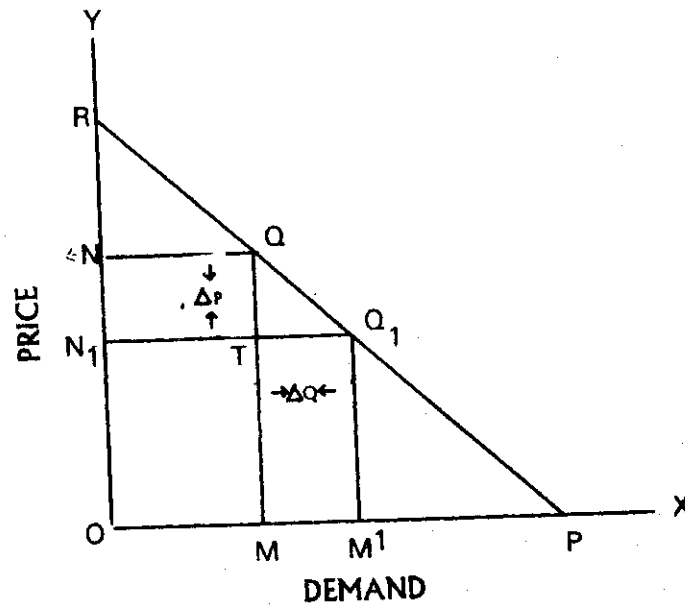


Fig: 5.7 : Measurement of Elasticity - Point Method

In the diagram 5.7 'RP' is the straight-line demand curve, which connects both the axes. In the beginning at the price QM, the quantity demanded is OM. Then the price changes to Q₁ M₁ and the new quantity demanded is OM₁. The symbol 'P' represents the change in price while the symbol 'Q' shows the change in quantity demanded. The price elasticity of demand can be determined by the following formula.

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

The percentage change in quantity demanded can be found out thus:

$$\frac{\text{Change in the quantity demanded}}{\text{Initial quantity demanded}} = \frac{\Delta D}{D}$$

The percentage change in price can be found out thus:

$$\frac{\text{Change in Price}}{\text{Initial Price}} = \frac{\Delta P}{P}$$

$$\begin{aligned} \text{Therefore, } Ed &= \frac{\text{Change in Price Quantity / Initial Quantity}}{\text{Change in Price / Initial Price}} = \frac{\Delta P}{P} \div \frac{\Delta P}{P} \\ &= \frac{MP}{OM} \end{aligned}$$

Appendix (not compulsory)

Substituting the symbols, we have

$$Ed = \frac{\Delta D}{D} \div \frac{\Delta P}{P} = \frac{\Delta DP}{\Delta PD} = \frac{dD}{dp} \times \frac{P}{D}$$

In terms of above diagram, the equation is

$$\frac{MM'}{OM} \div \frac{NN'}{ON} \text{ or } \frac{MM'}{OM} \times \frac{ON}{NN'} = \frac{MM'}{NN'} \times \frac{ON}{OM}$$

The smaller triangle QTQ' is similar to the bigger triangle QMP . Therefore, the ratio of sides is the same. In other words,

$$\frac{MM'}{NN'} \text{ or } \frac{TQ'}{QT} \text{ is equal to } \frac{MP}{QM}$$

We can now recast the above equation by substituting,

$$\frac{MP}{QM} \text{ for } \frac{TQ'}{QT} \text{ or } \frac{\Delta Q}{\Delta P}$$

$$Ed = \frac{MP}{QM} \times \frac{ON}{OM} = \frac{MP}{QM} \times \frac{QM}{OM} \text{ (.....ON = QM)}$$
$$= \frac{MP}{OM} \text{ (after eliminating QM on both the sides)}$$

The price elasticity of demand is therefore, MP/OM . Now we have got two triangles, i.e., QMP and RNQ which are similar to each other. Therefore, the ratio of their sides is also the same. As such MP/OM will be the same as QP/RQ and QM/RN (Since OM is the same NR).

$$\text{Hence, } Ed = \frac{MP}{OM} \text{ or } \frac{QM}{RN} \text{ or } \frac{ON}{RN} \text{ or } \frac{QP}{RQ}$$

Assuming that the distance between Q and Q' is reduced indefinitely, the two points will coincide and as such, the elasticity of demand at the point Q will be equal to QP/RQ .

On a straight-line demand curve we can make use of this formula to find out the price elasticity at any particular point. We can find out numerical elasticities also on different points of the demand curve with the help of the above formula. It should be remembered that the point elasticity of demand on a straight line is different at every point. Elasticity at any one point is the ratio of the lower part of the straight line to the upper part.

When elasticity is measured at a point on a straight-line demand curve, it is called point elasticity of demand.

5.7.3 ARCMETHOD

The main drawback of the point method is that it is applicable only when we possess information about even the slight changes in the price and the quantity demanded of the commodity. But in practice, we do not possess such information about minute changes. We may possess demand schedules in which there are big gaps in price as well as the quantity demanded. In such cases, there is an alternative method known as Arc method of elasticity measurement. In this method the **mid-points** between the old and the new data in the case of both price and quantity demanded are used. It studies a portion or a segment of the demand curve between the two points. An Arc is a portion of a curve line, hence, a portion or segment of a demand curve. The formula for measuring arc elasticity is given below:

$$Ed = \frac{\text{Change in Quantity demand}}{\text{Original Quantity Plus New}} \div \frac{\text{Change in Price}}{\text{Original Price plus new price after change}}$$

Symbolically, the formula may be expressed thus :

$$Ed = \frac{Q - Q_1}{Q + Q_1} \div \frac{P - P_1}{P + P_1}$$

Here, Q = Original Quantity demanded
 Q_1 = New Quantity after change in price
 P = Original price
 P_1 = New price after change

We can take a numerical example to illustrate Arc elasticity. Suppose that the price of a commodity is Rs. 5 and the quantity demanded at that price is 100 units of a commodity. Now assume that the price of the commodity falls to Rs. 4 and the quantity demanded rises to 110 units. In terms of the above formula, arc elasticity, then, will be -

$$\begin{aligned} Ed &= \frac{100-110}{100+110} \div \frac{5-4}{5+4} \\ &= \frac{110}{210} \div \frac{-1}{9} \\ &= \frac{9}{21} \\ &= \frac{3}{7} \end{aligned}$$

(The negative sign here may be omitted)

5.5 SIGNIFICANCE OF THE CONCEPT OF ELASTICITY OF DEMAND

The concept of elasticity of demand is highly useful from theoretical and practical points of view. It has wide range of applications. Some of the important applications are:

1. **To Businessmen:** In a free capitalist economy, if production is to be profitable, the volume of output of goods and services must be so adjusted as to match the available demand for the commodity. The businessman has to know the likely effect of price changes on the demand for his product in the market. He has to consider for instance, whether a lowering of price will cause an expansion in the demand for his product, and if so to what extent and thus to what extent his total revenue would rise fetching what amount of profit. This he can know easily if he has an idea about the demand elasticity for his product.
2. **To fix rewards for factors of Production :** In fixing the rewards for factors of production, the concept of elasticity of demand is of great use. If the demand for a factor is inelastic, the trade union can extract high wages. On the other hand, if the demand for labour is relatively elastic, the wages will be low and the efforts of unions in getting high wages will not materialize. The same thing holds good in respect of other factors of production too.
3. **To Government :** This can be used by the Government for imposing statutory price controls on various commodities and to stabilize the prices of various commodities. It is also of great help in framing tax policy and in fixing the proper rate of exchange for its currency.
4. **To forecast the Demand :** The production planning and measurement in the long run depends significantly upon the knowledge of income elasticity. The businessmen by taking into account the impact of changing income levels on the demand for their product will make necessary plans.

In this way, the concept of elasticity of demand is of a great practical significance to businessmen, economists, trade unions and government policy makers.

5.6 SUMMING UP

In the earlier unit we discussed the meaning of demand, its kinds and the law of demand. In continuation to that, in this unit, we have touched upon the aspects of elasticity of demand and its measurement. Four important elasticities of demand are discussed in detail. The price elasticity of demand explains the responsiveness of demand due to changes in price. The relationship between relative change in demand and proportionate change in income is income elasticity of demand. Cross elasticity measures the responsiveness of demand for a commodity due to the changes in the price of other related commodities. The promotional elasticity is the other one discussed in detail.

Three methods pertaining to the measurement of elasticity of demand are discussed. How change in price affects the changes in the total expenditure is explained by the total outlay method. In the point method, a straight-line demand curve joining the two points is used to measure elasticity of demand. The third method, i.e., Arc method, studies a segment of the demand curve between the two points. Finally, the significance of elasticity of demand in decision-making is explained.

5.7 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Demand is more elastic for goods like comforts and luxuries (Air-conditioners, Colour Television, VCRs; having more substitutes (Tea, Coffee); whose consumption can be postponed; substitute goods like soft drinks, etc.

Demand will be less elastic in the case of essential goods (rice, wheat); goods consumed as a matter of habit (pan masala, tobacco); very high priced goods (diamonds); goods whose consumption can not be postponed (food, clothes), etc.

2. The responsiveness of demand to change in income is termed as elasticity of demand. It can also be expressed as the proportionate change in the quantity demanded resulting from a proportionate change in income.

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

3. It is the responsiveness of demand to change in the price of other commodities. It can also be defined as the proportionate change in the quantity demanded resulting from a proportionate change in the price of Y.

$$E_{xy} = \frac{\text{Percentage of change in quantity demanded of X}}{\text{Percentage change in the price of good Y}}$$

4. The three types of elasticity of demand are :

- (i) **Unitary elasticity** : When a small change in the price keeps total outlay unchanged the price elasticity is said to be unity ($E_d=1$).
- (ii) **Greater than unity elasticity** : If a small change in price increases total outlay or if small increase in price increased total outlay or if small increase in price reduces total outlay, elasticity of demand is said to be greater than unity ($E_d>1$).
- (iii) **Less than unity elasticity** : If a fall in price decreases total outlay (increases with a rise in price), the elasticity of demand is said to be less than unity ($E_d<1$).

5.8 MODEL EXAMINATION QUESTIONS

- I. Answer the following questions in about 30 lines each.

- 1. What is elasticity of demand? Explain the different kinds of elasticity of demand.
- 2. What is price elasticity of demand? Explain the kinds of price elasticity of demand with the help of diagrams.
- 3. What are the methods which measure elasticity of demand? Explain them in brief.
- 4. Explain the total outlay method of measuring price elasticity of demand.

II. Answer the following questions in about 15 lines each.

1. What is elasticity of demand ?
2. What is income elasticity of demand? What are its determinants?
3. Explain the cross elasticity of demand ?
4. What are the basic determinants of price elasticity of demand.
5. Describe the total outlay method in measuring elasticity.
6. What is the point method of measuring elasticity?
7. Explain the practical utility of the concept of elasticity of demand.

5.9 RECOMMENDED BOOKS

- | | | | |
|----|-------------------------|---|---------------------------------|
| 1. | H.S.Agarwal | : | Micro Economics |
| 2. | M.L.Seth | : | Principles of Economics |
| 3. | M.L.Jhingan | : | Advanced Economic Theory |
| 4. | S.K.Mishra and V.K.Puri | : | Modern Micro Economics |
-

5.10 GLOSSARY

Elasticity	:	The degree of responsiveness of one variable to changes in another.
Price Elasticity of Demand	:	The degree of responsiveness of the quantity demanded of good to changes in its price.
Income Elasticity of Demand	:	The degree of responsiveness of the quantity demanded of a good to changes in income of consumers.
Cross Elasticity of Demand	:	The responsiveness for a commodity to a change in the price of other commodities.
Promotional Elasticity of Demand	:	The ratio of proportionate change in sales to proportionate change in advertisement expenditure.

UNIT – 6 : DEMAND FORECASTING

Contents

- 6.0 Aims and Objectives
- 6.1 Introduction
- 6.2 Objectives of Demand Forecasting
- 6.3 Purpose of Demand Forecasting
 - 6.3.1 On the basis of Time Period
 - 6.3.2 On the basis of Levels
 - 6.3.3 On the basis of Category of Goods
- 6.4 Approaches to Demand Forecasting
 - 6.4.1 Steps in the Process of Demand Forecasting
 - 6.4.2 Techniques/ Methods of Demand Forecasting
- 6.5 Criteria for a Good Forecasting Method
- 6.6 Demand Forecasting for New Products, Established Products and Producers' Goods
- 6.7 Limitations of Demand Forecasting
- 6.8 Summing Up
- 6.9 Check Your Progress : Model Answers
- 6.10 Model Examination Questions
- 6.11 Recommended Books
- 6.12 Glossary

6.0 AIMS AND OBJECTIVES

The aim of this unit is to explain you the purpose of Demand Forecasting and various approaches to Demand Forecasting.

At the end of the unit, you should be able to :

- explain the objectives and importance of Demand Forecasting;
- describe the Forecasting on the basis of time period, levels and category of goods;
- apply various methods/ techniques for forecasting the demand; and
- suggest suitable techniques for demand forecasting relating to established products, new product and Producers' goods.

6.1 INTRODUCTION

Knowing the demand for its product is a significant activity for the firm. In modern business, production is often made in anticipation of demand. Anticipation of demand implies 'Demand Forecasting'. Forecasting means expectation about the future course of developments. Demand forecasting means expectation about future course of the market demand for a product. This enables the firm to make necessary plans for production and sales by keeping in view the market conditions. Any forecasting requires managers to predict for future, which, by its nature, is unknown. In fact, it is to minimise the 'uncertainties' of the unknown future that these forecasts are needed. The forecasts must be so that correct decisions can be taken.

The demand forecasting is an estimate of the future demand. It cannot be hundred per cent precise. But, it gives a reliable approximation regarding possible outcome, with a reasonable accuracy, if it is based on the mathematical laws of probability. Now, let us explain the objectives of demand forecasting.

6.2 OBJECTIVES OF DEMAND FORECASTING

Demand forecasting has several objectives. The following are some of the important objectives:

- (i) To reduce cost of raw materials and control inventories; to stock enough raw materials according to demand estimates;
- (ii) To arrange for short-term financial requirements such as working capital;
- (iii) To fix sales targets based on demand estimation and to provide incentives to sales people;
- (iv) To arrange for appropriate promotional efforts such as advertising and sales campaigns;
- (v) To prepare proper price policies for achieving desired results;
- (vi) To plan production programmes so that there is neither over-production nor under-production.

6.3 PURPOSES OF DEMAND FORECASTING

Before one takes up a forecasting exercise, one has to find out the specific purpose for which the predictions are made. The demand forecast can have different interpretations and applications, depending on the purposes of the forecast. The purposes of the forecast can be understood in a systematic way by classifying them (i) on the basis of the time period; (ii) on the basis of levels of forecast; and (iii) on the basis of category of goods.

6.3.1 DEMAND FORECASTING ON THE BASIS OF TIME PERIOD

On the basis of time period the sale predictions can relate to any one of the following:

- (i) Short-term; (ii) Medium-term; and (iii) Long-term.

There is no hard and fast rule to say that a particular calendar time for these time periods. A short-time forecast generally refers to a period of two to three months, a

medium term to a period between three months and one year and a long-term to a period of more than one year. In some cases, a period of one year may be short period. You must, however, be kept in mind that this calendar classification of periods is only tentative.

i) Short-term Forecasting

Short-term forecasting serves the following purposes :

- (i) To evolve a suitable policy in view of the seasonal variation of demand and so as to avoid the problem of short supply or over-production of the firm's product in the market.
- (ii) To determine the suitable price policy to clear off the stocks during off-season and to take advantage in the peak season.
- (iii) To evolve a rational purchase policy for buying raw materials and control its inventory stock with a greater economy.
- (iv) To set the sales targets and for establishing control over the business.
- (v) To enable the firm to have a short-term financial policy to make use of the surplus cash and / or to arrange for cash in times of need.

ii) Medium term Forecasting

It is a known fact that the effect of the present policies cannot be predicted for the long-term. These policies may be internal (example: quality improvement) or external (example: governments' tax policy), the effect cannot be usually predicted for more than about a year ahead. In case of medium term forecast, experience and sound judgement are more important than statistical forecasting. The medium term forecast can assist in the decisions about timing of an activity, like advertising expenditure. These forecasts also contribute to control or revision of the decisions based on long-term forecast.

iii) Long-term Forecasting

A long-term forecasting relates to the informations which are vital for undertaking strategic decisions of the business pertaining to its expansion or contraction. In general, the long-term demand forecasting serves the following purposes:

- (i) Long-term demand potential will provide the required guidelines for planning of a new business unit or for the expansion of the existing one. Capital budgeting by a firm is based on the long-term demand forecasting.
- (ii) It is essential to determine long-term sales forecast for an appropriate manpower planning by the firm in view of its long-term growth and progress of the business.
- (iii) In view of the long-term demand forecasting and the production planning, it becomes easier for the firm to determine its long-term financial planning and programmes for raising the funds from the capital market.

6.3.2 DEMAND FORECASTING ON THE BASIS OF LEVELS

Demand forecasting may be undertaken at any one of the following levels:

- i) Macro economic forecasting;
 - ii) Industry demand forecasting;
 - iii) Firm demand forecasting; and
 - iv) Product line forecasting.
- i) **Macro Economic Forecasting:** It is concerned with the business conditions in the whole economy. These business conditions are measured with the help of some appropriate indices like those relating to National Income, Industrial production, Wholesale prices, etc. These indices are provided by official and non-official agencies. Demand forecasting with the help of these indices helps us to understand the various conditions in the whole economy.
 - ii) **Industry (or Market) Demand Forecasting:** Such forecasts give indications to a firm regarding the direction in which the whole industry will be moving. For example, 'Kelvinator' would like to know the way refrigeration industry is likely to behave, so as to decide about its plan for future in relation to the rest in the industry. These forecasts are based on surveys of consumers intentions and analysis of statistical trends supplied by trade associations to its members. The business may use such forecasts to compare the trends of the industry with its own current and expected sales and thus determine its market share.
 - iii) **Firm (Company) Demand Forecasting:** A big (e.g. Hindustan Lever Limited) would like to do forecasting of its own products, independent of the rest of the firms in the industry. It suggests whether or not the company is well placed to maintain or improve its share in the market.
 - iv) **Product Line Forecasting:** It helps the firm to decide which of the product or products should have priority in the allocation of firm's limited resources – for example, Hindustan Lever may like to know whether it should produce more of surf or lux or dalda.

6.3.3 DEMAND FORECASTING ON THE BASIS OF CATEGORY OF GOODS

Economists broadly classify the goods into capital goods, consumer durable goods and non-durable goods. For each of these categories of goods there would be distinctive pattern of demand. Forecasting based on this classification serves any or all the purposes mentioned above under two classifications.

Check Your Progress – 1

What do you mean by Demand Forecasting ?

.....

.....

Check Your Progress – 2

Identify the uses of demand forecasting based on levels.

6.4 APPROACHES TO DEMAND FORECASTING

Problems and methods of forecasting differ in case of established products and new products. For the established products, past sale trends and competition conditions are known, while this is not so for the new products.

The forecaster has to decide how much the sociological and psychological factors are going to enter into the exercise of forecasting. To be more effective, this exercise must also include the factors like special features peculiar to the product and market, nature of competition, impact of uncertainty, risk and the consequent errors in accuracy, etc.

Though, a general forecast is useful for a firm, but it will be very helpful, if the general forecast is broken down into different forecasts, which are specific with respective commodities, areas of sale, domestic and export market, etc.

6.4.1 STEPS IN THE PROCESS OF DEMAND FORECASTING

The following steps are necessary to have an efficient forecast of demand :

- i) **Identification of objectives:** The first step is to identify and clearly lay down the objectives of forecasting, whether it is short-term forecast, forecast of market shares or a general industry forecast. The purpose of this exercise may be the estimate of one or more than one aspects, like quantity and composition of demand, price to be quoted, sales planning, inventory control, etc.
- ii) **Determining the nature of the good:** There are three important categories of goods, viz., Capital goods, Consumers' durable goods, Consumers' non-durable goods. Demand determinants of these categories are also different. Hence, the determining variables of the demand function for the product are to be ascertained.
- iii) **Selecting a proper method of forecasting:** Another step is to select suitable methods of forecasting in view of the objectives, availability of data, etc. For example, if the data shows cyclic fluctuations, the use of linear trend will be suitable. Similarly, general trend may be more useful for long-term forecasting, while seasonal patterns will be more important for the short-term forecast.
- iv) **Interpretation of results:** Mere preparation of forecast does not help the management. Interpretation of results is also of equal importance. Once the data are collected

and statistical estimates are made, their implications are to be judged for policy making. Interpretation of demand forecasting is an art. It is very significant for business decision-making. For that, we need to frequently revise the forecast in the light of changing circumstances because forecasts are, in the first instance, made on the assumption of continuation of past events.

6.4.2 TECHNIQUES/METHODS OF DEMAND FORECASTING

It is to be noted here that there is no easy method or a simple formula, which enables the manager to predict the uncertainty of future with cent per cent accuracy. There are various methods to estimate potential demand. Some people rely on personal judgement or statistical calculations. One must take a mid way by combining statistical results with the value judgement. Again, different statistical forecasting methods are not mutually exclusive. They are to be used in combination for accuracy and cross checking purposes. In other words, forecasting must depend both on judgement and rigorous analysis. Basically there are two approaches to the problem of demand forecasting. They are – Direct methods, and Indirect methods.

Direct methods are useful to obtain information about the intentions of customers by means of market research, survey, economic intelligence, etc. Indirect methods are useful to make use of the past experience as a guide, and by extrapolating past trends to estimate the level of future demand. For the sake of simplicity and easy understanding we can classify the methods of demand forecasting in the following manner:

- i. The Survey Method/ Opinion Polling Method.
- ii. Trend Projection Method/ Extrapolation Method.
- iii. Economic Barometers.
- iv. The Statistical Methods.

Of the above, the first one is considered as an example of the Direct Method, and the remaining are considered as Indirect Methods. Now, let us examine the application of above methods in demand forecasting.

I. THE SURVEY METHOD

The survey Method of demand forecasting can be further divided into the following four kinds:

- i) Survey of Buyers' opinion
- ii) Survey of Sales – Force opinion
- iii) Survey of Experts opinion
- iv) Test Marketing

(i) Survey of Buyers' Opinion

A sample survey of the consumers may be undertaken questioning them about what they are planning or intending to buy. The questionnaire may be prepared for this purpose. This may be mailed to the consumers or may be sent through enumerators. Such consumer surveys provide excellent information on a number of important demand relationships, such as price demand, income demand, advertisement expenditure demand, cross demand,

etc. Though it has its advantage of first hand information, it has its disadvantages too. The important problems or disadvantages are (i) to contact large number of customers scattered all over the market is time consuming and costly affair, (ii) consumers may hesitate to reveal their plans because of personal privacy or commercial secrecy, (iii) the consumers may change their intentions due to unexpected changes in conditions. If these disadvantages are limited or restricted, the information obtained from this method is used as an important primary source in forecasting demand with a greater degree of certainty.

(ii) Survey of Sales-Force Opinion

Under this method, the sales persons have to report to the head office their estimates or expectations of sales in their territories. The company can also obtain such information from the retailers and wholesalers. By aggregating these forecasts a generalisation on an average is made, which is also based on the value judgement and collective wisdom of top sales executives, marketing manager, business economists altogether. It can be used for forecasting the sales of newly introduced products. Its main drawback is that it is subjective, so its accuracy depends on the intelligence of the reporting sales persons. Sometimes the sales force may not give the real picture about the products. Therefore, this can be used as a source of information for demand forecasting with due care of above disadvantage.

(iii) Survey of Experts' Opinion

Obtaining views from a group of specialists outside the firm will have certain possible advantages of speed and less cost. This method is best suited in situations where intractable changes are occurring. For example, forecasting future technological states. It is possible that in cases where basic data are lacking experts may give divergent views, but even then it is possible for a manager to come to an idea on the basis of these views. One formalised example of this group of tools is the 'Delphi' techniques. At it is simplest, panel members are asked by letters to give their predictions of the likely hood of occurrence of specified events. Postal anonymity from other panel members minimises the impact of personal inhibitions on the making of speculations about the future. Letters of the outcome and in particular of the consensus then informs personal members. Those who dissent are invited to give their reasons for discounting or else they are asked to modify their forecasts. This process may be repeated again, and the final range of outcomes regarded as probabilistic forecasts.

(iv) Test Marketing

Test marketing is especially useful for forecasting sales of new products or the potential of existing products in new areas. It involves selecting a test area, which can be regarded as a truly representative portion of the total market. A firm may reduce the price in the actual market and observe the reactions and compare the sales resulting from price reduction with the sales in the past. It may fix up different prices in different markets and observe the responses of buyers. The firm may make an experiment in one of the markets regarding new advertising campaign on other sales promotion schemes. In this way the firm finds out buyers' responses regarding various aspects of the product. If the product is successful in the test area, similar levels of success will be forecast in the total market.

88 Even though this method has the advantage of a real life experiment, it has some disadvantages also. They are: (i) It is exceptionally both expensive and time consuming, (ii) It is

not an easy task to select the areas to have the same characteristics such as, income levels, population, social background, tastes and preferences, occupational pattern, etc., (iii) The test must be continued for long enough to permit the consumer repurchase cycle to cooperate, otherwise false predictions may be made.

II. TREND PROJECTION METHOD

A time series analysis of sales data over a period of time is considered to serve as a good guide for demand forecasting. For long-term demand forecasting, trend is computed from the time based demand function data. Trends refer to the long-term persistent movement of data in one direction – upward or downward. The important methods used for trend projections are: (i) The Method of Moving Averages, (ii) Time Series Analysis.

(I) The Method of Moving Averages

This method is based on the past sales data and designed to compensate for regular cyclical/ seasonal variations. Under this method either 3-yearly, 4-yearly or 5-yearly, etc., Moving Average is calculated. First moving total of the values in group of years (3, 4 or 5) is calculated, each time giving up the first preceding year from the group. Then, it is divided by the number of years in the group. This can be understood with the help of the following illustration.

Moving Averages

Year	Demand	3-year Moving Total	3-year Moving Average (Trend)
1993	10	-	-
1994	12	36	12
1995	14	42	14
1996	16	45	15
1997	15	51	17
1998	20	-	-

The moving average (Trend) so obtained is plotted on a graph and from graphical presentation forecasting is projected through the extensions of the curve for the year ahead, measured on the X-axis. In the same way instead of yearly data, monthly data can also be used to project a trend for a particular month.

II. TIME SERIES ANALYSIS

This method is a refinement to the earlier method and attempts to build seasonal and cyclical variations into the estimating equation. Therefore, the equation appears to be

$$\text{Sales} = a. (\text{trend}) + b. (\text{season}) + c. (\text{cycle}) + d (\text{unforeseen changes})$$

Here, a, b, c and d are constants calculated from the past data. Sales forecast can again be obtained by substituting the values of trend, season and cycle in the equation. Trend value is the year number. The value of the season given by the 'normal' percentage differs from trend for the season being forecast. The value of the cycle could be found out with the help of economic barometers (explained in subsequent paragraphs) for the period of forecast.

This method is simple and inexpensive; hence, gained popularity. It is also not free from limitations. The validity of this method rests on the assumption that past data can be used to predict future sales, because there is a persistent tendency of the data to move in the same direction. [For detailed understanding of this technique, please refer to the unit on Time Series Analysis in your Business Statistics Course Material: Group-B, P-(1)].

III. ECONOMIC BAROMETERS

Generally, the Barometric techniques involve statistical indicators, usually time series which when combined in certain ways and provide indications of the direction in which the economy, or certain industries in it, is going. They are Barometers of market change. These can be classified as (i) Leading indicators, (ii) Coincident indicators, (iii) Lagging indicators.

The leading indicators series move up or down ahead of some other series. The coincident indicators move up or down at the same time as the leading indicator series move. The lagging indicators move up or down after the leading indicators have moved. For example, the bank rate is the leading indicator; the rate of interest charged by commercial banks is coincident indicator; and the rate of interest charged by money lenders is lagging indicator. The following are some of the major leading indicators, coincident indicator and lagging indicators:

Leading Indicators: Non-agricultural placements; index of net business formation; new orders of durable goods industries; new building permits for private housing units; industrial materials prices; stock prices; corporate profits after tax, etc.

Coincident Indicators: Employees in non-agricultural establishment; un-employment rate; GNP expenditure estimates; industrial production; personal income; sales of retail stores, etc.

Lagging Indicators: Business expenditure on new plant and equipment, book value of trade inventories, labour cost per unit of output; commercial and industrial loans; banks rates on short-terms business, etc;

These Barometric indicators can be used in forecasting demand in the short-run, since these do not always lead by the same length of time and also may lead in different directions. Forecast based on these indicators may serve as a warning to the decision makers. When there is a down swing in some of the indicators, they are warned that a general downward trend is the offing and they should be careful to plan in advance their production and inventories.

IV. THE STATISTICAL METHODS

Many statistical tools/ techniques are now available for estimating demand for the product. If sufficient relationships can be established statistically, and also supported theoretically, then a fairly complete market model can be built in equation form, using past data. Most commonly for demand forecasting purposes, the parameters of the demand function are estimated with the regression analysis by an equation to a set of observed data. In this regard the following economic indicators may be considered: (a) Personnel disposable income towards demand for consumer product; (b) Agricultural or Farm Incomes towards demand for Agricultural equipments, Fertilisers, etc. (c) Construction contracts for demand towards building materials such as cement, bricks, steel, tiles, etc., and (d) Automobile registry over a period towards demand for car,

spare parts, petrol, etc. By collecting such information, demand parameters may be computed with the help of regression analysis. When we consider the relationship between two variables – one dependent variable (eg. Sales) and another independent variable (eg. Price) the relationship is called simple regression. Where the relationship is between one dependent variable and a number of independent variables, it is known as multiple regression. These can be expressed mathematically in the equation form as follows:

Simple Regression : $y = a + bx$

Here, y – sales; x – Price; a, b are constants. By finding out the values of 'a' and 'b' by using regression mechanism the regression equation is established. After establishing the regression equation, it is possible to calculate the value of 'y' for given value of 'x'.

Multiple Regression :

In this model, firstly, it is necessary to specify the form of dependence of 'y' on the 'x' variable. This dependence may be expressed in linear form in which we show additive influence of the independent variables ($x_1, x_2, x_3, x_4 \dots x_n$) on the dependent variable 'y' as under:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_nx_n + e$$

Here 'y' (sales) is the dependent variable; $b_1, b_2 \dots b_n$ are the co-efficient of independent variables; $x_1, x_2, x_3 \dots x_n$ are independent variables; 'a' is the intercept or the constant value at 'y' irrespective of the influence of 'x' variables; 'e' is the error or residual value which will arise as the difference between the actual value of each 'y' observed in association with each set of 'x' values and the estimated value of each 'y' that is associated with the set of 'x' variables in the regression equation (For detailed understanding of the application of Regression techniques refer to the unit on Regression of your Business Statistics Course)

The other statistical models are – Naive models, Simultaneous equation models.

Naïve models are generally useful where situations are stable or experiencing only a gradual change. In a stable situation, for example, one may use the ratio of advertising outlay and sales at the past to forecast how future sales will react to future advertising outlays.

The models of simultaneous equations can be used where it is possible to build up the relationships between dependent variables and independent variables undertaken in the study. By solving the equation we can get values of those variables.

Example - 1

A garment manufacturer conducted a survey of demand for men's dresses. It is found that the average daily demand (D) in terms of price (P) is given by the equation :

$$D = 1400 - 10 P$$

- i) How many dresses per day can the manufacturer expect to sell at a price of Rs. 100 per a dress?
- ii) If he wants to sell 200 dresses, what price should he charge ?

keeping in mind the purpose, availability of data, cost and time for forecasting the demand with reasonable level of accuracy for taking various decisions.

6.8 SUMMING UP

This unit has focused on the concept and purpose of demand forecasting under different circumstances. A firm, which is an individual organising unit of control of business activity, has a basic objective of maximising its profits. In this context, it has to produce and sell as much as it can. For this purpose, there is a need to estimate demand for its goods / services. The various techniques that are useful to estimate the demand under different circumstances are discussed. Keeping in mind the purpose, availability of information, etc., the firm can make use of one or other suitable techniques to maximise its profits and to make use of its input resources in an optimal manner.

6.9 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Demand forecasting is nothing but anticipation of demand. It means expectation about the future course of the market demand for a product or service.
2.
 - i) It helps in understanding the various conditions in the whole economy.
 - ii) It helps the business in comparing the trends of the industry with its current and future sales and thus in determining its market share.
 - iii) It shows the firm its existing market share and helps in improving its market share.
 - iv) It helps the firm in allocating its scarce resources on its various products.
3. $Y = 5.8 + 1.14 (200)$
 $\therefore Y = -5.8 + 228 = 222.2 \text{ lakhs.}$

6.10 MODEL EXAMINATION QUESTIONS

- I. Answer the following in about 30 lines each.
 1. How do the short-term and long-term demand forecastings help the business firms?
 2. What is demand forecasting? Explain the Survey Method of demand forecasting.
 3. Explain the various methods of forecasting demand for established products.
 4. How do demand forecasting methods for new products vary from those for established products?
 5. Discuss briefly the statistical methods for long-term demand forecasting.
 6. What are the criteria for selecting a good forecasting method?
 7. Explain the steps involved in the process of demand forecasting.

- v) **Quickness:** The technique employed should produce quick results and the data required must be easily available.
- vi) **Flexibility:** Forecast is to be maintained up-to-date. The forecasting procedure should permit the changes to be made from time to time.

6.6 DEMAND FORECASTING FOR NEW PRODUCTS, ESTABLISHED PRODUCTS, PRODUCERS' GOODS

In real life situation we come across different circumstances to forecast the demand. These circumstances may be for New products, Established products and Producers' goods. Now, let us identify the suitable techniques of demand forecasting, which we have already discussed, to these circumstances.

New Products

To forecast the demand for new products we can use any of the following methods:

- a) Survey method
- b) Test Marketing
- c) Life Cycle Segmentation Analysis.

Each product has its own life cycle, i.e. introduction, growth, maturity, saturation and decline. To forecast the demand by using this technique, one has to find out in which stage the product is. Keeping in mind that particular stage one can reasonably predict the demand for such product.

Established Products

Demand can be forecast for established products by using any of the following methods

- a) Market surveys;
- b) Opinion surveys;
- c) Trend projections;
- d) Regression analysis

Producers' goods

For forecasting the demand for producers' goods the similar techniques we have discussed earlier can be used. But the forecaster has to keep in mind the factors such as – extent of excess capacity in the industry, the existing stock of producers' goods, the age distribution of the existing stock of producers' goods, the rate of obsolescence, the availability of funds, the nature of tax provisions, the prices of substitutes, etc.

6.7 LIMITATIONS OF DEMAND FORECASTING

So far we have discussed various methods/ techniques to forecast the demand. All the methods may not be useful under all circumstances. Each and every method has its own advantages and disadvantages. Depending on the method chosen for demand forecasting the disadvantages or limitations of that particular method may be normally applicable to such forecasting. However, one can choose the appropriate technique

keeping in mind the purpose, availability of data, cost and time for forecasting the demand with reasonable level of accuracy for taking various decisions.

6.8 SUMMING UP

This unit has focused on the concept and purpose of demand forecasting under different circumstances. A firm, which is an individual organising unit of control of business activity, has a basic objective of maximising its profits. In this context, it has to produce and sell as much as it can. For this purpose, there is a need to estimate demand for its goods / services. The various techniques that are useful to estimate the demand under different circumstances are discussed. Keeping in mind the purpose, availability of information, etc., the firm can make use of one or other suitable techniques to maximise its profits and to make use of its input resources in an optimal manner.

6.9 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Demand forecasting is nothing but anticipation of demand. It means expectation about the future course of the market demand for a product or service.
2.
 - i) It helps in understanding the various conditions in the whole economy.
 - ii) It helps the business in comparing the trends of the industry with its current and future sales and thus in determining its market share.
 - iii) It shows the firm its existing market share and helps in improving its market share.
 - iv) It helps the firm in allocating its scarce resources on its various products.
3. $Y = 5.8 + 1.14 (200)$
 $\therefore Y = -5.8 + 228 = 222.2 \text{ lakhs.}$

6.10 MODEL EXAMINATION QUESTIONS

- I. Answer the following in about 30 lines each.
 1. How do the short-term and long-term demand forecastings help the business firms?
 2. What is demand forecasting? Explain the Survey Method of demand forecasting.
 3. Explain the various methods of forecasting demand for established products.
 4. How do demand forecasting methods for new products vary from those for established products?
 5. Discuss briefly the statistical methods for long-term demand forecasting.
 6. What are the criteria for selecting a good forecasting method?
 7. Explain the steps involved in the process of demand forecasting.

II. Answer the following in about 15 lines each.

1. What are the objectives of demand forecasting?
2. What are the criteria of a good forecasting method?
3. What are the important methods of demand forecasting?
4. Explain the survey method of forecasting.
5. What are the barometric indicators?
6. What is the utility of demand forecasting?

6.11 RECOMMENDED BOOKS

- | | |
|---------------------------------|--------------------------------------|
| 1. P.L.Mehta | : Business and Managerial Economics |
| 2. V.G.Mankar & M.K.S. Pillai | : Business and Managerial Economics |
| 3. D.M.Mithani & V.S. Murthy | : Fundamentals of Business Economics |
| 4. R.L.Varshney & K.L.Maheswari | : Managerial Economics |

6.12 GLOSSARY

Demand Forecasting	:	An estimate of the future demand.
Simple Regression	:	Relationship between one dependent variable and another independent variable.
Multiple Regression	:	Relationship between the dependent variable and number of independent variables.

BRAOU

BLOCK-III : UTILITY ANALYSIS

Unit-7 : Utility Analysis - An Introduction

Unit-8 : Indifference Curve Analysis

BRAOU

UNIT – 7 : UTILITY ANALYSIS – AN INTRODUCTION

Contents

- 7.0 Aims and Objectives
- 7.1 Introduction
- 7.2 Utility and Satisfaction
- 7.3 Approaches to Utility Analysis
- 7.4 The Cardinal Utility Theory
 - 7.4.1 Assumptions
 - 7.4.2 Equilibrium of the Consumer
- 7.5 The Law of Diminishing Marginal Utility
 - 7.5.1 Graphic Representation
 - 7.5.2 Assumptions
 - 7.5.3 Limitations
 - 7.5.4 Importance
- 7.6 The Law of Equi-Marginal Utility
 - 7.6.1 Graphic Representation
 - 7.6.2 Assumptions
 - 7.6.3 Limitations
- 7.7 The Concept of Consumers' Surplus
 - 7.7.1 Graphic Representation
 - 7.7.2 Assumptions
 - 7.7.3 Criticism
- 7.8 Summing Up
- 7.9 Check Your Progress: Model Answers
- 7.10 Model Examination Questions
- 7.11 Recommended Books
- 7.12 Glossary

7.0 AIMS AND OBJECTIVES

This unit discusses the approaches to utility analysis and examines the 'Law of Diminishing Marginal Utility', 'Law of Equi-Marginal Utility', and the concept of 'Consumers' Surplus'.

After studying the unit, you should be in a position to:

- differentiate between cardinal and ordinal approaches to utility analysis;
- explain the law of diminishing marginal utility and its limitations;
- describe the law of equi-marginal utility; and
- explain the concept of consumer's surplus.

7.1 INTRODUCTION

Consumers satisfy their wants through the consumption of goods and services. *Goods are defined as things* that have the ability to satisfy a need. Economists call the want satisfying property of goods as 'utility'. In fact, when a consumer buys goods it is not the goods that he desires but the utility that he derives from the goods. Goods are demanded by consumers for their ability to satisfy wants. However, the want-satisfying power or utility is not inherent in goods. Goods possess utility because it is imputed to them by the consumers. For example, diamonds are like pebbles, but as we attach importance to the possession of this scarce good, they have a very high value in the society. Water, which is essential to life is considered of very great utility. For that reason a particular type of goods will have more utility for some people than it will have for others. Furthermore, for a given individual, a particular type of goods will have differing amounts of utility, depending upon the amount consumed. For example, when an individual is hungry, he will be inclined to consume food which has a high utility for him at that time. But when he is asked to consume again, he may not be consuming the same quantity and the utility will be also low. Thus, utility of a particular goods will vary as the quantity consumed varies. Therefore, in a technical sense, each unit of a particular goods will be distinct from each other unit.

The consumer is assumed to be rational. Given his income and the market prices of various commodities, he plans the spending of his income so as to attain the highest possible satisfaction or utility. This is the axiom of utility maximisation. In the theory of consumption, it is assumed that the consumer has full knowledge of all the information relevant to his decision, that is he has complete knowledge of all the available commodities, their prices and his income.

7.2 UTILITY AND SATISFACTION

The want satisfying power of a commodity or service can be defined as utility. It is essentially a subjective concept. Thus any commodity or service which can satisfy a human want is said to have utility. A particular thing is wanted, if it is expected to satisfy a given want. The consumption of a particular commodity may be harmful or immoral, e.g., Liquor. Even then if it satisfies some want of a consumer, it is deemed to possess utility.

The term utility is commonly used as equivalent to satisfaction. But, it has different meaning in economics. Utility implies expected satisfaction, whereas satisfaction means 'realised satisfaction'. A consumer thinks of utility when he is buying a commodity but he derives satisfaction only after its consumption. There may be a gap between the utility and satisfaction. Generally, in the case of standardised goods, the "expected satisfaction" of the consumer is often equal to his "realised satisfaction". Utility is

measured indirectly in the form of price paid for the commodity but satisfaction cannot be measured.

But the theory of consumer's behaviour is based on the assumption that utility and satisfaction are synonymous.

7.3 APPROACHES TO UTILITY ANALYSIS

There are two basic approaches to the problem of comparison of utilities. They are:

- (i) the Cardinalist Approach, and (ii) the Ordinalist Approach or the Indifference Curve Approach.

The cardinalist approach assumes that utility can be measured. Some economists suggested that utility can be measured in monetary units, i.e., by the amount of money the consumer is willing to sacrifice for another unit of a commodity. Other economists suggested that utility can be measured in subjective units called 'utils'. For example, the utility of an apple is 40 utils and that of an orange is 20 utils.

On the other hand, the ordinal school maintained that utility is not measurable but it is only comparable. The consumer need not know in specific units the utility of various commodities to make his choice. It is sufficient if he is able to rank the various baskets of goods according to the satisfaction each basket gives him. The consumer would be able to determine his order of preference among the different baskets of goods. Hicks and Allen are the main supporters of the ordinal approach. The main ordinal theories are the indifference curve approach and the revealed preference approach.

7.4 THE CARDINAL UTILITY THEORY

According to this theory, utility can be measured in terms of some quantifiable unit. Alfred Marshall advocated the cardinal approach to utility.

7.4.1 Assumptions

The following are the assumptions behind the cardinal utility approach.

- i) **Rationality** : The consumer is rational. It means he aims at the maximisation of his utility subject to the constraint imposed by his income.
- ii) **Utility is Measurable** : The utility of each commodity is measurable. The most convenient measure is money. The utility is measured by the monetary units that the consumer is prepared to pay for another unit of the commodity.
- iii) **Constant Marginal Utility of Money** : This assumption is essential if the monetary unit is used as the measure of utility. The essential feature of a standard unit of measurement is that it must be constant.
- iv) **Diminishing Marginal Utility** : The utility gained from successive units of a commodity goes on diminishing as the consumer acquires larger quantities of it.
- v) The total utility of 'a basket of goods' depends on the quantities of the individual commodities. If there are 'n' commodities in the bundle with quantities $x_1, x_2, \dots, X_n$, the total utility is:

$$U = f(x_1, x_2, \dots, X_n)$$

- iv) The marginal utility analysis of pricing and the diminishing marginal utility can quickly dispose of the diamond-water paradox, with the aid of this analysis we can now explain that the relative scarcity of diamonds results in high price, while the relative abundance of water means that its marginal utility and consequently its price will be low despite its high total utility.

7.6 THE LAW OF EQUI-MARGINAL UTILITY

The law of Equi-Marginal Utility is another important law in consumption theory. This is also known as the **Law of Substitution or the Law of Maximum Satisfaction or the Principle of Income Allocation**. It is also called as the Second Law of Gossen (the law of diminishing marginal utility being Gossen's First Law), an Austrian economist who found it. As human wants are unlimited and the resources to satisfy them are limited, every prudent consumer, therefore, will try to make the best use of the money at his disposal and derive the maximum satisfaction. In the words of "Alfred Marshall" if a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility, because if it had greater marginal utility in one use than in another, he would gain by taking away some of it from the second use and applying it to the first.

Thus, a consumer attains maximum total utility from his available income only when the marginal utilities of all goods consumed are equal. Symbolically,

$$MU_1 = MU_2 = MU_3 \dots \dots \dots MU_n$$

For getting maximum satisfaction out of the money at our disposal we carefully go on weighing the satisfaction obtained from each rupee that we spend. If we find that a rupee spent on one commodity has greater utility than in another, we shall go on spending rupees on the former commodities till the utilities derived from the last rupee spent in the two cases are equal. It means, we substitute some units of a commodity of greater utility for some units of lesser utility. As a result of this substitution the marginal utility of the former will fall and that of the latter will rise till the two marginal utilities are equalised. Hence, this is called the Law of Substitution. The following imaginary schedule will provide us the marginal utilities of two commodities i.e., 'X' and 'Y'.

Table – 7.6 Marginal Utilities of 'X' and 'Y'

Money Units	Marginal Utility of 'X'	Marginal Utility of 'Y'
1 st rupee	10	8
2 nd rupee	8	6
3 rd rupee	6	4
4 th rupee	4	2
5 th rupee	2	0
6 th rupee	0	- 2
7 th rupee	- 2	- 4

In the above table, we are assuming that the consumer has rupees 7 at his disposal to spend on two commodities 'X' and 'Y'. The two utility schedules indicate that the consumer's preference for commodity 'X' is more marked since he seems to receive more utility from his consumption of 'X' than from 'Y'. If he spends his whole income

Check Your Progress – 3

What are the assumptions of Cardinal Utility Approach?

.....

.....

.....

.....

7.5 LAW OF DIMINISHING MARGINAL UTILITY

Total utility is the sum of the utilities obtained from the units consumed. If a consumer consumes more of a commodity per unit of time, the greater will be the utility from it upto a certain point, i.e., maximum utility. This is called his saturation point for that particular commodity. Marginal utility, on the other hand, is the change in total utility resulting from one unit change in consumption of the commodity per unit of time. In other words, marginal utility is the addition of utility which a person derives from a small addition of a commodity.

Alfred Marshall defined diminishing (marginal) utility as “the additional benefit which a person derives from a given increase of his stock of a thing, diminishes with every increase in the stock that he already has”.

This is one of the important laws in consumption theory. According to this law, as a person purchases more and more units of a commodity, its marginal utility declines. In other words, the more we have of a commodity the less we want to have some more of it. It is the practical experience of every consumer that as he goes on consuming a particular commodity, each successive unit gives less and less utility. This law points out that the marginal utility of a commodity depends upon its quantity but is not proportional to its quantity. The marginal utility of the commodity to the consumer depends upon the volume of the stock purchased or possessed already by him. The larger the volume possessed or bought by him, the smaller is the utility derived from an additional unit of the commodity. The above law can be explained with the help of a simple example. The following table, relating to an imaginary consumer consuming bananas, illustrates the law clearly.

Table – 7.1 : Total and Marginal Utilities (in Units)

Number of Bananas	Total Utility	Marginal Utility
(1)	(2)	(3)
1	15	15
2	25	10
3	30	5
4	30	0
5	25	- 5
6	15	- 10

From the table 7.1 it is clear that as the consumer goes on eating bananas, the additional or marginal utility goes on decreasing. The 4th banana gives no additional utility and the 5th and 6th banana have a negative utility. Their consumption instead of giving satisfaction causes dissatisfaction. If we look at column 2, we will find that the total utility goes on increasing upto a point. It also seems reasonable that the utility of two bananas should be more than that of one and so on. But if we look at that more carefully we will notice that although the total utility does increase, it increases only at a diminishing rate. In the above table, when the consumer eats the second banana, the increase in utility is 10 units and when he eats the third the total utility increases by 5 only. This can be explained with the help of the following Graph:

7.5.1 GRAPHIC REPRESENTATION

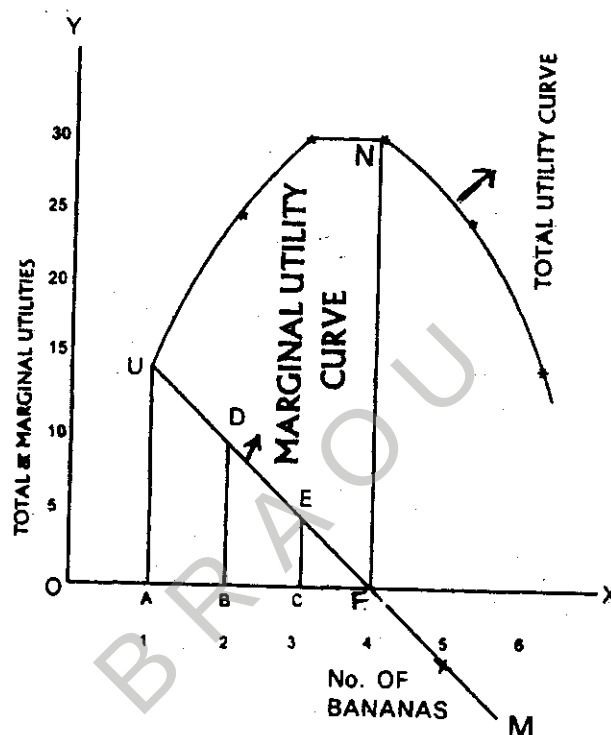


Fig. 7.1 : Total and Marginal Utility Curves

In the graph 7.1 'OX' axis represents the units of the commodity, i.e., bananas and along 'OY' axis is measured the total and marginal utilities. The total utility curve 'UT' indicates that total utility increases as the consumption of bananas increases. But the increase is at a decreasing rate. So the marginal utility decreases. At a certain level, increasing consumption of bananas may not push the total utility up. In the graph at point 'N' the total utility is the highest where the marginal utility is zero. After that, the total utility also decreases, and then marginal utility becomes negative. In the graph the marginal utility is represented by 'UM'. The straight lines AU, BD etc., represent the utility of the various units of the commodity. The 'AU' straight line represents the largest area because the utility of the first unit is the maximum. But the successive straight lines BD; 'CE' are smaller in accordance with the operation of the law. At

the 4th banana (point F) there is no addition to the total utility, i.e., the marginal utility is zero. And afterwards the marginal utility is negative which is represented below the "OX" axis. The marginal utility curve 'UM' is sloping downwards to the right because with every increase in the quantity of the commodity consumed, the marginal utility declines.

7.5.2 ASSUMPTIONS

The law of diminishing marginal utility is based on three important assumptions. They are:

- i) The tastes and preferences of the consumer do not change during the period of consumption,
- ii) The units of the commodity are homogeneous i.e, they are same in size and quality, and
- iii) There is no time gap between the consumption of the two units of the commodity. In other words, the process of consumption should be continuous without any interval.

7.5.3 LIMITATIONS

- i) The law does not apply in the case of rare collections like stamps, paintings and coins, etc. In the case of rare collections, the larger the number he collects, the greater will be the pleasure. Hence, the law does not apply.
- ii) When we discuss the law, we are applying it only to normal persons. But there are some abnormal persons too e.g., misers, drunkards, etc. The more the money a miser has, the greater is the utility that he derives. The more the drunkard gets pleasure the more he drinks.

In spite of these limitations, this law assumes a great importance in our day to day life.

7.5.4 IMPORTANCE

The law of diminishing marginal utility expresses us a basic principle of human behaviour. It is of great practical value to human beings in every walk of life.

- i) The law is applied in the sphere of taxation. A rich man is taxed more, for the utility of money to a rich man is less than that to a poor man. The principle of progressive taxation is based on this law only.
- ii) The law can also be applied in determining the prices of goods in the market. An increase in the stock of a commodity brings a person less satisfaction and therefore he can be induced to buy more only if the price is lowered. Hence, the greater the supply, the lower should be the price to clear it and vice-versa.
- iii) The law regulates our daily expenditure pattern. We know that as we go on buying more of a commodity, its marginal utility falls. Having only a limited amount of money at our disposal, we do not want to waste it unnecessarily on the purchase of the same commodity in large quantity. We, therefore, stop purchasing it at a point where the utility of money spent is equal to the utility of the last unit of the good purchased. We spend the rest of our money on other goods.

- iv) The marginal utility analysis of pricing and the diminishing marginal utility can quickly dispose of the diamond-water paradox, with the aid of this analysis we can now explain that the relative scarcity of diamonds results in high price, while the relative abundance of water means that its marginal utility and consequently its price will be low despite its high total utility.

7.6 THE LAW OF EQUI-MARGINAL UTILITY

The law of Equi-Marginal Utility is another important law in consumption theory. This is also known as the **Law of Substitution or the Law of Maximum Satisfaction or the Principle of Income Allocation**. It is also called as the Second Law of Gossen (the law of diminishing marginal utility being Gossen's First Law), an Austrian economist who found it. As human wants are unlimited and the resources to satisfy them are limited, every prudent consumer, therefore, will try to make the best use of the money at his disposal and derive the maximum satisfaction. In the words of "Alfred Marshall" if a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility, because if it had greater marginal utility in one use than in another, he would gain by taking away some of it from the second use and applying it to the first.

Thus, a consumer attains maximum total utility from his available income only when the marginal utilities of all goods consumed are equal. Symbolically,

$$MU_1 = MU_2 = MU_3 \dots \dots \dots MU_n$$

For getting maximum satisfaction out of the money at our disposal we carefully go on weighing the satisfaction obtained from each rupee that we spend. If we find that a rupee spent on one commodity has greater utility than in another, we shall go on spending rupees on the former commodities till the utilities derived from the last rupee spent in the two cases are equal. It means, we substitute some units of a commodity of greater utility for some units of lesser utility. As a result of this substitution the marginal utility of the former will fall and that of the latter will rise till the two marginal utilities are equalised. Hence, this is called the Law of Substitution. The following imaginary schedule will provide us the marginal utilities of two commodities i.e., 'X' and 'Y'.

Table – 7.6 Marginal Utilities of 'X' and 'Y'

Money Units	Marginal Utility of 'X'	Marginal Utility of 'Y'
1 st rupee	10	8
2 nd rupee	8	6
3 rd rupee	6	4
4 th rupee	4	2
5 th rupee	2	0
6 th rupee	0	- 2
7 th rupee	- 2	- 4

In the above table, we are assuming that the consumer has rupees 7 at his disposal to spend on two commodities 'X' and 'Y'. The two utility schedules indicate that the consumer's preference for commodity 'X' is more marked since he seems to receive more utility from his consumption of 'X' than from 'Y'. If he spends his whole income

of "Rs. 7 on commodity 'X' alone, he will secure a total satisfaction equivalent to 28 units while if he spends his entire income on 'Y' alone, he will secure only 14 units of utility. But the consumer will not, however, spend his entire money income on one commodity alone. The normal consumer behaviour pattern shows that people do not specialise in consumption. On the basic assumption that he wants to get maximum satisfaction, the consumer will continue to distribute his limited income on both goods till the marginal utilities, a rupee worth of purchase of the two goods, are equal. From the above utility schedules, we can say that the maximum satisfaction will be attained if the consumer spends Rs. 4 on 'X' and Rs. 3 on 'Y'. The maximum satisfaction will be about 46. In no other case does this utility amount to this. Now the marginal utility of both commodity 'X' and 'Y' is same i.e., 4. Thus, we can come to a conclusion that we can attain maximum satisfaction when we equalise marginal utilities by substituting the more useful for the less useful commodity.

7.6.1 GRAPHIC REPRESENTATION

In the two figures given below, we take money units on 'OX' axis and marginal utilities of two goods on 'OY' axis. Suppose a consumer has Rs. 7 to spend on 'X' and 'Y' commodities 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 (4 rupees) on X, and OM' on Y (3 rupees) because in this way the marginal utilities of the two are equal ($PM = P'M'$). Any other arrangement will give less than total satisfaction. Let the consumer spend MN money (one rupee) more on X and the same amount of money N'M' (=MN) less on Y. The above 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 figure LN'M'P' is bigger than PMNE. Hence, the total utility of this combination i.e., OM and OM' will give maximum satisfaction.

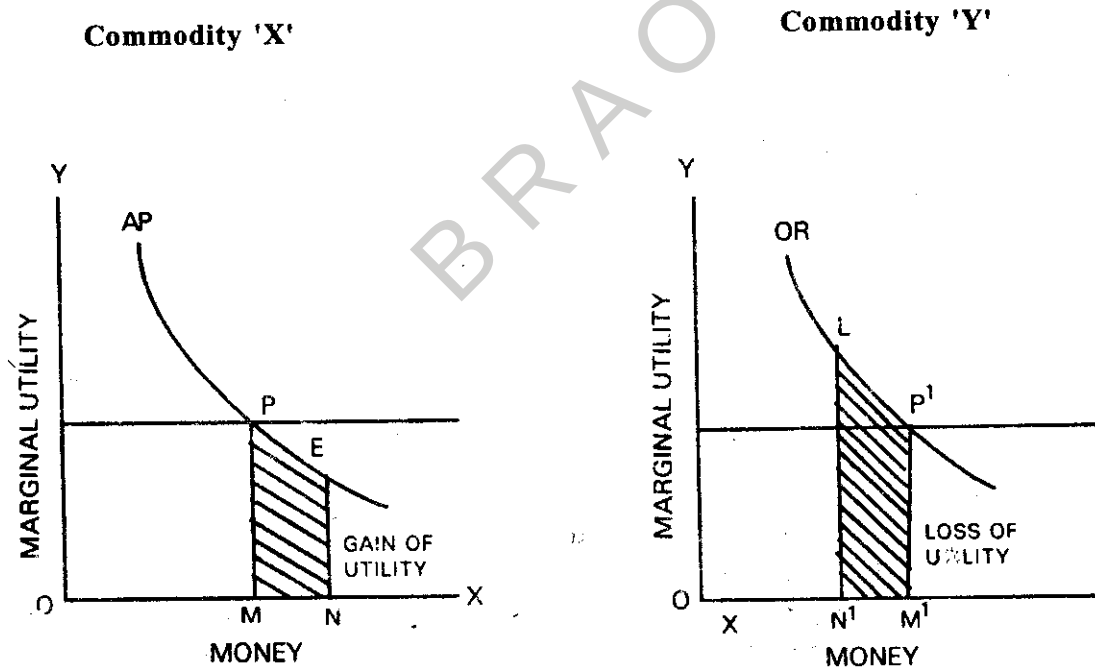


Fig 7.2 : Equi-Marginal Utility

7.6.2 ASSUMPTIONS

The Law of Equi-marginal utility is based on the following assumptions.

- i) Utility is measurable in terms of money.
- ii) The income of consumer is limited and remains constant.
- iii) The marginal utility of money remains constant.
- iv) The consumer is unable to change the prices of the commodities he consume.
- v) The law of diminishing marginal utility holds.
- vi) The utility schedule of commodity is independent of that of other commodities.

7.6.3 LIMITATIONS

1. The law is based upon the assumption that a man acts in a perfectly rational manner when he spends his money-income on a number of different commodities. If the consumer is ignorant or blindly follows a custom or fashion, he will make a wrong use of money. On account of his ignorance he may not know where utility is greater and where less.
2. An incompetent entrepreneur will fail to achieve the best results from the units of land, labour and capital that he employs. This is so because he will not be able to divert expenditure from less profitable channels to more profitable channels.
3. The law does not apply in cases where the resources are unlimited as for example is the case with the free gifts of nature. In these cases, there is no need of diverting expenditure from one direction to another.
4. The law assumes that the marginal utility of money remains constant. But it increases with every decrease in its available stock.
5. It is assumed that commodities are independent and their utilities are also independent. But in real life commodities may be either substitutes or complements. Therefore, their marginal utilities are interdependent.

We have discussed this law in relation to consumption. A consumer consciously or unconsciously observes this law while spending money on pursuing a variety of goods. Every consumer tries to equalise marginal utilities per rupee of various commodities in order to achieve maximum satisfaction. He substitutes an item yielding higher marginal utility to that of lower marginal utility so as to secure maximum satisfaction.

However, because of various limitations, this law is not widely used in day to day life advocated. Prof. Hicks a new approach i.e., indifference curve approach, to solve the problem of a consumer. This new approach is discussed in the next unit.

7.7 THE CONCEPT OF CONSUMER'S SURPLUS

The concept of consumers' surplus was introduced in economics by Alfred Marshall, who maintained that it can be measured in monetary units. In our everyday life, we often find that the price we pay for a commodity is usually less than the satisfaction we derive from its consumption. Sometimes we will be prepared to pay much more for a commodity than we actually pay. Consumer's surplus is 'equal to the difference

between the amount of money that a consumer actually pays to buy a certain quantity of a commodity 'X' and the amount that he would be willing to pay for this quantity rather than do without it'. In some of the items of our daily expenditure, the idea of consumer's surplus is quite obvious e.g., a packet of salt, a post-card, a newspaper, a match-box, etc. They are very useful commodities but at the same time, they are also very cheap. We are, therefore, prepared to pay much more for them, if need be, than we actually have to pay. From their purchase, therefore, we derive a good deal of surplus or extra satisfaction over and above the price that we pay for them. This is called **consumer's surplus**.

$$\text{Consumer's Surplus} = \text{Total Utility} - \text{Total Amount Spent}$$

The following table illustrates the concepts of the Consumer's Surplus

Units (Apples in Dozen)	Marginal Utility (In rupees)	Price (In Rupees)	Consumer's Surplus (In rupees)
1	2	3	4
1	40	10	30
2	36	10	26
3	3	10	20
4	22	10	12
5	10	10	0
Total Units Purchased	Total Utility 138	Total Money Spent 50	Consumer's Surplus 88

In the above table, it is assumed that the price of apples in the market is Rs. 10 per dozen. The consumer will purchase as many apples as will make his marginal utility equal to the price. Thus, he will purchase 5 dozens of apples and pay for each dozen Rs. 10. Totally, he spends Rs. 50. But his total utility from 5 dozens apples is equal to Rs. 138. He, thus, gets a consumer's surplus equal to:

$$\text{Rs. } 138 - \text{Rs. } 50 = \text{Rs. } 88$$

The consumer's Surplus can be found out from the fourth column of the table. From the first dozen of apples the consumer gets utility equal to Rs. 40. Therefore, the consumer would be ready to pay Rs. 40 for it rather than to go without it. But he pays for the first dozen only Rs. 10 because the price of apple in the market is only Rs. 10. Therefore, from the first dozen he gets consumer's surplus equal to $40 - 10 = 30$. Similarly, he gets Rs. 26, Rs. 20 and Rs. 12 consumer's surpluses on the second, third and fourth units. From the fifth unit the consumer derives utility equal to 10 and he also pays Rs. 10 for it. Thus, there is no Consumer's Surplus on the fifth unit. The total Consumer's Surplus is equal to Rs. 88. We can also represent Consumer's Surplus with the help of a diagram.

7.7.1 GRAPHIC REPRESENTATION

In the following graph the units of the commodity are measured along 'OX' axis and marginal utility in terms of money is measured along 'OY' axis.

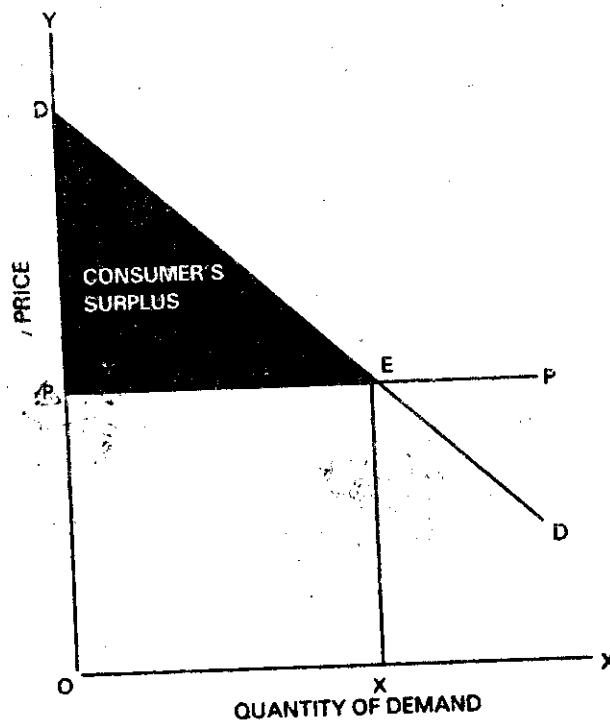


Fig. 7.3: Consumer's Surplus

Graphically, the consumer's surplus is found by the Demand Curve (marginal utility curve) for the commodity and the current market price which the consumer cannot affect by his purchase. In the diagram, DD is the demand curve which shows the set of prices that the consumer is willing to pay for successive units of a commodity. It is based on the marginal utility. PP is the price line which is horizontal to X-axis. At this price, the consumer buys OX quantity of the commodity. The total amount of money the consumer is willing to pay for OX quantity of a commodity is represented by the area ODEX. The area OPEX indicates the total amount of money that the consumer actually pays for OX quantity of the commodity. So, when the consumer buys OX quantity the price that he pays is equal to the marginal utility he secures.

The fact that the price in the market is lower than the price he is willing to pay for the commodity implies that his actual expenditure is less than the amount he would be willing to spend to acquire the quantity X. The difference is called the consumer's surplus and it is represented by the area of the PDE.

There is inverse relationship between consumer's surplus and the price of the commodity. If the price of the commodity falls, the consumer's surplus increases and vice versa.

7.7.2 ASSUMPTIONS OF CONSUMER'S SURPLUS

The concept of consumer's surplus is based on the following important assumptions.

- i) There is a fixed relationship between utility and satisfaction.
- ii) The marginal utility of money to the consumer remains constant throughout the process of exchange.

- iii) While measuring consumer's surplus, the price changes are taken into account but the other determinants of demand are excluded.
- iv) The utility of the commodity depends upon the quantity of that commodity alone. It means that each commodity is to be treated as an independent commodity.

The Marshall's concept of consumer's surplus holds good only on the basis of these assumptions.

7.7.3 CRITICISM

1. It is argued that consumer's surplus is purely an imaginary idea. You just imagine what you are prepared to pay and you proceed to deduct from that what you actually pay. It is all hypothetical.
2. It is difficult to measure consumer's surplus precisely as a few people would be ready to say what they would be prepared to pay for a commodity. Besides different people are prepared to pay different amounts.
3. It does not apply to the necessities of life. In such cases, the surplus is immeasurable. A man would be ready to pay any amount for a glass of water when he is dying of thirst. Further, economists like Hicks and Allen felt that utility is a subjective phenomenon and hence cannot be measured in concrete terms.
4. But this notion of consumer's surplus is useful to exchequer for the imposition of certain taxes as the consumer will not feel it burdensome if the tax is imposed on a commodity for which he derives consumer's surplus.

Check Your Progress – 4

What is meant by consumer's surplus?

.....

.....

.....

.....

7.8 SUMMING UP

In this unit, we have dealt with one of the two approaches relating to utility analysis, that is, cardinalist approach. This approach assumes measurement of utility in 'utils'. In this analysis, consumer gets equilibrium when price of a commodity is equal to the additional benefit i.e., marginal utility, he derives from consuming that commodity. This condition is applied even if there are more than one commodity.

The important theory in utility analysis is the law of diminishing marginal utility. It means that if you consume more of a commodity, without time lag, the marginal (additional) utility you get from that commodity goes on decreasing. Another theory we have learnt in this unit is the law of equi-marginal utility. In order to maximise our satisfaction with the limited money we have to weigh the utility derived from each rupee that we spend. Every consumer tries, as far as possible, to equalise marginal utilities per rupee of various commodities in order to achieve equilibrium. He is constantly engaged in

substituting an item by another item so as to secure maximum satisfaction out of his expenditure. We choose that commodity which gives us more satisfaction. This substitution leads to the equality of marginal utilities.

The other concept we have discussed is the consumer's surplus. It is the excess of what we are prepared to pay over what we actually pay for a commodity.

All the three theories depend on the assumption of measurability of utility. But, in practical world, we cannot measure utility from a commodity we consume. This assumption was criticised by many economists. Even marginal utility of money may not be constant as it may change from person to person.

7.9 CHECK YOUR PROGRESS : MODEL ANSWERS

1. The want satisfying power of a commodity or service is called utility. A consumer thinks of utility at the time of buying a commodity. The term utility is a subjective concept.
2. The term utility is commonly used as equivalent to satisfaction. But in economics it has different meaning. Utility implies expected satisfaction, whereas satisfaction means realised satisfaction. Satisfaction is derived only after the consumption of a commodity. It is to be noted that in the theory of consumer's behaviour it is assumed that utility and satisfaction are synonymous.
3. The following are the assumptions behind the Cardinal Utility approach:
 - a) **Rationality:** The consumer is rational. It means he aims at the maximisation of his utility subject to the constraint imposed by his income.
 - b) **Utility is Measurable:** The utility of each commodity is measurable. The most convenient measure is money. The utility is measured by the monetary units that the consumer is prepared to pay for another unit of the commodity.
 - c) **Constant Marginal Utility of Money:** This assumption is essential if the monetary unit is used as the measure of utility. The essential feature of a standard unit of measurement is that it must be constant.
 - d) **Diminishing Marginal Utility:** The utility gained from successive units of a commodity goes on diminishing as the consumer acquires larger quantities of it.
 - e) The total utility of "a basket of goods" depends on the quantities of the individual commodities. If there are 'n' commodities in the bundle with quantities $X_1, X_2, \dots, X_n$ the total utility is $U = f(X_1, X_2, \dots, X_n)$
4. The concept of consumer's surplus was introduced in economics by Alfred Marshall, who maintained that it can be measured in monetary units. According to him, consumer's surplus is "equal to the difference between the amount of money that a customer actually pays to buy a certain quantity of a commodity 'X' and the amount that he would be willing to pay for this quantity rather than do without it". This can be expressed with the following formula:

Consumer's Surplus = Total Utility – Total Amount Spent.

7.10 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Explain the law of diminishing marginal utility with the help of a diagram.
2. Explain the law of equi-marginal utility.
3. Explain the concept of consumer's surplus with Graphic representation.
4. How do you arrive at Consumer's equilibrium in the cardinal utility approach?

II. Answer the following questions in about 15 lines each.

1. Distinguish between cardinal and ordinal approaches of utility.
2. What is meant by Consumer's Surplus?
3. Distinguish between utility and satisfaction.
4. Explain the term "utility".
5. What is consumer's equilibrium.
6. What do you mean by consumer's surplus?
7. Explain the relationship between marginal utility and total utility.
8. What is the importance of law of Diminishing Marginal Utility?
9. What are the assumptions of Consumer's Surplus?
10. What are the limitations of law of diminishing marginal utility?

7.11 RECOMMENDED BOOKS

- | | | |
|----------------------|---|-------------------------------|
| 1. Stioner and Hauge | : | A Text Book of Econoic Theory |
| 2. H.S. Agarwal | : | Miro Economics |
| 3. M.L. Seth | : | Principles of Economics |

7.12 GLOSSARY

Marginal Utility	:	Increase in the total utility of consumption of a good which results from increasing the quantity of the good consumed by one unit.
Consumer's Surplus	:	The excess of the amount a consumer is prepared to pay for a good over the amount he actually pays for it.
Consumer's Preference	:	A Term used to denote the relative strengths of consumer's wishes to consume various goods and services.

UNIT – 8 : INDIFFERENCE CURVE ANALYSIS

Contents

- 8.0 Aims and Objectives
 - 8.1 Introduction
 - 8.2 What are Indifference Curves ?
 - 8.3 Assumptions of Indifference Curve Analysis
 - 8.4 Properties of Indifference Curves
 - 8.5 Consumer's Equilibrium
 - 8.5.1 Price Line or Budget Line
 - 8.5.2 Assumptions
 - 8.5.3 Conditions
 - 8.5.4 Graphical Presentation
 - 8.6 Income, Substitution and Price Effects
 - 8.6.1 Income Effect
 - 8.6.2 Substitution Effect
 - 8.6.3 Price Effect
 - 8.7 Derivation of Demand Curve from Indifference Curves
 - 8.8 Summing Up
 - 8.9 Check Your Progress: Model Answers
 - 8.10 Model Examination Questions
 - 8.11 Recommended Books
 - 8.12 Glossary

8.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain the ordinal utility approach as exemplified by the indifference curve analysis.

After going through the unit, you should be able to:

- explain the concept of 'indifference curve';
- list out the assumptions of indifference curve analysis;
- describe the properties of indifference curves;
- explain the consumer's equilibrium with the help of indifference curve analysis;

- recognise income, substitution and price effects;
- drive demand curve from indifference curves.

8.1 INTRODUCTION

In the study of marginal utility analysis, we have assumed that utility is measurable in the cardinal sense. To overcome this difficulty the modern economists have developed an alternative approach of indifference curve analysis based on ordinal measurement of utility. This is in recognition of the fact that exact measurement of utility is not possible and that the economists can at best give a ranking to consumer's satisfaction instead of measuring it in units. In the ordinal approach, the consumer need not assign specific amounts to the utility which he derives from the consumption of a good or combination of goods. He will simply compare the different utilities or satisfaction in the sense whether one level of satisfaction is equal to, lower than, or higher than another. He cannot determine by how much one level of satisfaction is higher or lower than the other. For example, if the various combinations are X, Y, Z, the consumer can tell whether he prefers X to Y or Y to Z or is indifferent to the comparing of them.

The concept of ordinal utility implies that the consumer cannot go beyond stating his preference or indifference. In other words, if a consumer happens to prefer X to Y he cannot precisely tell by how much he prefers X to Y or he cannot tell the quantitative differences between various levels of satisfaction. At the most he can merely judge whether one level of satisfaction is higher than or lower than or equal to another or alternatively by ranking his preferences as 1st, 2nd, 3rd and so on. For example, the individual consumer is consuming rice and clothing. The indifference curve analysis indicates that he would be consuming both in such a manner that his level of satisfaction would be the same if he consumes less of rice and more of clothing or more of rice and less of clothing as long as he remains on the same indifference curve.

Modern economists, like Allen and Hicks, have supported the ordinal approach. They replaced the utility analysis by the indifference curve analysis. This is also known as "Substitution analysis". Diminishing marginal rate of substitution (MRS) is the basic concept.

8.2 WHAT ARE INDIFFERENCE CURVES ?

To understand indifference curves, it is better to start with an indifference schedule. An indifferent schedule may be defined as a schedule of various combinations of the two commodities that will give an equal level of satisfaction to the consumer.

Indifference Schedule

Schedule-I		Schedule-II	
Goods 'X'	Goods 'Y'	Goods 'X'	Goods 'Y'
1	15	1	17
2	11	2	14
3	8	3	11
4	6	4	8
5	5	5	6

In the above schedule the consumer has to start with 1 unit of X and 15 units of Y. Now the consumer is asked to tell how much of goods Y he will be willing to give up for the gain of an additional unit of X so that his level of satisfaction remains same. If the gain of one unit compensates him fully for the loss of 4 units of Y, then the next combination of 2 units of X and 11 units of Y ($2X + 11Y$) will give him as much satisfaction as the initial combination of ($1X + 15Y$). Similarly by asking the consumer further how much of Y he will be prepared to forego for successive increments in the stock of X so that his level of satisfaction remains unaltered. We get combinations of $3X + 8Y$, $4X + 6Y$ and $5X + 5Y$ each of which provides the same satisfaction as combination of $1X + 15Y$ or $2X + 11Y$. Since satisfaction is the same whichever combination of goods in the schedule is offered to him, the consumer will be indifferent among the combinations included in a schedule. Similarly the consumer may have another schedule representing more of both the goods than the initial combination in Schedule-II. Once again the consumer is indifferent among the various combinations in Schedule-II, but however, it should be borne in mind that the consumer will prefer any combination in Schedule-II to any combination in Schedule-I because it is assumed that more of a combination is preferred to less of it and hence any combination in Schedule-II will give him more satisfaction than any combination in Schedule-I.

The indifference schedule can be converted into Indifference Curve (IC) by plotting the various combinations on a graph paper. Indifference curves are shown in Fig. 8.1 for IC schedules I and II. The points of indifference, at a particular level of satisfaction, when joined together produce a curve known as **Indifference curve**. Indifference curve is a curve which indicates different combinations of two commodities e.g., X and Y, which yield an equal level of satisfaction. An indifference curve is also known as **satisfaction curve**.

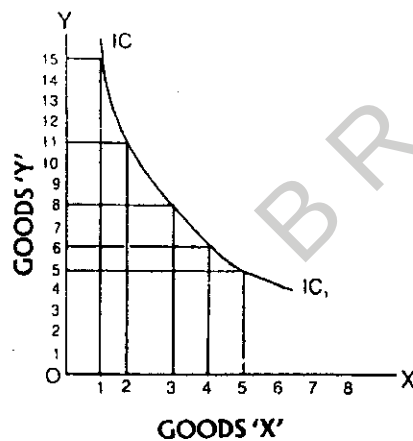


Fig 8.1 (a) : Indifference Curve₁

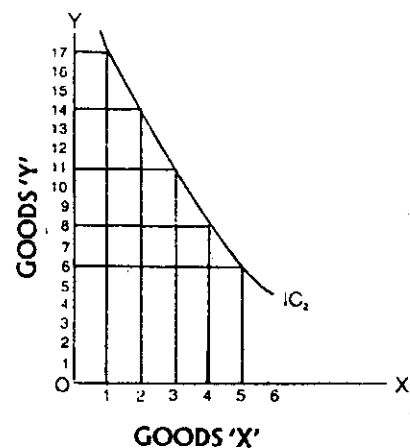


Fig 8.2 (b) : Indifference Curve₂

Thus when there are two indifference curves (I & II), combinations on I indifference curve will be of equal value and similarly combinations on the II indifference curve will be of equal value. But combinations on the higher indifference curve will have greater value than combinations on the lower indifference curve. The higher the indifference curve or the farther it is from the origin, 'O' the higher level of satisfaction from the combination of two commodities.

Any combination of goods on IC_2 gives the consumer more satisfaction than that of IC_1 . Indifference Curve shows nothing about the absolute amount of satisfaction. As such one can say whether one IC represents a higher or lower level of satisfaction than another but one cannot say by how much it is higher or lower.

Check Your Progress – 1

What is an Indifference Schedule. Give an imaginary indifference schedule.

.....

.....

.....

.....

8.3 ASSUMPTIONS OF INDIFFERENCE CURVE ANALYSIS

Before we discuss the properties of indifference curves, it will be useful if we mention the assumptions about the psychology of the consumer, which one generally makes in indifference curve analysis. The assumptions are:

(i) Non-Satiety

It is assumed that a consumer will also prefer more of a piece of goods to less of another that is, if he is over supplied or over satiated with one of them he will prefer a smaller quantity, of that one to the larger quantity. It is, thus assumed that the consumer has not yet reached the point of satiety in the consumption of any of the goods. This assumption is, therefore, known as non-satiety assumption.

(ii) Transitivity

The consumer is rational in spending money on goods and his choices are transitive. That means he is always consistent in his choice. Let us suppose there are three combinations of two goods, X, Y and Z. If the consumer is indifferent between combination X and Y and also between Y and X, it is obvious that by law of transitivity he will be indifferent between combination of Y and Z, which implies that consumer's tastes are quite consistent.

(iii) Full Knowledge

The consumer processes full knowledge about all matters pertaining to his decisions.

(iv) Diminishing Marginal Rate of Substitution

The concept of Marginal Rate of Substitution is the basis of Indifference Curves. It may be defined as the rate at which an individual will exchange successive units of one commodity for another.

According to the principles of diminishing marginal rate of substitution, it is assumed that the consumer will be prepared to give up less and less of goods Y for each additional unit of X. In the indifference schedule given earlier we have seen that in the beginning consumer gives up 4 units of Y for the gain in one additional unit of X but the level of satisfaction remains the same. It follows that he gives up 3 units of Y for an additional unit of X and later on 2Y for 1X and so on. Thus the marginal rate of substitution of

X for Y (MRS_{xy}) diminishes as more and more of goods X is substituted for goods Y.

Combination of Goods

It is assumed that consumer is not interested in any one commodity at a particular time as asserted by the utility analysis, but is interested in a combination of goods.

8.4 PROPERTIES OF INDIFFERENCE CURVES

Based on the above assumptions we can proceed to deduce the properties of indifference curves, namely:

- i) Indifference curves slope downwards from left to right.
- ii) Indifference curves are convex to the origin.
- iii) Indifference curves cannot intersect each other.
- iv) A higher indifference curve represents higher level of satisfaction than the indifference curve at the lower level.
- v) Indifference curves need not necessarily be parallel to each other.
- vi) Indifference curves do not touch axes.

Now, let us explain these properties at length.

i) Indifference curves slope downwards from left to right

This property implies that an indifference curve has a negative slope which means that when the amount of one piece of goods in the combination is increased, the amount of the other one is reduced so that the loss of satisfaction by giving up the first one is compensated for the gain in satisfaction by additional unit of the other one (see figure 8.1). If the indifference curves do not slope downwards from left to right, they can be either horizontal or they must slope upwards from left to right. Let us examine the horizontal indifference curve in the figure given below.

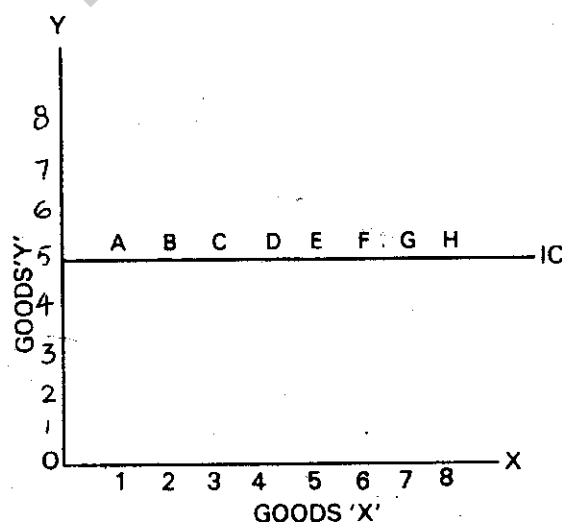


Fig: 8.2

If the indifference curve had the shape of horizontal straight line, it would mean that all combinations along the curve are of equal value., i.e. $4y+1x$, $4y+2x$, $4y+3x$ and so on. But this cannot be so if our first assumption is to hold good, i.e., a consumer always prefers a larger amount of a piece of goods to a smaller one. Hence each succeeding combination is better than the previous one, so much so the consumer cannot be indifferent between the various combinations. He would definitely prefer a combination including a larger amount of one commodity with the same amount of the other. Therefore, an indifference curve cannot be horizontal since different combinations on the curve will differ in importance and satisfaction.

The other alternative to a downward sloping indifference curve would be an upward sloping indifference curve as shown below:

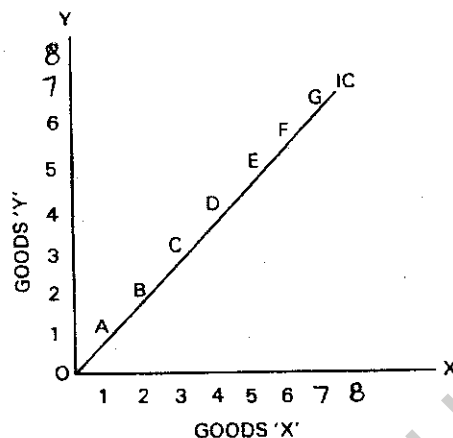


Fig: 8.3

If the indifference curve were upward sloping to the right, it would mean that combination which combines more of both the goods could give the same satisfaction to the consumer as the combinations which had smaller amounts of both the goods. This is clearly invalid because the consumer would always prefer the combination containing more of both the goods to a combination containing less. Therefore, the consumer prefers the same combination to the other. He cannot be indifferent between them. It follows, therefore, that indifference curve cannot slope upwards to the right because in such a case the combinations on the curve will be of different significance and not of equal significance which is quite contradictory to the property of an indifference curve. Hence the indifference curve must necessarily slope downwards from left to right as given below in figure 8.4 A.

The down ward sloping indifference curve would mean that all combinations on the curve are of equal significance and he is, therefore, indifferent between them for every increase in the amount of X, there is corresponding decrease in the amount of Y.

ii) Indifference curves are convex to the origin

The property of indifference curve being convex to the origin follows from the assumption of Diminishing Marginal Rate of Substitution. This is illustrated below (see Figure 8.4 B).

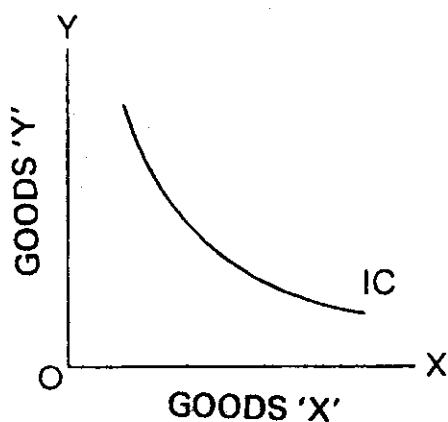


Fig: 8.4 A

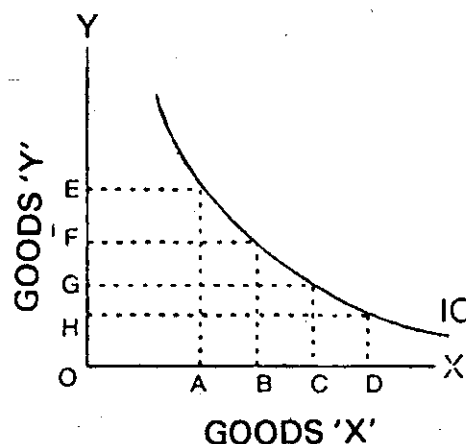


Fig: 8.4 B

Along OX axis we have made $AB = BC = CD$ representing three equal units of commodity X. In order to get more Y, the consumer will exchange X for Y. It will be clear from the above figure that as more and more of X is acquired, for each extra unit of X, the consumer is willing to part with less and less of Y i.e., MRS_{xy} diminishes as more and more of X is substituted for Y. Thus, the convex indifference curves are consistent with the principle of diminishing MRS. We therefore conclude that indifference curves are convex to the origin.

If the indifference curve is concave to the origin it goes contrary to the Law of Diminishing Marginal Rate of Substitution.

A concave indifference curve will imply that the MRS_{xy} increases as more and more of X is substituted for Y as shown below.

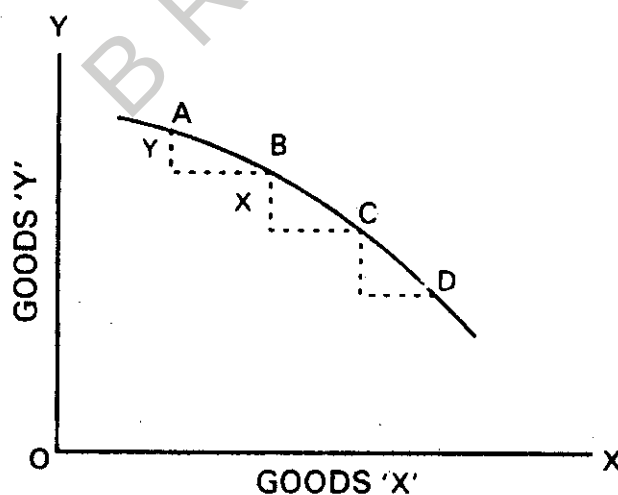


Fig: 8.5

It can be seen from the figure 8.5 that as more and more of X is acquired for each extra unit of X, the consumer is willing to part with more and more of Y. i.e., MRS_{xy} increases as more and more of X is substituted for Y. Thus, if the principle of diminishing marginal rate of substitution is valid, then indifference curves cannot be concave to the origin.

iii) Indifference curves cannot intersect each other

Another important property of indifference curves is that they cannot intersect each other. If they should intersect we arrive at self-contradictory or absurd conclusions. In the figure 8.6, two indifference curves are shown cutting each other at point C.

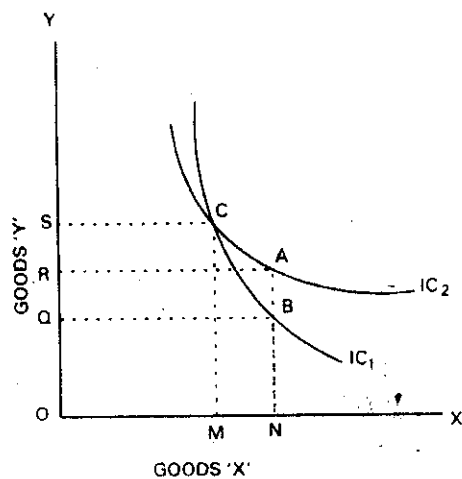


Fig: 8.6 A

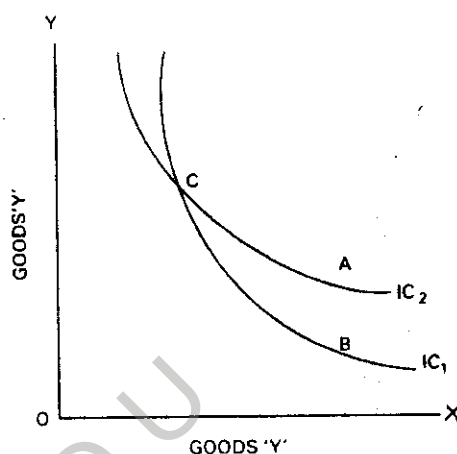


Fig: 8.6 B

Taking IC_2 No.1 first

$$OM \text{ of } X + OS \text{ of } Y = ON \text{ of } X + OR \text{ of } Y$$

Therefore $OR \text{ of } Y = OQ \text{ of } Y$

Hence, $ON \text{ of } X + OR \text{ of } Y = ON \text{ of } X + OQ \text{ of } Y$, but conclusions that $OR \text{ of } Y + OQ \text{ of } Y$ is absurd.

Two indifference curves cannot intersect and can also be shown by the law of transitivity. Take point A on IC_2 and point B on IC_1 vertically below A. combinations A and C will give the consumer equal satisfaction because they lie on the same indifference curve IC_2 likewise between combinations B & C on IC_1 . The consumer is indifferent because they give him same level of satisfaction. If combination A is equal to combination C in terms of satisfaction, and combination B is equal to combination C, it follows that the combination A will be equivalent to B in terms of satisfaction. But a glance at the figure will show that this is absurd since combination A contains more of commodity Y than combination B, while the amount of X commodity is the same in both the combinations. Thus the consumer will definitely prefer A to B, i.e., A will give more satisfaction to the consumer than combination B. We therefore conclude that indifference curves cannot cut each other.

- iv) A higher indifference curve represents higher level of satisfaction

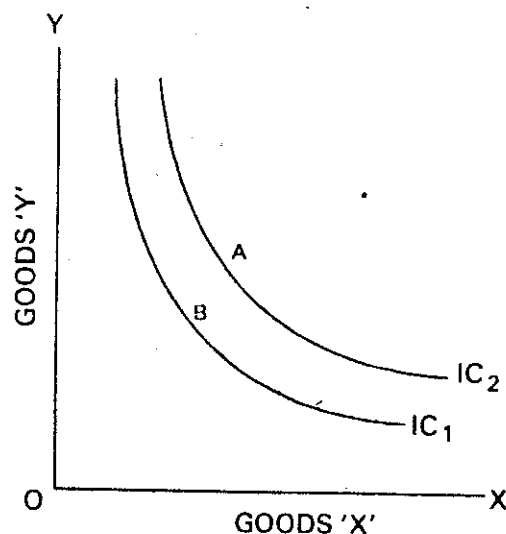


Fig: 8.7

The combinations which lie on a higher indifference curve will be preferred to the combinations which lie on a lower indifference curve because combination A contains more of both the goods than the combination B. Hence, combination A on a higher indifference curve will give him more satisfaction than the combination B on a lower indifference curve.

- v) Indifference Curves need not necessarily be parallel to each other

The marginal rate of substitution between the two commodities need not be the same in all the indifference curves. Hence, indifference curves may be parallel or may not be parallel. Fig 8.9 indicates that some indifference curves are parallel while some others are not

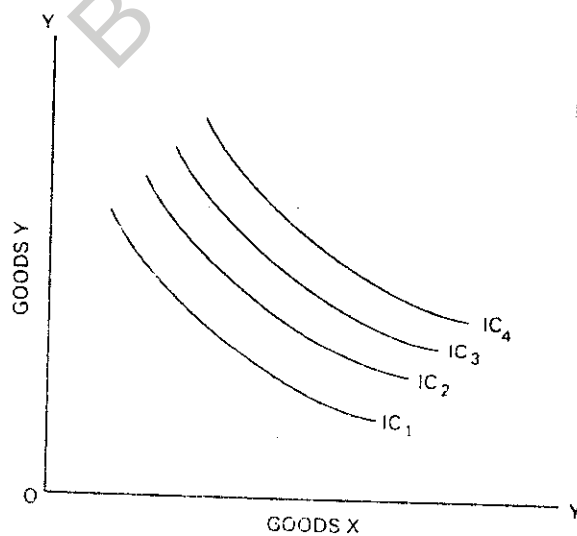


Fig 8.8

vi) Indifference Curves do not touch axes

These curves do not touch either X axis or Y axis. If they touch, the consumer uses quantity of one commodity only but not the combination of two commodities. This is contrary to the indifference curve analysis.

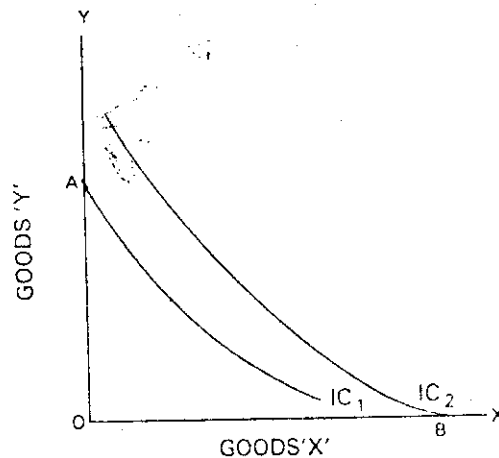


Fig 8.9

It can be seen from the Fig 8.9 that when IC_1 touches OY axis the consumer is not consuming any quantity of X. In the same manner, when IC_2 touches X axis he is not consuming any quantity of commodity Y.

Check Your Progress – 2

What are the properties of Indifference curves?

.....

.....

.....

.....

8.5 CONSUMER'S EQUILIBRIUM

We have already discussed how the consumer reaches his equilibrium with the help of utility analysis. We shall now examine how he achieves maximum satisfaction with the help of indifference analysis.

8.5.1 PRICE LINE OR BUDGET LINE

In order to explain consumer's equilibrium there is also the need for introducing the price line into the indifference diagram which represents the prices of the goods and consumer's income.

Suppose our consumer has got Rs.100 to spend on commodity X and Y. Let the price of commodity X in the market be Rs. 20 per unit and that of Y Rs. 10. If he spends the whole of his income on X he would buy 5 units of X and if the entire amount is spent on Y, he would buy 10 units. In other words he can buy any combination that lies in the price line with his given income and given prices of the goods. It should be

carefully noticed that any combination outside the price line AB will be beyond the reach of the consumer with his given income and price of goods and any point within the price line, say G will be definitely within the reach of the consumer but on such combinations he will not be spending all his income. He will not be at point G inside AB since by assumption he spends all his income on commodity X or Y. Therefore, the consumer with given income under given market conditions will have different opportunities of consumption along path AB.

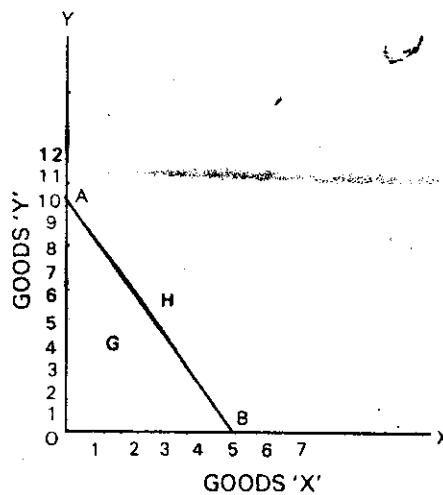


Fig. 8.10

By superimposing the indifference curve on the price or budget line, the equilibrium position of the consumer is determined. A consumer is said to be in equilibrium when he is buying such a combination of goods which leaves him with no tendency to rearrange his purchases of goods.

8.5.2 ASSUMPTIONS

The following assumptions are made to explain the consumer's equilibrium:

- i) He has a given amount of money to spend on the two goods.
- ii) Prices of all the goods are fixed in the market so that no individual consumer can alter the price.
- iii) Goods are homogeneous and divisible.
- iv) The consumer is rational, i.e., the consumer will maximise his satisfaction with given income and prices of goods.

8.5.3 CONDITIONS

The consumer is in equilibrium when he maximises his utility, given his income and the market prices. Two conditions must be fulfilled for the consumer to be in equilibrium.

The first condition is that the marginal rate of substitution be equal to the ratio of commodity prices.

$$MRS_{xy} = \frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

This is necessary but not a sufficient condition for equilibrium. The second condition is that the indifference curves be convex to the origin. This condition is fulfilled by the axiom of diminishing MRS.

8.6.4 GRAPHICAL PRESENTATION

Given the indifference map of the consumer and his budget line the equilibrium is defined by the point of tangency of the budget line with the highest possible indifference curve. At the point of tangency the slopes of the price line P_x/P_y and the indifference curves ($MRS_{xy} = MU_x/MU_y$) are equal.

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

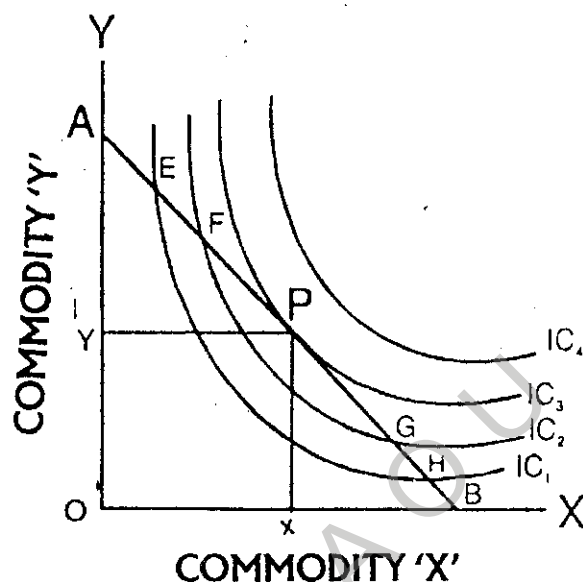


Fig 8.11

Thus the first order condition is denoted graphically by the point of tangency of the two relevant curves. The second order condition is implied by the convex shape of the indifference curves. The consumer maximises his utility by buying OX and OY of the two commodities. Any other possible combination of the two goods either would lie on a lower indifference curve and thus yield less satisfaction or would be unattainable. Take point E which also lies on the same price line AB but E lies on a lower indifference curve IC_1 and therefore will yield less satisfaction than P. Likewise points F, G, H are also rejected in favour of P, since they lie on lower indifference curve. It is, thus, clear that of all combinations lying on AB price line P lies on the highest possible indifference curve and yields maximum possible satisfaction and therefore the consumer will be in the equilibrium position at point P.

Only at the tangency point of P, the slopes of the price line and indifference curve are equal. The slope of the price line can be represented by P_x/P_y at point 'P'. Likewise, the slope of IC_3 can be represented by MRS_{xy} at Point 'P'. The point P indicates the ratio between the prices of the two goods. At points E, F, the marginal rate of substitution (MRS_{xy}) is greater than the given price ratio; hence he will buy more of X than Y.

and come down along the price line. He will continue to do so till $MRS_{xy} = P_x/P_y$. On the contrary at points, G and H, MRS_{xy} is less the given price ratio. Therefore, it will be to the advantage of the consumer to substitute good Y for good X and thereby move up the price line AB until the $MRS_{xy} = P_x/P_y$. Therefore only at point P, the consumer is in equilibrium because at that point the price line is tangent to the indifference curve or in other words the marginal rate of substitution of good X for good Y must be equal to the ratio between the prices of the two goods.

Check Your Progress – 3

What are the assumptions made to explain the consumers' equilibrium?

.....

.....

.....

.....

8.6 INCOME, SUBSTITUTION AND PRICE EFFECTS

The income of the consumer, the prices of other commodities, and the price of the commodity will have influence on the consumers' equilibrium. These effects are discussed below.

8.6.1 INCOME EFFECT

Another concept associated with indifference curves is the income effect. The effect of a change in the consumer's income on his total satisfaction is known as income effect. So far we have assumed a consumer with a given income buying two different commodities at given prices. We must also consider how the consumer will react in regard to his purchases of the commodity when his income changes while prices of goods and his tastes and preferences remain unchanged. As a result of change in consumer's income his purchases of goods will change. This is regarded as the income effect. The income effect is illustrated in the Fig. 8.12.

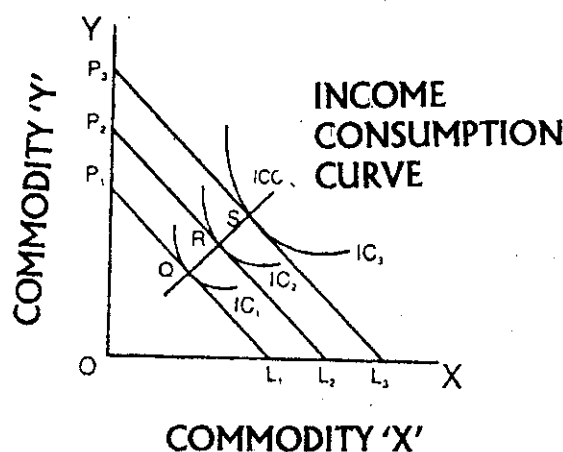


Fig. 8.12 : Income Consumption Curve

With the given price and a given money income as indicated by price line $P_1 L_1$, the consumer is in equilibrium at point Q (see Fig 8.12). If the income of the consumer increases, with increased income, he would be able to purchase larger quantities of both the goods. As a result of a change in his income the price line will shift upwards to the right ($P_2 L_2$) and will be parallel to the price line $P_1 L_1$. With further rise in income, the price line shifts to $P_3 L_3$ and the consumer is at equilibrium at S. If the various points of Q R and S showing consumer's equilibrium at various levels of income are connected, we will get the Income Consumption Curve. Income consumption curve is (ICC) is thus the locus of equilibrium points at various levels of consumer's incomes. The ICC shows the way in which consumption varies when income changes but prices remain unchanged.

If the income effect is positive for both the goods X and Y, the consumption curve will slope upwards to the right as given by ICC_1 in Fig. 8.13. If the income effect is negative for good X, ICC will slope backward to the left as ICC_2 , and will slope downwards to the right as ICC_3 , if commodity Y happens to be an inferior one.

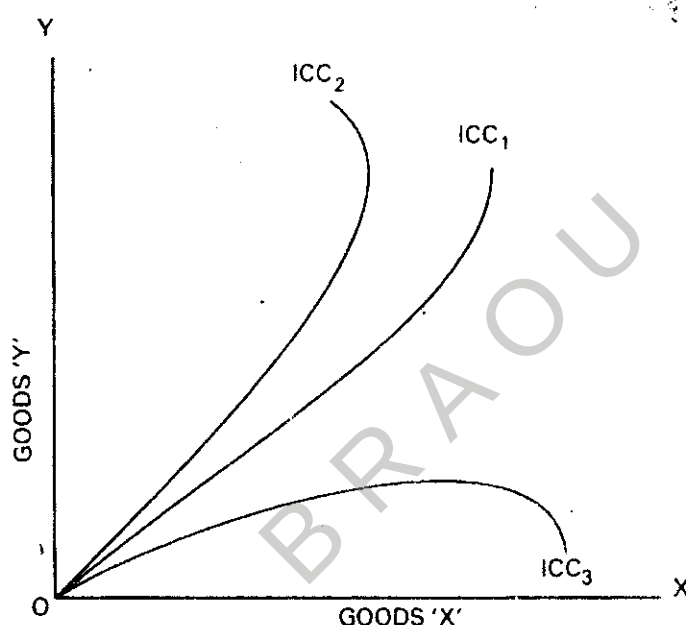


Fig. 8.13

8.6.2 SUBSTITUTION EFFECT

Yet another factor responsible for the changes in the consumption of a commodity is the substitution effect. Under this effect we assume change in prices for a corresponding change in income with the result that the consumer is neither better off nor worse off than before, i.e., the real income of the consumer remains the same. However, when prices change, commodities which are cheaper would be substituted for commodities which are dearer. This result is known as **substitution effect**.

Thus substitution effect is illustrated below:

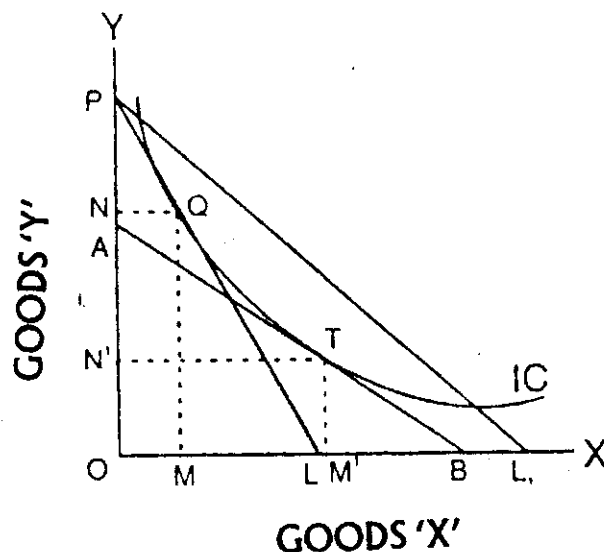


Fig. 8.14

With the given income and prices, the consumer is at equilibrium at point Q on the indifference curve, purchasing ON of commodity Y and OM of commodity X. Suppose the price of commodity X falls, the price line shifts to PL_1 . With this fall in price the consumer's real income or purchasing power would increase. In order to find out the substitution effect, the gain in real income should be wiped out by reducing the money income of the consumer that forces him to stay on the same indifference curve. When some income is taken away the price line is shifted to a new position AB parallel to PL_1 , which means that the reduction of consumer's income by the amount PA (in terms of Y) or LB (in terms of X) has been made to keep him on the same indifference curve. The consumer would therefore rearrange his purchases of X and Y and will substitute X for Y since X is now relatively cheaper and Y is now relatively dearer. Thus in order to buy more of X he moves on the same indifference curve from point Q to point T. Thus, increase in the purchase of commodity X by MM' and the decrease in the purchase of commodity Y by NN' is due to the change only in the relative prices of commodities X and Y, since the effect due to the gain in real income has been wiped out by making a simultaneous reduction in consumer's income. Therefore, movement from Q to T represents the substitution effect. Substitution effect on commodity X is the increase in its quantity purchased by MM' and substitution effect on Y is the fall in the quantity purchased by NN' . In short, the substitution effect implies that a change in the real income of a consumer due to a change in the price is compensated by a corresponding change in income but the relatively cheaper article is bought in the place of the dearer one.

8.6.2 PRICE EFFECT

This effect shows the reaction of the consumer and measures the full effect of the change in the price of the commodity on the quantity purchased with given income.

To begin with the consumer is in equilibrium at point Q on the budget line AB . With the fall in the price of X, the budget line shifts to the right BA_1 , and the consumer can now buy OA_1 of X or OB of Y. A further fall in price of X will shift the budget line to BA_2 , and so on. By joining Q , Q_1 and Q_2 , we get a curve called the Price Consumption Curve. The Price Consumption Curve shows the price effect.

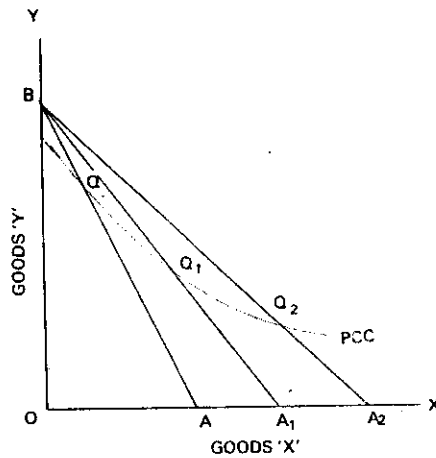


Fig. 8.15

Check Your Progress – 4

What is meant by price effect?

.....

.....

.....

.....

8.7 DERIVATION OF DEMAND CURVE FROM INDIFFERENCE CURVES

The demand curve can be derived from indifference curves. This is done by measuring money on Y-axis and units of X commodity on X axis. As the price of the commodity X falls, the consumer will be moving to a higher indifference curve. With the help of unit price of X, the demand curve for the commodity X can be drawn, where it will be downward sloping indicating that more and more of X will be bought as price of X falls.

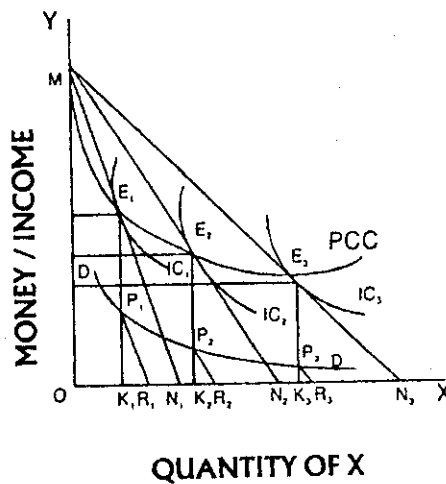


Fig. 8.16

Money is measured along Y-axis and commodity 'X' on X-axis. The slope of the price line indicates the price of commodity 'X'. PCC is the price consumption curve and the points E_1 , E_2 and E_3 lying on PCC represent the equilibrium position of the consumer. To begin with the consumer is in equilibrium position at E_1 , where the price line is tangential to indifference curve IC_1 . If there is a fall in the price, the price line shifts to MN_2 and the consumer has a new equilibrium position at E_2 . With every fall in the price of X, the consumer moves from one position of equilibrium to another and joining all these equilibrium points we get PCC. The price of one unit of X will be the total amount of money spent divided by the total commodity of X. The consumer buys OK_1 , OK_2 and OK_3 quantities of X at Equilibrium positions E_1 , E_2 and E_3 respectively. The price of the commodity at E_1 is OM/ON_1 . In fact it is the slope of price line MN_1 . The consumer buys OK_2 quantity of X at price OM/ON_2 and OK_3 at OM/ON_3 price. The consumer by moving from E_1 to E_2 and E_2 to E_3 is buying more and more of X at lower and lowest prices.

If we obtain this information, i.e., price per unit of X when different quantities are purchased by the consumer, then it becomes easy to draw the demand curve of the consumer. The demand curve DD in Fig. 8.16 has been derived by establishing price-quantity relationships at different levels of price. For the purpose of expressing per unit price of X, we measure a unit of X from K_1 on X-axis. Now suppose K_1R_1 is one unit of X from R_1 , we draw a line, P_1R_1 parallel to MN_1 . Being parallel to the price line MN_1 , the slope of P_1R_1 must be the same as the slope of MN_1 and hence the slope of P_1R_1 is the price of one unit of X. The amount P_1K_1 has to be paid as the price for a unit of X. Hence the point P_1 lies on a demand curve and the consumer buys OK_1 quantity. Similarly, we measure one unit of X from K_2 . Now K_2R_2 measures a unit of X. from R_2 , we draw a line P_2R_2 which is parallel to MN_2 . Now, P_2K_2 is the price of X and the quantity demanded is OK_2 . Similarly we can note that at P_3K_3 price of X its demand will be OK_3 .

By joining all the three points P_1 , P_2 and P_3 we get a Demand Curve DD. It shows that at P_1K_1 , P_2K_2 and P_3K_3 price of X, the quantity purchased will be OK_1 , OK_2 and OK_3 respectively.

Check Your Progress – 5

What is the relationship between PCC and Demand Curve?

.....

.....

.....

.....

8.8 SUMMING UP

Indifference curve analysis is based on ordinal measurement of utility. By consuming a combination of commodities, consumer can compare the different utilities. Indifference curve is the line of all those combinations of two commodities, say X and Y goods, which yield equal satisfaction to the consumer. A consumer gets equilibrium when the ratio of marginal utilities from two commodities is equal to the ratio of commodity prices.

and when the indifference curves are convex to the origin. The ratio of commodity prices is explained through price line.

The three effects which are associated with ordinal utility analysis, namely, income, substitution and price effects are explained with the help of diagrams. Demand curve can be derived from the price consumption curve with the given indifference map and income of the consumer.

8.9 CHECK YOUR PROGRES : MODEL ANSWERS

1. It is a list of combinations of two commodities that will be equally acceptable to a consumer. Imaginary indifference schedule may be given for various combinations of any two commodities, like Bananas and Oranges, which give the same total satisfaction to the consumer.

Oranges	Bananas
1	25
2	20
3	16
4	13
5	11
6	10
7	9

2.
 - i) They slope negatively or slope downwards from left to right.
 - ii) They are convex to the origin.
 - iii) Every indifference curve to the right represents higher level of satisfaction.
 - iv) No two indifference curves can intersect each other.
 - v) Indifference curves need not necessarily be parallel to each other.
3. The following assumptions are made to explain the consumers' equilibrium;
 - i) He has given amount of money to spend on the two goods.
 - ii) Prices of all the goods are fixed in the market so that no individual consumer can alter the price.
 - iii) Goods are homogeneous and divisible.
 - iv) The consumer is rational, i.e., the consumer will maximise his satisfactions with given income and prices of goods.
4. Price effect shows the reaction of the consumer and measures the full effect of the change the price of the goods on the quantity purchased with given money income.
5. The price consumption curve shows the relationship between changes in the prices of a commodity and the corresponding changes in the quantity demanded of that commodity. The demand curve also indicates the similar relationship that how much quantity of a commodity bought by the consumer at different prices assuming other things remain constant. Thus PCC as well as demand curve yield the same information about the demand-price relationship. If we are given the indifference

map and money income of the consumer, we can derive his demand curve from his price consumption curve.

8.10 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Why do indifference curves slope downwards?
2. Examine the properties of indifference curves.
3. Explain the consumer's equilibrium with the help of indifference curve analysis.
4. Explain diagrammatically the income, substitution and price effects.
5. What do you mean by price consumption curve? Show how demand curve is derived from Price Consumption Curve.

II. Answer the following questions in about 15 lines each.

1. What are indifference curves? Explain them with the help of indifference schedule.
2. Can two indifference curves intersect each other?
3. What is price line? Explain it diagrammatically.
4. What are meant by income and substitution effects?
5. Explain the relationship between PCC and Demand Curve.
6. Why must the point of tangency between IC and price line alone be the point of equilibrium?
7. What are the assumptions of indifference curve analysis?
8. What is the marginal rate of substitution? Explain the principle of Diminishing Marginal Rate of Substitution.

8.11 RECOMMENDED BOOKS

Stonier and Hague	:	A Text Book of Economic Theory
H.S. Agarwal	:	Micro Economics
M.L. Seth	:	Principles of Economics

8.12 GLOSSARY

Consumer's Equilibrium	:	The state in which a consumer maximises his utility given his income and the market prices.
Indifference Curve	:	A Curve showing a series of 'bundles' of two goods, between which a consumer is indifferent.
Income Effect	:	The effect which a change in price of a good has on a consumer's demand for the good via the change it induces

	in his real income.
Marginal Rate of Substitution	: The rate at which an individual will exchange successive units of one commodity for another.
Price Consumption Curve	: It reflects the relationship between changes in the price of a commodity and its quantity demanded by the consumer.
Price Line or Budget Line	: It indicates the various combinations of two commodities which the consumer can buy with his limited money.
Substitution Effect	: The change in the quantity demanded of a good which results purely from a change in its price relative to the prices of other goods.

BRAOU

BRAOU

BLOCK-IV : PRODUCTION ANALYSIS

Unit-9 : Production Function

Unit-10 : Laws of Returns to Scale

Unit-11 : Supply Function

BRAOU

UNIT – 9 : PRODUCTION FUNCTION

Contents

- 9.0 Aims and Objectives
- 9.1 Introduction
- 9.2 Meaning of Production
- 9.3 The Concept of Production Function
- 9.4 Assumptions of Production Function
- 9.5 Production Function for a Single Product
- 9.6 The Law of Variable Proportions
- 9.7 Summing Up
- 9.8 Check Your Progress: Model Answers
- 9.9 Model Examination Questions
- 9.10 Recommended Books
- 9.11 Glossary

9.0 AIMS AND OBJECTIVES

This unit provides the basic knowledge pertaining to the concepts of production and production function. It also explains the 'Law of Variable Proportions'.

After going through the unit, you should be in a position to:

- explain the meaning of production and production function;
- describe production function for a single product; and
- diagrammatically present the law of variable proportions.

9.1 INTRODUCTION

A firm tries to maximise the level of production given the cost combinations. With this end in view, the firm employs an optimum combination of factors of production. Accordingly it either increases or decreases its expenditure on different factors of production. The theory of production involves discussion on the law of variable proportions and laws of returns to scale.

This unit explains the meaning of the term production and the concept of Production Function. At the end of the unit the Law of Variable Proportions is explained in detail with the help of a diagram.

9.2 MEANING OF PRODUCTION

The term 'production' in Economics strictly refers to the creation of those goods and services which have exchange value. It does not mean creation of matter, as matter can neither be created nor can it be destroyed. Hence, production merely implies the

creation of utilities. Economic utilities are mainly created in three forms: (i) form utility, (ii) time utility, and (iii) place utility.

Prof. J.R.Hicks has given his own interpretation of the term 'production'. He defines production as "any activity whether physical or mental which is directed to the satisfaction of other people's wants through exchange". This definition comprises three essentials: (i) No production is possible without some sort of activity, physical or mental. Thus, a lawyer is as much a producer as a farmer because his activity is mental in sharp contrast to the activity of the farmer which is physical in content. (ii) The activity concerned must be directed to the satisfaction of other peoples' wants. Thus, if a farmer produces wheat for self-consumption, his activity will not be regarded as production. (iii) Other people's wants must be satisfied through a process of exchange. Thus, if a teacher coaches students without receiving a salary or tuition fees in exchange, his services can not be regarded as production.

In a general sense, economists have characterised the production process as a combination of four factors of production viz., land, labour, capital and organisation. Land plays an important role in the agriculture sector, while other factors have prominence in the industrial sector. The entrepreneur, who looks after the organisational aspect of production is the decision - maker who, through a combination of the factors of production, produces the output. Hence, the entrepreneur plays a key role in the production of a commodity. In the literature of economics also entrepreneurship is often considered as playing a dominant role in initiating the process of development. Schumpeter considers entrepreneurship to be an important trait for the development process to take place in any economy, as an entrepreneur is often considered as an innovator. While the four factors of production are often recognised as being important for the production process, in recent times, there is a further sub-division of the activities. Hence, the standard economic discussions of production classify the variables related to the decision of the firms into only two categories, inputs and outputs. An input is simply anything which the firm buys for use in its production or other process. An output is any commodity which the firm produces or processes for sale.

Check Your Progress – 1

List out the factors of production.

.....

.....

.....

.....

9.3 THE CONCEPT OF PRODUCTION FUNCTION

The production function is a purely technical relation which connects factor inputs and outputs. Thus, the production function for any commodity is an equation, table or graph showing the quantity of the commodity that can be produced per unit of time for each of a set of alternative inputs, when the best of production techniques available are used. Thus, it describes the laws of proportion, that is the transformation of factor inputs into outputs during any particular time period. The production function may represent

138 either the technology of a firm or an industry, or of the economy as a whole. It shows

us how, and to what extent, output changes with variations in inputs during a specified period of time. As it expresses a functional relationship between quantities of inputs and outputs, it is named as production function. It can also be expressed in the form of a mathematical equation in which output is the dependent variable and inputs are the independent variables. The relation between the inputs used in the production process and the quantity of output obtained can be expressed in functional notation as follows:

$$P = f(A,B,C,D)$$

Where 'P' stands for output of goods per unit of time and A,B,C,D are the various inputs used for producing the output. The production function is always specified for a period of time. It is a flow of inputs resulting in a flow of output during a specified period. Every producing firm has its own production function which is determined by the state of the technical knowledge and managerial ability of the firm. Improvement in technical knowledge or managerial ability of the firm will bring about a new production function in the place of the existing one. The new production function either gives more output with the same quantity of original inputs or it may use smaller quantities of inputs for the same original output.

Check Your Progress – 2

How are the inputs classified for describing the production function?

.....

.....

.....

.....

9.4 ASSUMPTIONS OF PRODUCTION FUNCTION

The production function is based on the following assumptions:

- i) It is always related to a specified period of time.
- ii) Technical knowledge is assumed to be constant.
- iii) The firm in question will use the best and the most efficient techniques available.
- iv) The factors of production are divisible into viable units.

Check Your Progress – 3

What are the assumptions of production function?

.....

.....

.....

.....

9.5 PRODUCTION FUNCTION FOR A SINGLE PRODUCT

For producing one commodity several methods of production may be available. A method of production is a combination of factor inputs required for the production of one unit of output. For instance, a unit of commodity 'X' may be produced by the following processes:

	Process (P1)	Process (P2)	Process (P3)
Labour Units	2	3	4
Capital Units	3	2	1

The three activities or processes described above may be graphically presented by the length of lines from the origin to the point determined by the labour and capital units. These three processes can be shown as has been done in Figure 9.1.

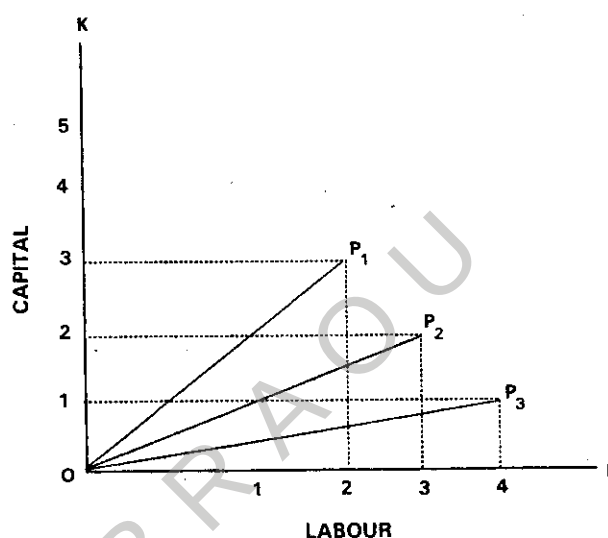


Fig. 9.1 : Production Function

If there are two methods namely A and B to produce commodity 'X', method A is considered technically efficient in relation with other method 'B' if 'A' uses at least one factor less than B. For example, the two methods A and B require the following factor inputs:

	Method A	Method B
Labour	2	3
Capital	3	3

In the above example, method 'A' is technically efficient when compared with method 'B'. The theory of production concentrates only on efficient methods of production. A rational entrepreneur always goes for efficient methods of production. We must note here that a technically efficient method is not necessarily economically efficient as there is a difference between technical and economic efficiency. For example, the following two methods are technically efficient and are included in the production function.

	Method A	Method B
Labour	2	1
Capital	3	4

In the two technically efficient methods described above, one of them will be chosen at any particular time depending on the price of factors of production. The choice of a technique is an economic one which is based on prices and not its technical efficiency. The goal of the firm using a particular production function is profit maximisation that is the maximisation of the difference:

$$P = R - C,$$

where, P = Profits

R = Revenue

C = Cost

Production function as determined by technical conditions of production is of two types.

1. Production function with one variable input is a short term production function.
2. Production function with all variable inputs is a long-term production function.

In the short-run, it is possible to increase the quantities of one input while keeping the quantities of other inputs, constant in order to have more output. This aspect of production function is known as the law of variable proportions.

In the long-run, it is possible for a firm to change all its inputs in order to expand its business. This is known as 'Law of 'Returns to Scale'. This is discussed in the next unit.

9.6 THE LAW OF VARIABLE PROPORTIONS

This law is also called Production function with one variable input. According to this law, in the production function of a firm, all the inputs are fixed except one. This one input is called the variable input.

For example, let us assume that all the inputs such as plant, machinery, etc., of a firm are fixed but labour is made variable factor of production. Here, the firm tries to increase its output by increasing the supply of labour (other inputs being fixed). When the firm increases the supply of labour, it changes the proportions between the fixed and the variable inputs. This law is concerned with the way in which the output changes when the number of units of a variable input is increased, keeping other inputs constant. When more and more units of a variable factor are used, holding the quantities of fixed factors constant, a point is reached beyond which the marginal product, then the average product and finally total product will diminish. This can be illustrated with the help of a Table by taking a 5 acre plot of land.

Table 9.1: Output of Rice (in Units) from Five Acre Land

Number of Labourers	Total Product	Average Product	Marginal Product	
1	2	3	4	
1	8	8	8	} Stage - I
2	20	10	12	
3	36	12	16	
4	48	12	12	} Stage - II
5	55	11	7	
6	60	10	5	
7	60	8.6	0	} Stage - III
8	56	7	4	

In the above table, Production Function is revealed in the first two columns. The average product and marginal product columns are derived from the total product column.

Total Product (TP)

This refers to the total amount produced during a particular period by all the factors of production employed over that period of time. If all the inputs except one are held constant, the total product will vary according to the quantity of the variable factor used.

Average Product (AP)

This is merely the total product per unit of the variable factor.

$$AP = \frac{TP}{L}$$

Where

AP	=	Average Product
TP	=	Total Product
L	=	Labourers

Marginal Product (MP)

This is the change in total product resulting from the use of one more unit of the variable factor.

$$MP = \frac{\Delta TP}{\Delta L}$$

An analysis of the above table shows that the total, average and marginal products first increased till they reach the maximum and then start declining. The total product reaches its maximum when 7 units of labour are used and then it declines. The average product continues to rise till the 4th unit, while the marginal product reaches its maximum at the third unit of labour, then it also falls. It should be noted that the point of falling

output is not the same for total, average and marginal products. The marginal product follows it and the total product is the last to fall. This means that the tendency of diminishing returns is ultimately found in the three productivity curves. This is shown in the diagram 9.2.

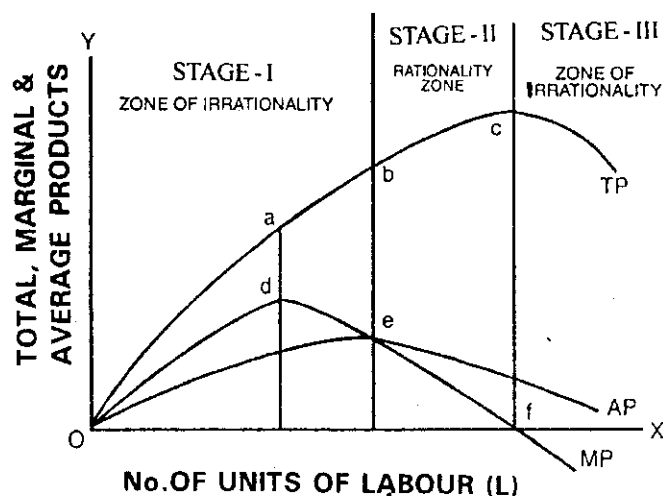


Fig. 9.2: Total, Average, Marginal Product Curves

In the diagram 9.2, the TP curve first rises at an increasing rate, but later moves gradually towards the highest point, after reaching which it starts falling slowly. This can be noticed by observing the slope of the TP curve. In the above diagram, at point 'a' the slope of TP is the highest, at 'b' it is less than 'a' and at 'c' it becomes zero. The Marginal Product Curve (MP) and the Average Product Curve (AP) also rise with TP. The MP curve reaches its maximum point 'd' when the slope of the TP curve is at the maximum point at 'a' and then it starts falling. The maximum point on the 'AP' curve is 'e' where it coincides with the 'MP' curve. This point also coincides with 'b' on the TP curve from where the total product starts a gradual rise. When the TP curve reaches its maximum point 'c', the MP curve becomes zero at point 'f' and when the former starts declining, the latter becomes negative. When the total product becomes zero, then the average product also becomes zero. The rising, the falling and the negative phases of the total, marginal and average products are in fact the different stages of the Law of Variable Proportions.

In Stage-I, the total product increases at an increasing rate. One labourer produces 18 units while two labourers produce 20 units. In the first stage, the marginal as well as average product rise but the marginal product rises faster than the average product. Because the marginal product is greater than the average product, the former pulls up the latter. When the marginal product begins to decline, it still exceeds the average product and tends to pull up the latter. When both marginal and average products are equal, the marginal product neither pulls-up nor pulls-down the average product. Here Stage-I ends and Stage-II begins.

In Stage-II, the total product continues to increase no doubt but at a diminishing rate, till it reaches the maximum point at 'C'. The boundary for the second stage is at the point 'C' where the total product is maximum and marginal product is zero. In Stage-II, the marginal product and the average product both decline but the marginal product declines at a faster rate than the average product. The marginal product being lower than the average product pulls the average product down.

Stage-III begins when the MP curve meets the X-axis and the TP curve reaching its maximum point. In this stage any increase in the number of labourers on the farm causes the total product to decline. The marginal product now becomes negative and the average product continues to decline though it remains positive. As the marginal product becomes negative in this stage, no firm would deliberately choose to operate in it.

A rational entrepreneur is expected to maximize his profits. Since profit maximization is his goal, as long as he produces in Stage-I, he is irrational as he can still increase the factor of production under consideration and make more profits. Hence Stage-I is a zone of irrationality. The elasticity of production, which is defined as the ratio of marginal product to average product, is greater than one in this Zone. Stage-II is a zone of rationality, as the entrepreneur can maximize his profits. The elasticity of production here will be between one and zero. In this stage the marginal product curve touches the X axis and the value of marginal product becomes zero. As long as the elasticity of production lies in between one and zero the entrepreneur is producing in a zone of rationality. Once the marginal product becomes negative, that is, as elasticity of production becomes less than zero, as it is shown in the diagram in Stage-III, the entrepreneur, if he is rational, will not increase production by increasing the variable factor beyond the point where its marginal product becomes zero. If he chooses to increase the factor of production under consideration, he will not be maximizing his profits, even though his output may be increasing at a decreasing rate.

9.7 SUMMING UP

In this unit we have examined the theories relating to production. This unit has touched upon the aspects of production and production function. By production, we mean the creation of utilities. Production is the result of some sort of activity. It provides satisfaction and enables exchange. Production function explains the technical relationship between inputs and output. It enables us to know different methods of producing a commodity. Production of a commodity can be increased by increasing either one input or more inputs. Major part of this unit is devoted to explain the law of variable proportions. It indicates that by keeping all other factors constant, production can be changed by increasing one input which we term as variable input. The law says that if we increase one input, output will increase upto a stage and then it falls. In the first stage output increases at increasing rate and then increases at diminishing rate and reaches at a point where average product curve reaches maximum and marginal and average products become equal. At the end of second stage the output reaches maximum and marginal product becomes zero. This is the rational stage for the producer to maximise his profits. And in the third stage the marginal product becomes negative and the output also diminishes.

9.8 CHECK YOUR PROGRESS: MODEL ANSWERS

1. The factors of production are land, labour, capital and organisation.
2. Inputs are classified into fixed and variable. A fixed unit is one which cannot be changed in response to changes in market condition requiring an immediate change in output. On the other hand a variable input is one whose quantity can be changed readily when market conditions warrant like labour, raw materials.
3. The production function is based on the following assumptions:

- (i) It is always related to a specified period of time;
- (ii) Technical knowledge is assumed to be constant;
- (iii) The firm in question will use the best and the most efficient technique available;
- (iv) The factors of production are divisible into viable units.

9.9 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. What is meant by production? Explain the concept of production function by taking a single product.
2. Explain the law of variable proportions.
3. Describe the three stages of law of variable proportions with the help of a diagram.

II. Answer the following questions in about 15 lines each.

1. What is production? What are the factors it depends on?
2. What is Production? What are its essential points?
3. What is meant by production function? What are its assumptions?
4. Explain the terms : (i) total product, (ii) average product, and (iii) marginal product.
5. What is elasticity of Production ?

9.10 RECOMMENDED BOOKS

Stonier and Hague	:	A Text Book of Economic Theory
H.S. Agarwal	:	Micro Economics
M.L. Seth	:	Principles of Economics

9.11 GLOSSARY

Average Product	:	The total product per unit of the variable factor.
Marginal Product	:	The increase in output which results from increasing the quantity of an input by one unit.
Production Function	:	A mathematical relationship between the quantity of output of a good, and the quantities of inputs required to make it.
Total Product	:	The total amount produced during a particular period by all the factors of production employed over that period of time.

UNIT –10 : LAWS OF RETURNS TO SCALE

Contents

- 10.0 Aims and Objectives
- 10.1 Introduction
- 10.2 Concept of Returns to Scale
- 10.3 Laws of Returns to Scale
 - 10.3.1 Increasing Returns to Scale
 - 10.3.2 Constant Returns to Scale
 - 10.3.3 Decreasing Returns to Scale
- 10.4 Economies of Scale
 - 10.4.1 Concept
 - 10.4.2 Kinds of Economies of Scale
- 10.5 Diseconomies of Scale
- 10.6 Summing Up
- 10.7 Check Your Progress: Model Answers
- 10.8 Model Examination Questions
- 10.9 Recommended Books
- 10.10 Glossary

10.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain you the laws of returns to scale.

After going through this unit, you should be able to:

- explain the concept of returns to scale;
- describe the laws of returns to scale; and
- list out economies and diseconomies of scale.

10.1 INTRODUCTION

In the last unit we have discussed the production function with one variable input. When the quantity of only one factor is increased and that of other factors is held constant, the proportion between the factors changes. In the long run when all the factors are increased simultaneously in order to increase the output, the factor proportions remain constant. This is called **expansion in scale**. In this unit we study the production function when all the factors are variable. At the end we also discuss the economies of scale.

10.2 CONCEPT OF RETURNS TO SCALE

Expansion of output may be achieved by varying some inputs only, but in the long-run, expansion in output can be achieved by changing all factors of production. The laws of returns to scale refer to the effects of scale relationships. Output may be increased in the long-run by changing all factors of production either by the same proportion or by different proportions. The term 'returns to scale' refers to changes in output as all factors change by the same proportion. 'Returns to scale' are only one part of the economies of the scale. Returns to scale are technical economies, while economies of scale include the technical as well as the monetary economies. In other words, this concept deals with the behaviour of output in response to change in the scale of production. An increase in the scale of production implies that all inputs or factors are increased in the same proportion. Here the factor proportions do not change when the scale or production changes. The study of change in output as a result of changes in the scale constitute the subject-matter of returns to scale.

Check Your Progress – 1

What do you understand by the term 'returns to scale'.

.....

.....

.....

.....

10.3 LAWS OF RETURNS TO SCALE

The laws of returns to scale explain the relationship between all the variable factors and output. The laws of returns to scale assume that:

- i) All factors are variable.
- ii) A worker works with given tools and implements.
- iii) Technological changes are absent.
- iv) Perfect competition prevails.
- v) The output is measured in physical quantities.

Under the above assumptions, when all inputs are increased in unchanged proportions and the scale of production is expanded, the effect on output shows three stages. In the first stage, returns of scale increase because the increase in total output is more than proportional to the increase in all inputs. In the second stage, returns to scale will become constant as the increase in total output is in exact proportion to the increase in inputs. In the third stage, returns to scale diminish because the increase in output is less than proportionate to the increase in inputs. In other words, if we increase all the inputs by 10 per cent at a time, then the total output will increase by more than 10 per cent in the first stage, by 10 per cent in the second stage and by less than 10 per cent in the third stage. The principle of returns to scale can also be explained with the help of the following table.

Table 10.1 Returns to Scale in Physical Units

Unit	Scale of Product		Total Returns (In Quintals)	Marginal (Returns)	
1	2		3	4	
1.	1 worker	+ 1 acre land	8	8	} Increasing Returns to Scale
2.	2 workers	+ 2 acres land	17	9	
3.	3 workers	+ 3 acres land	27	10	
4.	4 workers	+ 4 acres land	38	11	} Constant Returns to Scale
5.	5 workers	+ 5 acres land	49	11	
6.	6 workers	+ 6 acres land	59	10	} Diminishing Returns to Scale
7.	7 workers	+ 7 acres land	68	9	
8.	8 workers	+ 8 acres land	76	8	

The above table reveals us the fact that in the beginning with the scale of production of 1 worker + 1 acre of land, the total output is 8 quintals. When the scale of production is doubled (2 workers + 2 acres of land), total returns are more than doubled as the production increases to 17 quintals. If we still increase the scale of production to (3 workers + 3 acres land), the total returns increase to 27 quintals.

This is called the stage of increasing returns to scale. As the scale of production is further expanded, the total returns will increase in such a way that the marginal returns become constant. In the case of the 4th and 5th units of the scale of production, marginal returns remain constant at 11 quintals. It means due to increase in the inputs, there is no additional increase in the returns. This is the second stage. Any increase in the scale of production beyond this will lead to diminishing returns. In the case of the 6th, 7th and 8th units, the total returns increase at a lower rate than before so that the marginal returns start diminishing successively to 10, 9 and 8. This phenomenon can also be shown in the form of a diagram.

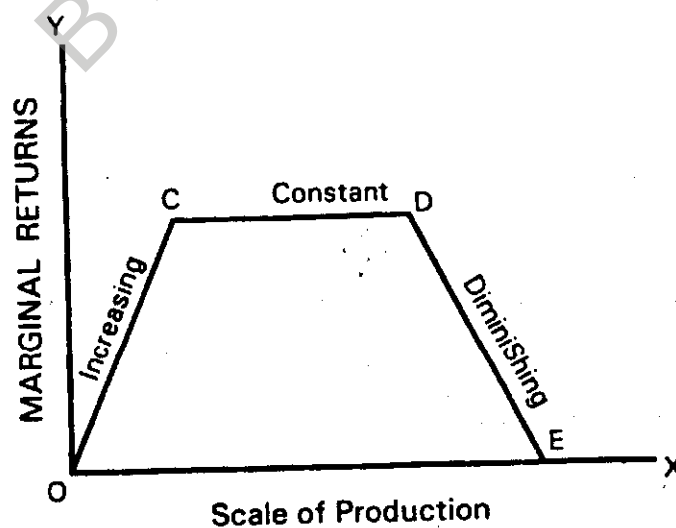


Fig 10.1 : Returns to Scale

In Fig. 10.1 the OCDE curve represents returns to scale. From O to C, due to the increase in the scale of production, the returns to scale are shown as increasing. From point C to D, the returns are constant and from D to E they are diminishing. Now let us try to understand why the returns to scale first increase, then remain constant and then diminish. Let us analyse each of the laws of returns.

10.3.1 INCREASING RETURNS TO SCALE

Returns to scale increase because of the indivisibility of factors of production. This means that the machines, management, labour, finance, etc., cannot be divided into smaller sizes to suit the requirements of a producing firm. When a firm expands its size, the returns to scale increase because the indivisible factors are employed to their maximum capacity. As the concept of indivisibility is vague, modern economists attribute increasing returns to economies of scale and specialisation. When a firm expands its size, there is a wide scope for specialisation of labour, management and machinery. Work is divided into several processes and sub-processes for better concentration to increase efficiency. Another reason for increasing returns to scale is dimensional efficiency. The output increases more than in proportion to the increase in the investment in the input. This can be better understood with a simple example. If the diameter of a water pipe is doubled, the flow of water is more than doubled. Thus, with specialisation and efficiency, output increases when the size of the firm is expanded. It enjoys both internal and external economies of scale of production. The firm may be able to install better machines, sell its goods more easily, borrow money cheaply, get the raw-materials cheaply as it purchases in larger quantities and employ more efficient managers and workers, etc. Further, it may also enjoy external economies in terms of cheap credit, and transport due to the concentration of a number of firms at one place. Trade journal, research and training centre appear which help in increasing the productive efficiency. All these help in increasing returns to scale.

10.3.2 CONSTANT RETURNS TO SCALE

Increasing returns to scale accrue to a firm or industry only upto a point. As the firm is enlarged further, internal and external economies are counter balanced by diseconomies of scale. When economies and diseconomies balance each other output increases in the same proportion as an increase in the proportion of inputs. Hence, constant returns to scale occur. This means that if all the inputs are doubled, output also doubles. A production function showing constant returns to scale is called linear and homogeneous production function of the first degree. The Cobb-Douglas production function evolved by the American Economists is a linear homogeneous production function.

10.3.3 DIMINISHING RETURNS TO SCALE

If a producing firm continues to expand even beyond the point of constant returns, a stage comes when diminishing returns to scale set in. The business may become unwieldy and it brings problems of supervision and co-ordination. Diseconomies of scale dominate economies of scale. Diseconomies may arise either due to higher factor prices or from diminishing factor productivities. When an industry expands its size, the demand for skilled labour, capital, etc., rises and under the conditions of perfect competition, intensive bidding raise wages, rent and interest. The prices of raw materials may also increase and there may be frequent break downs of machinery due to the difficulties involved in controlling them.

Returns to scale can also be represented with the help of isoquants. The diagram given below depicts the increasing, constant and diminishing returns to scale.

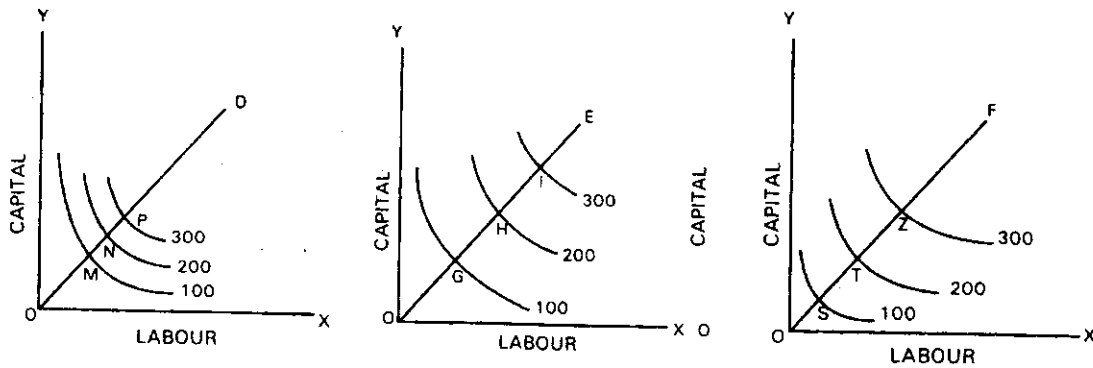


Fig. 10.2 A

10.2 B

10.2 C

Diagram – A illustrates increasing returns to scale. Here an increase in both inputs in a given proportion brings a more than proportionate increase in output. Thus 'OM' is greater than 'MN' and 'MN' is greater than NP. If the factor price ratio remains unchanged, output expands along ray OD.

Diagram – B illustrates constant returns to scale. It shows that when we double both inputs, we double output. If we triple all inputs, the output level is also tripled. Thus $OG = GH = HI$. The output expands along ray OE as long as the factor price ratio remains unchanged.

Diagram – C depicts diminishing returns to scale. Here, to double the output per unit of time, the firm must more than double the quantity of both outputs used per unit of time. Thus, here OS is less than ST and ST is less than TZ.

Check Your Progress – 2

Explain the stages of returns to scale.

.....

.....

.....

.....

10.4 ECONOMIES OF SCALE

10.4.1 CONCEPT

A firm or an industry increases its size to take advantage of the benefits of large-scale production. After the Industrial Revolution, it has become possible to introduce machinery on a large scale to expand output. The reason for this development has been mainly to take advantage of some of the economies associated with large scale production. Economies of scale are nothing but the reduction in production costs accrued

to a firm or an industry either due to its internal expansion or due to the concentration of a large number of firms at one place.

10.4.2 KINDS OF ECONOMIES OF SCALE

Expansion of the scale provides a number of economies to the firm. These economies of scale may be of two kinds:

- i) Internal Economies
- ii) External Economies

I) INTERNAL ECONOMIES

Internal Economies are those which accrue to the firm itself when the firm expands its output. Hence, internal economies arise within a firm as a result of its own expansion. In other words, they arise simply due to the increase in the scale of production. These economies are enjoyed because of the use of methods which small firms do not find it worth-while to employ. The following are the various types of internal economies.

1. **PRODUCTION ECONOMIES :** When the scale of production expands a number of economies accrue to the firm in the production itself. They may arise in the following ways :
 - a) Better techniques of production can be adopted.
 - b) Bigger machines can be purchased at economical prices;
 - c) Various processes can be linked up and specialisation can be achieved.
 - d) Large firms will be in a position to make some useful goods from the waste material.
 - e) A large producer can afford to have a separate packing department thereby packing costs can be reduced.
2. **Managerial Economies:** When the scale of operations is considerably large, specialisation can be achieved in the field of management. Professional managers are appointed to improve the quality of management. Such firms will be in a position to make use of the information technology for purposes of management. The cost on account of these does not increase in proportion to the increase in the scale of operation. Thus it leads to economies.
3. **Commercial Economies:** These economies arise from the purchase of materials and the selling of goods. When the scale of production is large, the per unit expenditure is reduced due to various reasons. Large business firms enjoy bargaining advantages at the time of buying the raw materials. The amount that they spend on advertising would be spread over large volume of production. The expenditure on sales persons, agents, etc. can also be minimised.
4. **Transport and Storage Economies:** When the scale of production increases, economies in transport and storage accrue to the firm. Such firms can depend on their own transport vehicles. They can also afford to have railway siding facilities which reduce the loading costs. Large firm can have their own warehouses to store both raw-materials as well as finished goods. Thus, per unit cost of transport and storage is reduced in the case of large firms.

5. **Financial economies:** These advantages arise from the fact that big firms will have better goodwill and can borrow at lower rates of interest from banks and financial institution. Large companies can approach the public by issuing shares and debentures. They can also take an advantage of entering the international markets.
6. **Risk bearing Economies:** A big firm can spread its risks and it will have the capacity to bear them by diversifying its output. Diversification may be in terms of sources of supply of raw-materials and of the process of manufacture.

II) EXTERNAL ECONOMIES

The economies which accrue to a firm not due to its own operations but due to operations of other firms are termed as **external economies**.

These economies are associated with localisation of industry. They occur where an increase in the size of an industry leads to lower costs for each individual firm in the industry. They accrue to each member firm as a result of the expansion of the industry as a whole. The following are the various types of external economies:

1. **Economies of Concentration:** They relate to advantage arising from the availability of skilled workers, the provision of better transport and credit facilities, benefits from subsidiary industries, etc. Scattered firms of an industry cannot enjoy such benefits.
2. **Economies of Information:** They arise due to the publication of trade journals, magazines and establishment of research centres.
3. **Economies of Disintegration:** When an industry expands its size, it becomes possible to split up some of the processes which are taken over by specialist firms. For example, a number of cotton mills located in a particular locality may have the benefit of a calendering plant.

Check Your Progress – 3

What do you mean by economies of scale?

.....

.....

.....

.....

10.5 DISECONOMIES OF SCALE

Certain diseconomies are also associated with large-scale production. If the scale of production is continuously expanded, a stage may come where increase in production is less than proportionate than increase in the factors of production. The various reasons for such diseconomies are as follows:

1. **Limited supply of factors of production:** When the production is increased beyond certain limit, it may become a problem to procure factors of production from local sources. Then factors are to be transported from other places at higher

rates. The same situation may also arise with regard to raw-materials.

2. **Managerial problems:** When the scale of production is very large, it becomes difficult to manage the operations of the business. Sometimes vital information for decision making purpose may not reach the top management in time. In turn it may lead to delay in decision making and thereby it may lead to labour problems.
3. **Technical problems:** When the scale of production is increased beyond certain limit, the per unit cost of production increases. Plant and machinery which require huge funds may have to be acquired and latest equipment is to be added. Such technical reasons lead to increase in per unit cost of production. As a result of these diseconomies, the diminishing returns to scale set in and the per unit cost will be increasing.

In addition to the above, the expansion in the scale of operations of different firms will lead to so many problems like causing pollution, creating traffic congestion, increase in cost of living in terms of high rents for residential houses, hike in prices of necessities, etc.

10.6 SUMMING UP

We have discussed the laws of returns to scale and different economies of scale in this unit. Laws of returns to scale explain the changes in output when all factors of production move in the same direction and with equal proportion. You have found three types of returns to scale. In the first stage, when a firm increases factors of production by the same proportion, output will increase much more than the increase in inputs which is termed as increasing returns to scale. In the next stage constant returns prevail. If the firm still increases the use of factors of production, it gets diminishing returns to scale. This stage is known as diminishing returns to scale.

Due to internal expansion or concentration of firms at one place, firm may get economies of scale. Economies indicate the reduction of costs to produce same quantity. If the scale of production is increased beyond certain point, the diseconomies to scale arise and per unit cost of production starts increasing due to various reasons.

10.7 CHECK YOUR PROGRESS: MODEL ANSWERS

1. The term 'returns to scale' refers to changes in output as all factors change in the same proportion. 'Returns to Scale' are only the part of the economies of the scale. Returns are technical while economies of scale include the technical as well as monetary economies. In other words, the concept deals with the behaviour of output in response to change in the scale of production.
2. There are three stages in the returns to scale. In the long run production function, we study the returns to scale. When the scale is increased there is increase in returns to scale in the beginning. After that output increases in the same proportion as in the inputs which is termed as constant returns. If the output is further expanded the stage of diminishing returns to scale occurs due to diseconomies.
3. The economies which accrue to the firm on account of increase in the scale of operations are termed as economies of scale. These economies may be classified into internal and external. The economies which accrue to the firm due to expansion of its own size are termed as internal economies. On the other hand, the economies that accrue to a firm due to the operations of other firms are termed as external

economies to scale.

10.8 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Explain the laws of returns to scale.
2. Explain the two kinds of economies of scale.
3. Discuss the factors responsible for increasing returns to scale.
4. Explain the laws of returns to scale with the help of a diagram.

II. Answer the following questions in about 15 lines each.

1. What is meant by economies of scale?
2. Explain internal economies of scale.
3. What are the diseconomies of scale?
4. Distinguish between short-run and long-run production functions.
5. Explain the external economies of scale.

10.9 RECOMMENDED BOOKS

Stonier and Hague	:	A Text Book of Economic Theory
H.S. Agarwal	:	Micro Economics
M.L. Seth	:	Principles of Economics

10.10 GLOSSARY

Economies of Scale	:	These exist when expansion of the scale of productive capacity of a firm or industry causes total production costs to increase less than proportionately with output.
External Economies	:	Economies which accrue to a firm due to the operations of other firms.
Internal Economies	:	Economies which accrue to a firm due to expansion of its own size.
Long-term Production Function	:	It explains changes in output when all the factors are increased.

UNIT-11 : SUPPLY FUNCTION

Contents

- 11.0 Aims and Objectives
- 11.1 Introduction
- 11.2 The Concept of Supply
- 11.3 Supply Function
- 11.4 Law of Supply
 - 11.4.1 Supply Schedule
 - 11.4.2 Supply Curve
- 11.5 Changes in Supply
- 11.6 Elasticity of Supply
- 11.7 Elasticity of Supply in Different Periods
- 11.8 Summing Up
- 11.9 Check Your Progress : Model Answers
- 11.10 Model Examination Questions
- 11.11 Recommended Books
- 11.12 Glossary

11.0 AIMS AND OBJECTIVES

The main purpose of this unit is to explain the supply function and the law of supply.

After studying this unit, you should be able to:

- describe the concept of supply ;
- list out the factors influencing the supply ;
- discuss the law of supply ;
- explain the changes in supply graphically ; and
- explain the elasticity of supply.

11.1 INTRODUCTION

The producers supply goods and services required by the people. These goods are distributed to different places of consumption through various channels for sale. The goods and services are offered depending on the demand conditions in the market. We have already discussed the demand analysis and production function in the previous units. This unit deals with various aspects of supply function.

11.2 THE CONCEPT OF SUPPLY

It may be recalled that the term "demand" refers to the amount of a commodity demanded at a particular price and during a certain period of time. Like-wise, supply also refers to the amount of a commodity offered for sale by sellers at a particular price during a particular period. That **means supply is always expressed in relation to price and time**. Thus, supply can be defined as "the amount of a particular commodity offered for sale per unit of time at a given price".

The supply of a good or service is said to take place only when the seller is able and willing to offer it for sale. The seller will be able to offer for sale when he holds sufficient stock of the goods and services. Do you think that it leads to effective supply?. No. For example, if you go to a vegetable market and find the stock of tomatoes with a seller and if he is not willing to sell them, you cannot buy. The willingness of the seller to offer for sale depends on the prevailing price in the market. Generally, if the market price is atleast equal to the seller's minimum price, the seller is willing to sell his stock of goods. Thus, there is a difference between the stock of goods and supply of goods. The stock becomes supply with the willingness of the seller to sell.

11.3 SUPPLY FUNCTION

The supply function refers to the relationship between the supply of a commodity and the factors influencing it. The main factors which influence the supply of a commodity are (i) Price of the commodity, (ii) Prices of related goods (iii) Cost of the factors of production (iv) state of the technology, and (v) Production subsidy. All these factors/determinants of supply can be summarised and expressed in the form of an equation. This is called supply function.

$$S_x = f(P_x, P_y, P_f, T, S)$$

Where,

f = functional relationship

S_x = The supply of Commodity

P_x = The price of commodity

P_y = The prices of related goods

P_f = Prices of the factors of production

T = Technology used

S = Subsidy

Thus, it is clear from the above equation that supply of a commodity is a function of the price of that commodity, prices of related goods, prices of the factors of production, the technology used and the subsidy for the production. Let us discuss these factors in detail.

- (i) **Price of the Commodity** : Price of the commodity is the first and foremost determinant of the supply of that commodity. When the price increases, more quantity of a commodity is offered for sale. On the contrary when the price decreases, lesser quantity is offered

for sale. Thus, there is a strong relationship between the price and supply of a commodity.

- (ii) **Prices of Related Goods :** Prices of related goods also influence the supply of a commodity. For example, if the prices of motor bikes increase while the prices of scooters remain unchanged a automobile producer will supply more of motorbikes and less of scooters. Thus, the supply of a commodity changes because of changes in the prices of related goods.
- (iii) **Prices of the Factors of Production :** Prices of the factors of production also determine the cost of production. When the factor prices increase, the cost of production of a commodity which is produced with the help of those factors will also increase. Then the producer will shift to the production of other goods which can be produced at a lower cost. Thus, the changes in the factor prices will influence the supply of a commodity.
- (iv) **Changing Technology :** The advancement of science and technology leads to many inventions and innovations. Such technological improvements are applied in the production process. As a result, it increases the supply of commodities. A variety of new products are produced and supplied in the market.
- (v) **Subsidies :** Government encourages the production of certain goods by giving certain incentives and subsidies. Such subsidies increase the production of goods and services. For example, production of urea, development of computer software, etc.

Besides the above factors, certain other conditions also influence the supply of goods and services in the economy. Wars, social unrest, transporters' strikes and natural calamities like droughts, floods, climatic conditions, earth quakes etc., will affect the supply of certain goods and services.

For example, we experience shortage of vegetables like tomatoes during summer seasons. We also experience non-availability of essential commodities during the times of curfews, bandhs, etc.

Check Your Progress - 1

- i) What do you mean by the term "supply" ?

.....

.....

.....

.....

- ii) What is supply function ?

.....

.....

.....

.....

11.4 LAW OF SUPPLY

By the term 'supply' we mean the quantities of a commodity that a seller is willing and able to offer for sale. We also know that sellers always sell their products for a profit. If the cost of the production remains unchanged, profits are likely to be high at high prices. Thus, the supply of a commodity will vary directly with its price. If the price goes up, the producer will offer more for sale. And if the price falls, he will be unwilling to sell or will offer less for sale. Hence, supply varies with a change in price. Thus, it can be deduced that higher the price the greater is the supply and lower the price lesser is the supply. We can formulate the law of supply as follows :

"In a given market at any given time, that quantity of any goods which sellers are ready to offer for sale generally varies directly with the price." **It is exactly the opposite of law of demand.** Thus, the supply is the function of price [$S=f(P)$]. It is assumed that the determinants of supply, other than price remain constant. Here, 'varies directly' means that as price rises the quantity offered for sale increases and vice versa.

Exceptions

There are, however, certain exceptions to the law of supply. They are :

- (i) When the prices are expected to fall greatly, sellers sell more in order to clear their stocks. This happens in the short-run.
- (ii) In the long-run the supply is influenced by changes in costs which are in turn affected by changes in technology.
- (iii) Changes in habits, tastes, fashions, etc., also affect the supply of commodities.

11.4.1 SUPPLY SCHEDULE

A supply schedule is a statement of various quantities of a given commodity, offered for sale at various prices at a particular point of time. It is a tabular statement representing the law of supply.

The following table depicts a hypothetical supply schedule for mangoes.

Table 11.1 - Supply Schedule

Price per Kg. of Mangoes (In Rupees)	Quantity Supplied (In Kgs)
5	400
4	300
3	200
2	100
1	50

In the above schedule we notice that as the price falls, less mangoes are offered for sale and as the price rises, the seller is prepared to sell more of it. The simple explanation here is that the higher the price of the commodity, the greater are the profits that can be earned and, thus the greater the incentive for the producer to produce more of the commodity and offer it for sale.

11.4.2 SUPPLY CURVE

Supply curve is a graphic representation of the law of supply. The above supply schedule can be represented in the form of a curve as illustrated below :

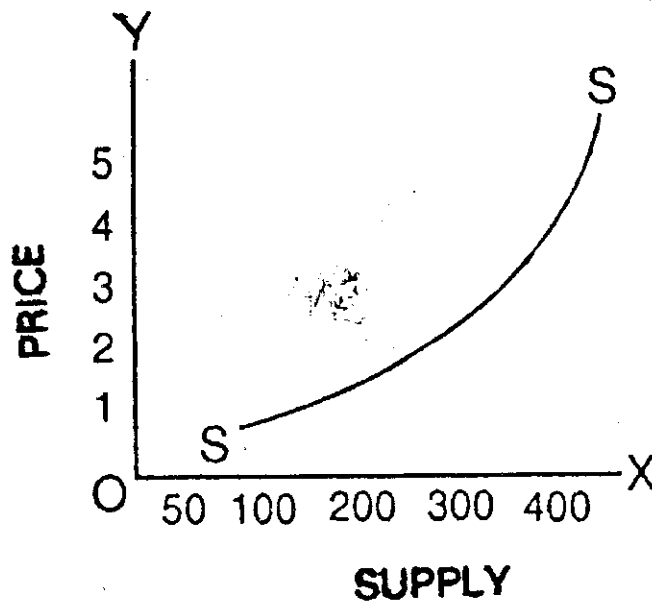


Fig-11.11 : Supply Curve

The quantities of mangoes offered for sale are measured along the 'OX' axis and the price along the "OY" axis. The supply curve, 'SS', slopes upwards as we go from the left to the right. This means that as the price rises, more quantity is offered for sale and certainly when the price falls, less is offered for sale. This supply curve is related to the cost structure of the firm.

11.5 CHANGES IN SUPPLY

The changes in the supply of a particular commodity are possible without any change in the price. Increase in supply means more supply of a commodity arriving in the market without a change in the price. On the other hand decrease in supply means less supply in the market. These two can be explained with the help of diagrams.

In fig. 11.2 OQ is the supply at price OP and the supply curve is SS. Without any change in the price when the supply increases from OQ to OM the supply curve shifts to the right and the new supply curve is S_1S_1 . The Fig. 11.3 explains the situation of decrease in supply. When the supply decreases from OQ to OK the supply curve SS shifts to the left and the new supply curve is S_2S_2 is formed.

The reasons for changes in the supply of a commodity are as follows :

- (i) Changes in the cost of production ;
- (ii) Changes in the production technology ;

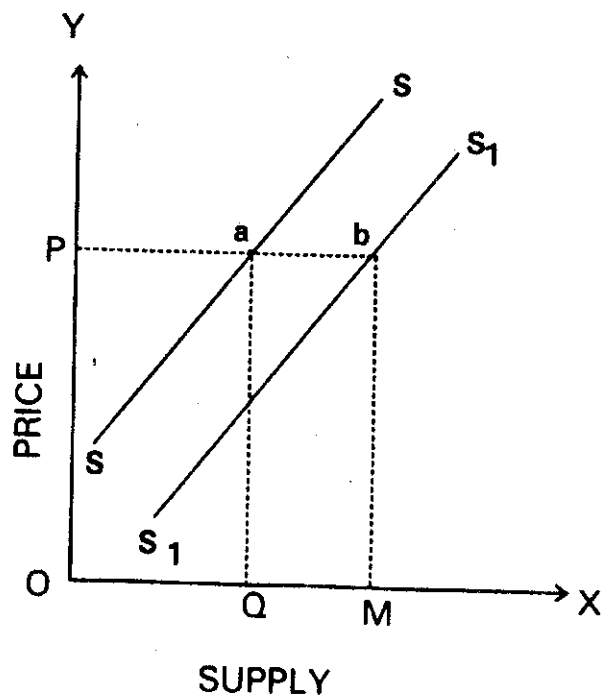


Fig. 11.2 : Increase in Supply

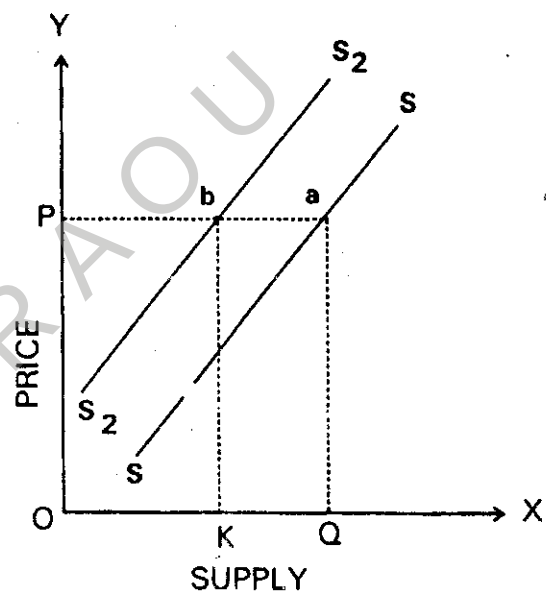


Fig. 11.3 : Decrease in Supply

- (iii) Availability of new raw materials in the market ;
- (iv) Natural calamities like earth quakes, floods, drought, etc.,
- (v) Development in the transport facilities ;
- (vi) Political and social changes
- (vii) Desire of the producer to use the goods for his personal consumption ;
- (viii) Market conditions, etc.,

11.6 ELASTICITY OF SUPPLY

The law of supply just explains the direct relation between the price and supply of a particular commodity. It does not explain how much the supply of a commodity has changed due to a particular change in the price of that commodity. It is the elasticity of supply which explains the percentage change in the supply of a commodity on account of certain percentage change in the price of that commodity.

Elasticity of supply refers to the change in the supply of a commodity due to change in its price. It is the degree of responsiveness or sensitiveness of the supply to changes in price. It can be explained as the percentage change in quantity divided by the percentage change in price. It can be measured with the help of the following formula :

$$\begin{aligned} Es &= \frac{\text{Change in amount supplied}}{\text{Original amount supplied}} \div \frac{\text{Change in price}}{\text{Original price}} \\ &= \frac{\Delta Q}{Q} \div \frac{\Delta P}{P} \end{aligned}$$

Where 'Q' refers to the quantity supplied and 'P' to the price and Δ represents a change.

As explained earlier in the supply law, the supply of a commodity changes due to change in its price. When the supply rises because of rise in price it is called expansion of supply. On the other hand, if the supply declines with a fall in price it is called contraction of supply. Thus, there can be either expansion or contraction of supply due to changes in price.

The elasticity of supply may be perfectly inelastic or perfectly elastic. These two are extreme cases. Normally, it lies between these two extreme limits. The supply is elastic when with a small change in the price there is a great change in supply. It is inelastic or less elastic when a great change in the price induces only a slight change in supply.

If the supply is perfectly inelastic, it will be represented by a vertical line as shown below:

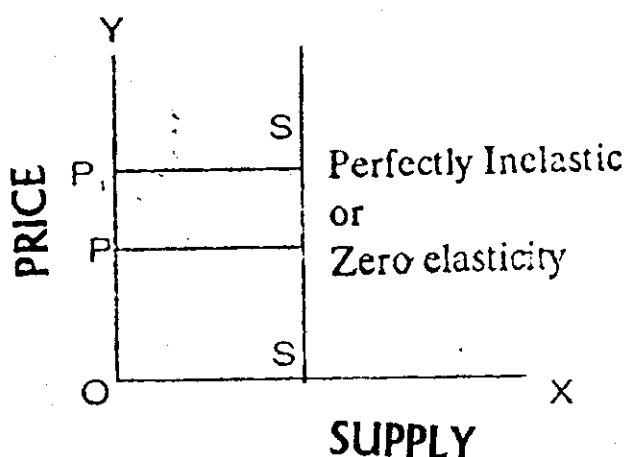


Fig. 11.4 : Perfectly Inelastic Supply

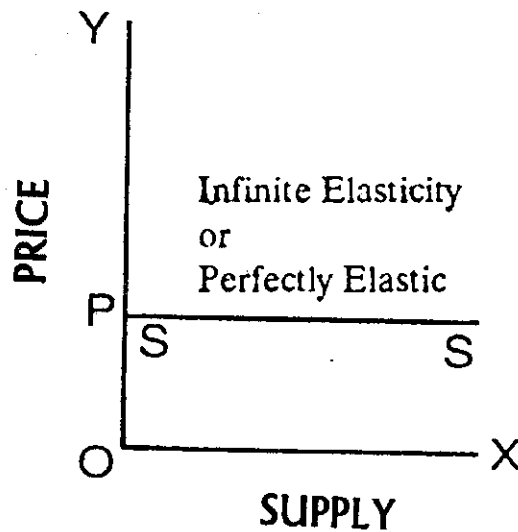


Fig. 11.5 : Perfectly Elastic Supply

The diagram 11.4 represents the case of zero elasticity in which the quantity supplied does not change as price changes. When the price increased from OP to OP_1 , the supply remained unchanged. The supply curve is parallel to Y axis. In such cases the elasticity of supply is equal to zero ($E_s=0$). If the supply is perfectly elastic, it will be represented by a horizontal straight line as shown in figure 11.5. At 'OP' price the supply elasticity is infinite. If the price is less than this, the supply would be zero. Producers would be supplying any amount of the commodity at that price. Here the elasticity is infinite ($E_s=\infty$)

Normally, elasticity of supply is neither zero nor infinite. It will be usually unit elasticity or relatively elastic or relatively inelastic.

When the change in price is accompanied by an equally proportionate change in the supply ($E_s=1$), it is said to be unit elasticity. When the change in supply is more than the change in price it is relatively elastic ($E_s>1$). On the other hand when the change in supply is less than the change in price the supply is said to be relatively inelastic ($E_s<1$). These three types of elasticities are represented in the following diagram.

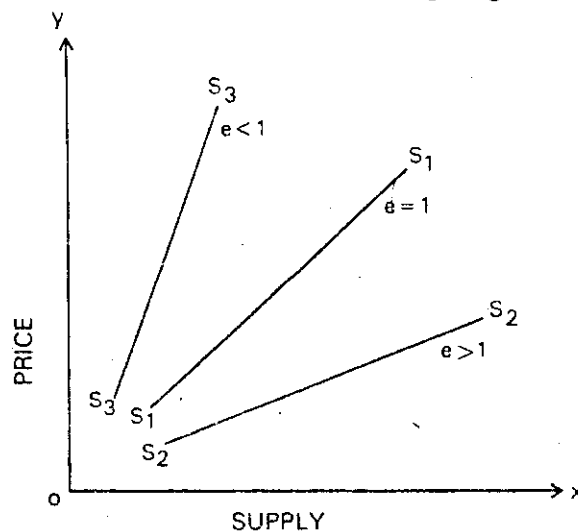


Fig. - 11.6 : Unit, Relatively Elastic and Relatively Inelastic Supplies

Check Your Progress - 2

What is meant by supply elasticity? List out its types.

.....

.....

.....

11.7 ELASTICITY OF SUPPLY IN DIFFERENT PERIODS

Time will have its influence on the elasticity of supply. The time can be divided into very short period, short period and long period. Very short period is the period in which the supply cannot be changed. It is **also known as market period**. During this period the supply will be perfectly inelastic. This is shown as MS curve in the Fig 11.7

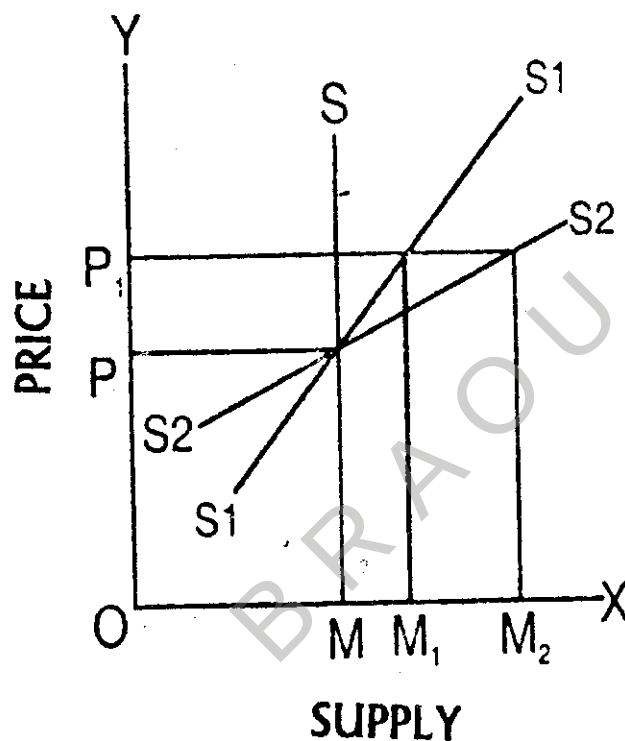


Fig 11.7 : Supply Curves in Different Periods

During this period though the price increases, the supply does not change. Supply will have some elasticity during short period. S_1 is the short period supply curve. During short period the supply can be increased to some extent by changing the variable inputs like labour, raw-materials. The elasticity of supply in short period will be less when compared to that of long period. S_2 is the long period supply curve. During long period supply can be increased to any extent by changing all the factors.

That is the reason why, the supply elasticity in long period is more than that of the short period. In the very short period when the price increases to OP_1 from OP , there is no change in the quantity of supply. In the short period the supply increases from OM to OM_1 . But in the long period it increases to OM_2 .

Check Your Progress - 3

State the time effect on the elasticity of supply.

.....

.....

.....

.....

11.8 SUMMING UP

Supply refers to the amount of a commodity offered for sale by sellers at a particular price during a particular period of time. There is a difference between stock of goods and supply of goods. The stock becomes supply with the willingness of the seller to sell. The supply is influenced by many factors like price of the commodity, price of related goods, cost of the factors of production, state of the technology and production subsidy.

The law of supply is just opposite to that of the law of demand. The law of supply states that the higher the price the greater is the supply. The law of supply can be explained with the help of a diagram.

The elasticity of supply refers to the change in the supply of a commodity due to change in its price. There are different types of elasticity of supply namely, perfectly inelastic, perfectly elastic, unitary elastic, relatively elastic and relatively inelastic. The time will have its effect on the elasticity of supply.

11.9 CHECK YOUR PROGRESS : MODEL ANSWERS

1.
 - i) Supply means the quantities of goods which are offered for sale at a particular price at a given point of time. Supply takes place only when the seller is able and willing to offer the goods for sale. The supply of goods is different from the stock of goods.
 - ii) It is the relationship between the supply of a commodity and the factors that influence the supply. The price of the commodity, prices of related goods, prices of the factors of production, technology used, subsidies, etc., are the important determinants of supply.
2. The extent of change in the supply of a commodity in accordance with the change in its price is called elasticity of supply.

The elasticity of supply may be perfectly inelastic ($e=0$); perfectly elastic ($e=\alpha$); unitary elastic ($e=1$); relatively elastic ($e>1$) and relatively inelastic ($e<1$).
3. Time will have its effect on the elasticity of supply. The time can be classified into market period, short period and long period. The elasticity of supply will be perfectly inelastic in the market period. It will be elastic to some extent in the short period. In the long run by changing all the factors the supply can be increased to any extent. Therefore, the supply will be more elastic in long period than in the short period.

11.10 MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. State the law of supply, together with exceptions to it ?
2. Explain the determinants of supply.
3. Explain the different elasticities of supply.

II. Explain the following in about 15 lines each.

1. What do you mean by the term 'supply'?
2. What is supply function?
3. Explain the changes in the supply.
4. What is supply schedule ?
5. What do you mean by 'elasticity of supply' ?
6. Show the supply curve for an imaginary supply schedule.
7. Show the supply curves in different periods.

11.11. RECOMMENDED BOOKS

- | | | |
|--------------|---|-------------------------|
| H.S. Agarwal | : | Micro Economics |
| M.L. Seth | : | Principles of Economics |
| D.M. Mithani | : | Principles of Economics |

11.12 GLOSSARY

- | | |
|-------------------------------|--|
| Elasticity of Supply : | The degree of responsiveness in the supply of a commodity to change in its price. |
| Supply : | The quantity of a good or service which the sellers desire to sell at a given price. |
| Supply Curve : | A curve indicating the relationship between the quantity of a good supplied and its price. |

BRAOU

BLOCK-V : COST, REVENUE AND PROFIT ANALYSIS

Unit-12 : Cost Analysis

Unit-13 : Revenue Analysis

Unit-14 : Break Even Analysis

Unit-15 : Profit Analysis

BRAOU

UNIT-12 : COST ANALYSIS

Contents

- 12.0 Aims and Objectives
- 12.1 Introduction
- 12.2 Nature of Costs
- 12.3 Kinds of Costs
 - 12.3.1 Explicit and Implicit Costs
 - 12.3.2 Money and Real Costs
 - 12.3.3 Opportunity Costs or Alternative Costs
- 12.4 Nature of Costs and Classification of Costs in the Short Run
 - 12.4.1 Fixed Costs
 - 12.4.2 Variable Costs
 - 12.4.3 Total Costs
- 12.5 Average and Marginal Costs
- 12.6 Short Run Cost Curves
- 12.7 Relationship between Average Cost and Marginal Cost
- 12.8 Long Run Costs
- 12.9 Summing Up
- 12.10 Check Your Progress : Model Answers
- 12.11 Model Examination Questions
- 12.12 Recommended Books
- 12.13 Glossary

12.0 AIMS AND OBJECTIVES

The main aim of this unit is to explain different concepts pertaining to Cost Analysis and the relationship among various costs.

After studying this unit, you should be able to :

- contrast between explicit and implicit costs;
- differentiate between money cost and real cost;
- define opportunity cost;
- explain the nature of costs in short-run and long-run;

- explain the meaning of fixed cost, variable cost, total cost, average cost and marginal cost;
- distinguish between average cost and marginal cost; and
- analyse the short-run and long-run cost curves diagrammatically.

12.1 INTRODUCTION

Commodities are produced to satisfy human wants. Producing commodities means creating utilities, the aim of which is ultimately to fulfill human desires. The factors of production or various inputs have to be employed to produce any commodity. This is the physical side of production. The remuneration paid to a factor employed in the process of production is called the cost of production. The costs of a firm determine its supply of commodities. On the other hand, supply and demand determine price. To understand the process of price determination and the forces behind supply, one must understand the nature of costs.

Costs may be categorised into real costs, money costs, opportunity costs or alternative costs and explicit and implicit costs.

12.2 NATURE OF COSTS

Firms incur various costs for producing goods and services. These costs of production are money expenses for buying resources such as raw materials, machinery and equipment, depreciation and obsolescence charges on machines, buildings and other capital goods, rent on buildings, interest on capital invested and borrowed, normal profits of business, expenses on power, etc.

12.3 TYPES OF COSTS

12.3.1 EXPLICIT AND IMPLICIT COSTS

Explicit Costs : The expenses which are incurred by a firm in buying goods and services directly are termed as explicit costs. Money expenses made by the producer to hire workers and to purchase raw-materials, power, etc., are also explicit costs.

Implicit Costs : The expenses which are imputed for self-owned and self-employed resources, salary of the proprietor or rent on the owner's own building, etc., are called implicit costs. These costs are frequently ignored in calculating the costs of production.

Explicit and implicit costs are known as the firm's accounting expenses. The total costs of production of a firm include both these costs.

12.3.2 MONEY COSTS AND REAL COSTS

Money Costs : A firm usually incurs money expenses for producing a commodity. A firm spends money on wages and salaries of labourers, for purchasing raw materials, machinery and equipment, on depreciation, on power and fuel, etc. These money expenses are called money costs.

Real Costs : Real costs are different from money costs. Money costs are those which are paid by a producer for utilizing factor inputs for the production of commodities. But money costs do not reveal the fact behind these costs. Marshall believes that numerous

members of society make sacrifices in their efforts to produce a commodity. These sacrifices and efforts are the real costs of production; workers forego leisure, capitalists save and invest, and landlords utilize land for production. These sacrifices and efforts made by various members of society constitute real costs of production. According to Marshals, "All the efforts and sacrifices made by the producer are the real costs of production for these efforts are termed as the expenses of production".

But real costs seldom coincide with money costs of the production. Marshall declares that "If the purchasing power of money, in terms of effort has remained constant and if the rate of remuneration for waiting has remained about constant, then the money measure of costs corresponds to real costs; but such a correspondence is never to be assumed lightly. Neither can the sacrifice of a person who serves a few be equated to the painful efforts by a worker receiving Rs. 10 as wage. Thus the real costs and money costs of production do not coincide with each other in the short-run or long-run".

12.3.3 OPPORTUNITY COSTS OR ALTERNATIVE COSTS

Resources are scarce, but wants are unlimited. When resources are scarce, they are put to several uses or alternative uses. As they are scarce there arise economic problems. Otherwise, if they are in plenty, there occurs no problem of alternative use of resources. Modern economists disregard the criteria of 'sacrifices and efforts,' as real costs. But they express the real costs of production in terms of alternative uses of inputs. Suppose the land is utilized to produce wheat, or it is used to produce paddy instead of wheat, then the cost of land producing wheat is the cost of land producing paddy foregone. It is the next best alternative use foregone. Suppose labour is employed to produce bricks or it is also employed to produce tiles, then the cost of labour producing bricks is the cost of labour producing tiles foregone. Similarly, it can be applied to any factor input, which has an alternative use. Suppose with a sum of Rs. 500 a producer can produce two watches or a bicycle, and with the same amount he decides to produce the bicycle rather than the two watches, then real cost of the bicycle is equal to the cost of two watches, that is the alternative foregone.

Opportunity cost has been defined by economists as the cost of production of a commodity, that could have been alternatively used instead. According to Bentham, "The opportunity cost of any thing is the next best alternative that could be produce instead by the same factors, or by an equivalent group of factors, costing the same amount of money". According to Richard G. Lipsey, "The cost of using some thing in a particular venture is the benefit foregone by (an opportunity cost of) not using it in its best alternative use".

Opportunity cost has great importance when applied to economic problems. It can be applied in the determination of factor prices. It can also be applied to consumption and public expenditure. It explains the phenomenon of price. As the resources are scarce, they would be put to alternative uses, that is why there arises the need to understand the opportunity cost.

Check Your Progress - 1

What do you mean by implicit cost ?

.....

.....

12.4 NATURE OF COSTS AND CLASSIFICATION OF COSTS IN THE SHORT RUN

The period which is required to bring a change in production by changing variable capital, fixed capital being constant, is called short-run. In the short-run, the firm can change production only by changing variable capital. If the firm wants to increase or decrease its production, it has to employ more or less variable capital such as raw-materials and labour. In the short-run, the firm cannot increase production by enlarging the size of the plant or by establishing a new plant. In other words, the scale of the firm cannot be changed. That is why, short-run is a period of time in which the production can be altered only by varying the variable capital while the fixed capital of the firm remains the same.

In the short-run costs of production are classified into two i.e., fixed costs and variable costs.

12.4.1 FIXED COSTS

In the short-run fixed costs remain the same whatever the level of production. If the firm stops production, fixed costs have to be borne by the entrepreneur. Fixed costs include interest on investment made on capital goods, rent on land, wages and salaries of permanent staff, payment of Life Insurance Premiums, depreciation charges, etc. Fixed costs are those costs which cannot vary with the level of output in the short-run. **The fixed costs are also known as supplementary costs or overhead costs.**

12.4.2 VARIABLE COSTS

Variable costs are those costs which change with the level of output. As production increases or decreases, variable costs also increase or decrease. If the firm stops production, it incurs no variable cost. In the short-run there is no doubt that the level of output can be changed by altering the variable capital but it cannot be changed beyond the capacity of the existing firm. These costs include money spent for purchasing raw-materials, fuel, power, transportation charges, wages for casual and temporary labourers, etc. **The variable costs are also called prime costs or direct costs.**

12.4.3 TOTAL COSTS

A firm incurs some amount of money expenses to produce a given quantity of commodity. The total money spent for producing a given quantity of goods is called Total Costs (TC). It can be observed that as production increases, the total cost also increases. The total cost of a given quantity is the sum of the total fixed cost (TFC) and the total variable cost (TVC). The total fixed cost is the total money spent on fixed factors of production such as machinery and equipment, salaries to the permanent staff, buildings, Life Insurance Premiums, etc. In Fig. 12.1 the total fixed cost remains constant regardless of the changes in the level of output because the scale of the firm cannot be changed in the short-run. The total variable cost is the total money spent on the variable factors such as raw-materials, wages and salaries for casual and temporary workers, electricity charges, etc. As the level of output is increased or decreased, the total variable costs also rise or fall. If the firm stops the production of the commodity, the total variable costs become zero. In other words, the total variable costs change with the level of production as is indicated in Fig. 12.1

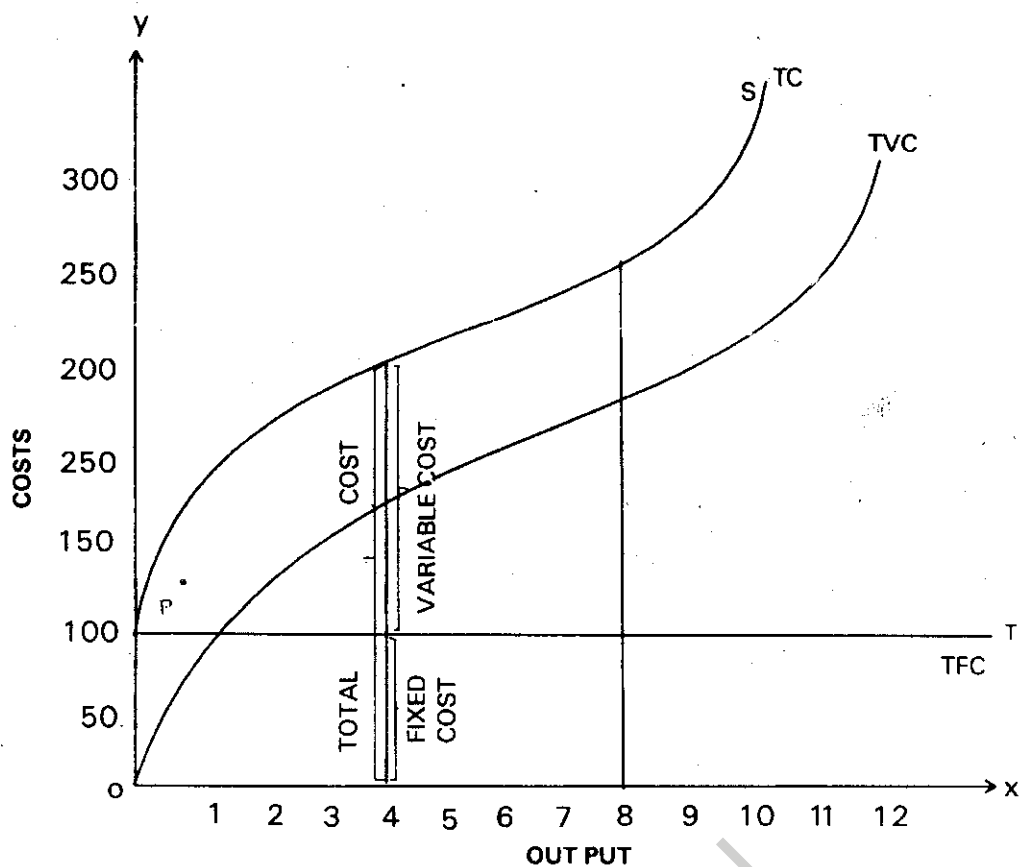


Fig. 12.1 : Total Cost : Fixed and Variable

Total Cost = Total Fixed Cost + Total Variable Cost. In Fig. 12.1, PS is the total cost Curve. It is the sum of the fixed cost (the distance between PT and OX-axis) and the total variable cost (indicated by the distance between the curves PS and PT)

12.5 AVERAGE AND MARGINAL COSTS

Average Cost

The average total cost (ATC) or average cost (AC) is the total cost divided by the number of goods produced. This is nothing but the cost per unit. Average cost is the sum of the average fixed cost (AFC) and the average variable cost (AVC). As production increases the average cost at first falls and then rises. Average fixed cost decreases continuously as output increases. Average variable cost and average cost are at first noticed to fall due to economies of scale, and then they rise due to diseconomies of large scale production.

$$AC = TC / \text{Number of goods produced}$$

$$AFC = TFC / \text{Number of goods produced}$$

$$AVC = TVC / \text{Number of goods produced}$$

$$ATC = AFC + AVC$$

Marginal Cost

In the short-period, only variable factors are changed so as to bring change in the production. If the firm intends to produce an additional unit, it has to employ more variable factors on

which it spends an additional amount. The additional cost which is incurred to produce one more unit of commodity is called the marginal cost, which adds to the total cost. Marginal cost can be computed by dividing the change in the total cost by the marginal output.

$$MC = \frac{\Delta TC}{\Delta Q}$$

MC = Marginal Cost

ΔTC = Change in total cost

ΔQ = Change in quantity

Since the increase in total cost is equal to the increase in the number of units of variable capital multiplied by the price of the variable capital, this can be written as-

$$MC = \frac{\text{Increase in quantity of variable capital}}{\text{Increase in output}} \times$$

O R

$$MC = \frac{\text{Price of variable capital}}{\text{Marginal product of variable capital}}$$

O R

$$MC_n = TC_n - TC_{n-1}$$

where,

MC_n = Marginal cost of producing n^{th} unit of output

TC_n = Total cost of producing n units of output

TC_{n-1} = Total cost of producing $n-1$ (i.e. one less) units of output.

This is a very important concept in the theory of value. It is useful in the determination of output which a firm will produce in any period.

Check Your Progress - 2

Define Marginal Cost.

.....

.....

.....

12.6 SHORT RUN COST CURVES

In Table 12.1 if the firm increases the level of output, it leads to an increase in total costs and total variable costs but the total fixed cost remains the same. It is clear from Table 12.1 that if the firm goes on producing more units, the average fixed cost declines continuously

but marginal cost, average cost and average variable cost at first decline to a certain extent of output due to the operation of economies of scale and then they start rising due to the emergence of diseconomies.

Table 12.1 indicates that from 5 units of output marginal cost starts rising due to diminishing returns. The average variable cost is obtained by dividing the total variable cost by the corresponding total output. Average variable cost starts rising from 6 units of output, and average total cost stops declining and starts rising from 7 units of output. Marginal cost falls and rises rapidly. Average variable cost and average total cost decline and increase slowly. After the level of 7 units of output, marginal cost rises faster than average variable cost and average total cost, which are less than the marginal cost.

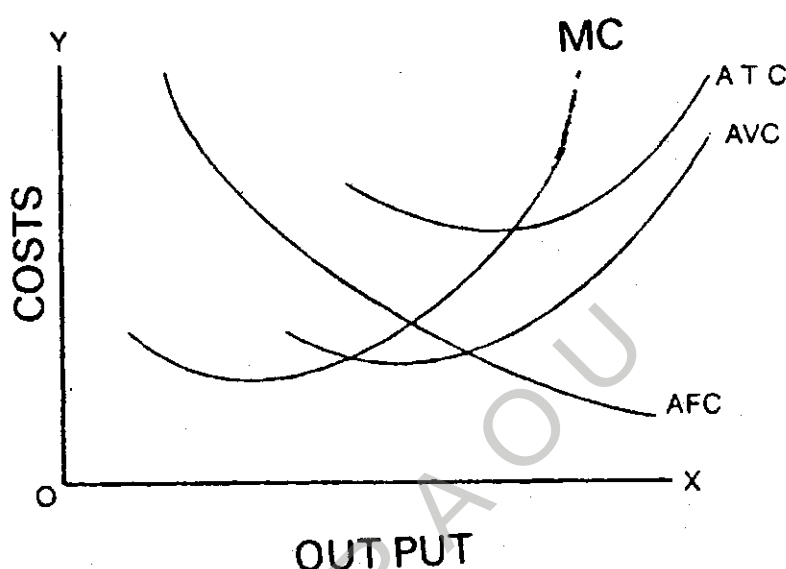


Fig. 12.2 : Short Run Cost Curves

If we observe the short-run cost curves carefully in Figure 12.2, we can study the nature of the cost curves. In the beginning all the cost curves of AFC, AVC, ATC and MC are declining. The total fixed costs remain the same whatever the level of output may be, but as production increases the total fixed costs are distributed among the number of units produced. Thus the fixed cost per unit (AFC) curve declines without break. It goes on declining as the level of output goes on increasing. The shape of the AFC curve is in the form of a rectangular hyperbola as at both sides it is rectangular in shape. ATC is the sum total of AVC plus AFC. At first it gradually decreases as production increases. The cost per unit is the lowest and reaches its minimum point at the level of 6 units of output.

Table 12.1 : Cost of Production of a Firm in Short - Run

Units of Output	Total Fixed Cost	Total Variable Cost	Total Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost	Marginal Cost
(i)	(ii)	(iii)	(iv) (ii+iii)	(v) (ii÷i)	(vi) (iii÷i)	(vii) (iv÷i)	(viii)
0	100	-	100	100	-	100	-
1	100	20	120	100	20	120	-

2	100	38	138	50	19	69	18
3	100	52.5	152.5	33.3	17.5	50.8	14.5
4	100	66	166	25	16.5	41.5	13.5
5	100	80	180	20	16	36	14
6	100	99	199	16.7	16.5	33.2	19
7	100	140	240	14.3	20	34.3	41
8	100	184	284	12.5	23	35.5	44

This is the least cost-point for the given technique. Economies of scale continue to operate till it reaches the level of 6 units of output. If the entrepreneurs increases the production further, economies disappear and diseconomies set in due to the law of diminishing returns so that the cost per unit gradually increases. The ATC curve lies above the AVC curve. At first it lies above the MC curve and after reaching the minimum point it lies below the MC curve. The reason why it slowly increases and decreases is this. The AFC curve declines continuously and the AVC curve decreases and increases slowly. The ATC curve is the sum total of AFC and AVC, that is why it gradually decreases and increases. The ATC curve reaches its minimum point after the MC and AVC curves reach their respective minimum points. AVC is the cost per unit for employing variable factors. In the beginning it starts declining gradually due to economies and reaches the minimum point at the level of 5 units of output earlier than the ATC curve, and after the MC curve reaches its minimum point. It starts rising even when the ATC curve is declining. As production is further increased, the AVC increases faster than the ATC and goes closer to the ATC curve. The gap between ATC curve and AVC curve is gradually reduced, whereas in the beginning the gap between the two was wide.

If we look at the MC curve, as the firm goes on producing additional units of commodities, it falls rapidly and then rises very fast. This decline and rapid rise occur because it is the cost per extra unit produced but not the average cost or cost per unit, which can be derived by the total cost divided by the number of units produced. Due to the operation of economies of scale as additional units are produced, it, at first starts declining swiftly reaching the minimum point at 4 units of output, and then starts increasing fast due to the emergence of diseconomies of scale intersecting the AVC curve and the ATC curve at their lowest points and rising above them. It reaches its minimum point earlier than the AVC and ATC curves. The MC curve lies below the AVC and ATC curves while they are declining. When the AVC and ATC curves are increasing, the MC curve is higher than both the curves. The MC curve intersects both the AVC and the ATC curves at their lowest points.

12.7 RELATIONSHIP BETWEEN AVERAGE COST AND MARGINAL COST

If we look at Figure 12.3 the relationship between average and marginal costs can be easily understood. It is clear from the Figure that in the beginning both the marginal and average costs are falling, but marginal cost is declining faster than average cost because of the additional amount spent on the production of one more unit. Average cost declines slowly because the total costs of the firm are equally distributed among all the goods produced. Average cost is the sum of the average fixed cost and the average variable cost. As production increases, the average fixed cost declines continually whereas the average variable cost at first declines and then rises.

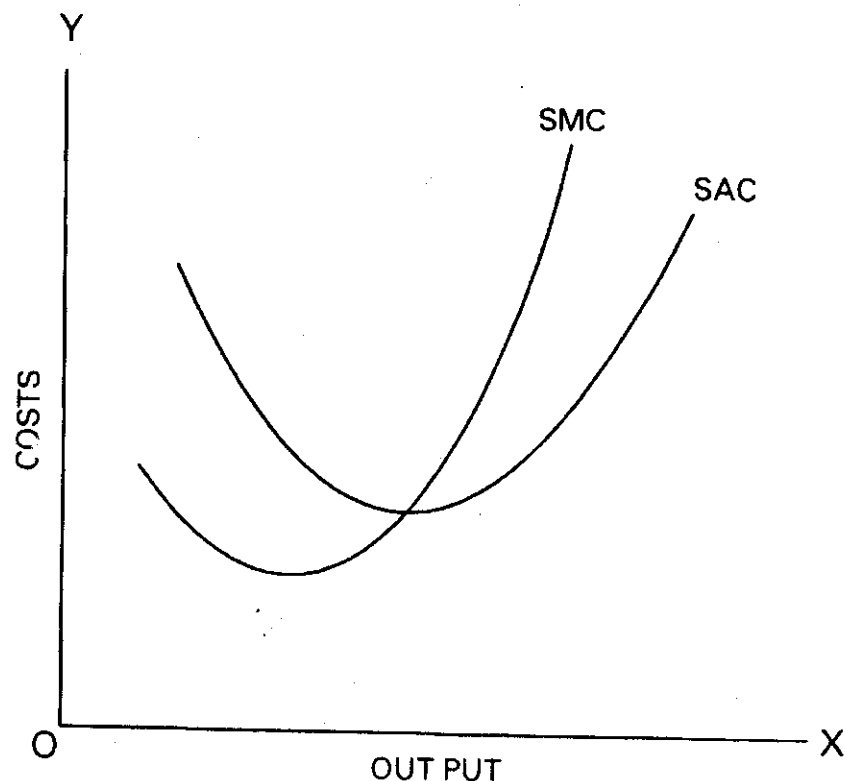


Fig. 12.3 : Relationship between Average Cost And Marginal Cost

While the AC curve is falling, the MC curve is also declining, but at a faster rate than the AC curve. The MC curve reaches its minimum point earlier than the AC curve reaches its lowest point. The MC curve starts rising while the AC curve is still falling. When the AC curve reaches its minimum point, the MC curve is still rising and passing through the minimum point of the AC curve. If output is further increased, the AC curve also starts rising but less than the MC curve. When both the MC and AC curves are rising, the MC curve is above the AC curve. While the AC and MC curves are declining, the MC curve lies below the AC curve.

12.8 LONG-RUN COSTS

The term long-run does not refer to any fixed years of calendar time. We cannot say whether a 10 years period or a 15 years period is long run. Similarly, short-run period, as explained earlier, is the period in which there is no possibility of changing the size of the plant or fixed capital. In the short-run some factors remain fixed and the other variable factors such as labour, raw-materials, etc., are changed to bring change in output. In the short-run some factors are kept constant and other factors are variable. In the long-run all factors can be changed so as to bring change in the level of production. There are no fixed costs but all factors are variable. The very long period is a period where the capacity of the plant will have run out to meet the shifts in demand and its equipment will have been worn out and will therefore need replacement, etc. In the long-run, a firm changes its present policies and commitments. For example, if the company finds that the demand for its product has increased substantially, it may be five years or ten years or fifteen years before it decides to change the size of the plant and equipment completely so as to meet the increased demand. If demand changes rapidly, the entrepreneur will have to redesign the size of the firm so as to make it profitable. Thus, the long-run period is itself an economic variable. In fact according to Leftwich, the long-run is "a series of alternative short-run situations

into any one of which a firm can move. The long-run may be compared with the action sequence of motion picture. If we look at a single picture we have a short-run concept".

If a firm decides to change a certain level of output, it has to choose some method among the many technically possible methods. The producer has to choose some method to minimize cost and to maximise profit. That is, what he has to choose is the least cost method of production from the alternative techniques available. If the producer chooses to have a new method, he has to change all the factors, the fixed as well as the variable. That is why the long-run is the period in which all the factors which were variable really become fixed. Once installed, they last for a long time. It depends on the entrepreneur's capability to select a method which rewards him with large profits and bonuses.

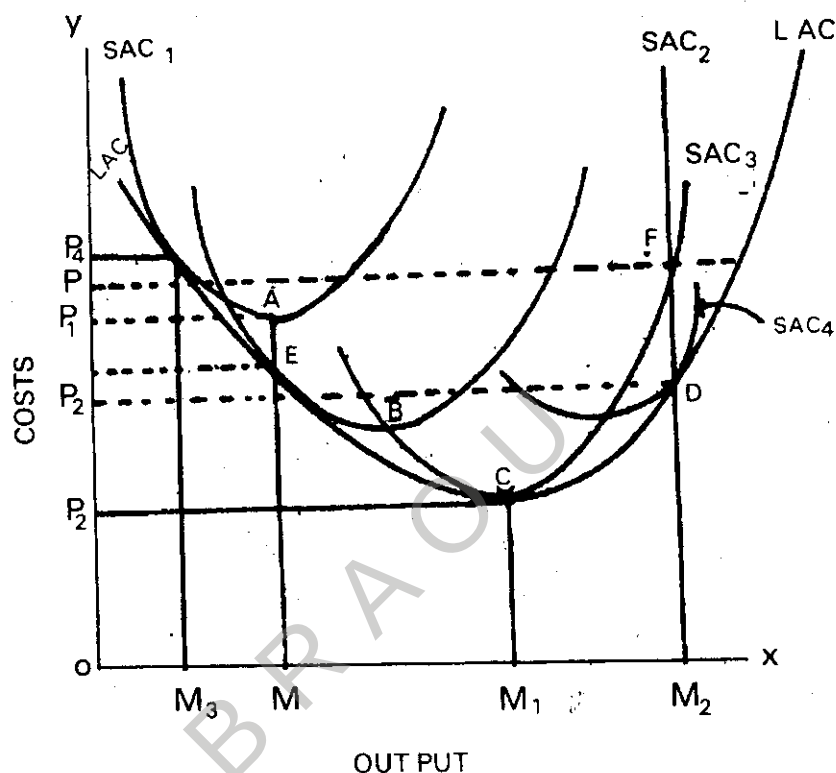


Fig. 12.4 : Long Run Cost Curves

Fig. 12.4 shows the long run cost curves of a small-sized plant which has a certain amount of capital which is fixed in the short run. SAC_1 is the short run average cost curve. In the short-run the producer can change his output over the U-shaped short-run, average cost curve. The average cost OP is the minimum at point A on SAC_1 on OM level of production.

In the long run, if OM is the profitable level of output, he can increase the profitability of this output by installing a larger plant. If he were able to obtain just the right adjustment, he could set up the plant corresponding to SAC_2 , which is larger than SAC_1 . SAC_2 represents the short-run average cost curve. Then the producer could produce the same amount of OM at the average cost of OP_1 , which is less than the average cost of OP . OP_1 is the minimum unit cost of producing OM units obtaining with the plant SAC . This is not the minimum cost for this plant. But for this SAC_2 plant, the minimum cost is the point B on the short run average cost curve SAC_2 . Even then, at the level of output OM , the minimum unit cost is OP only. This is the least possible cost for producing OM units of output. Either

a smaller plant say the one corresponding to SAC_1 or a larger plant, say the plant giving rise to SAC_3 , would entail a higher unit cost for producing the same OM units of output.

However, in this example, the producer may still reduce unit cost in the long-run, producing a greater quantity of output. Indeed he may keep expanding his capital facilities until he has set up the plant corresponding to SAC_3 in the Fig. 12.4. At point C on SAC_3 , the very best average cost of production is obtained. If the producer can profitably market OM_1 units of output, then he can produce this amount for an average cost of OP_2 .

If the producer still wants to expand production, he can do so more economically in the long run by establishing a larger plant but the average cost will exceed OP_2 . For example, if he wishes to produce OM_2 units of output, he can do so most economically by setting up the plant corresponding to SAC_4 . The least possible cost of producing OM_2 units is obtained at the average cost of OP_3 with the SAC_4 plant. Suppose OM_2 units of output are produced with the help of the plant SAC_3 ; the cost per unit will be higher, i.e., OP_4 because of the size of the plant which is smaller than SAC_4 . That is why SAC_3 is an economically viable plant which is smaller than SAC_4 . This is nevertheless greater than the absolute minimum unit cost of OP_2 . Thus, in the long run, it is desirable, in order to produce any level of output to use the plant which has the minimum unit cost. In this case, it is the SAC_3 plant which has the minimum unit cost OP_2 at OM_1 output.

So far we have looked only at a series of short-run cost curves SAC_1 , SAC_2 , etc. Now draw a curve that is just tangential to each of these short-run cost curves. The curve so drawn is called the envelope of the family of short-run curves. It is labelled as LAC in Figure 12.4 and it is the long-run average cost curve. It is also called the "PLANNING CURVE". The LAC is at a tangent to all SAC curves but it touches only one SAC_3 curve at its lowest point C as in Figure 12.4. If the producer wants to produce either the OM_3 or OM_2 level of output instead of producing the OM_1 level of output, then the cost per unit will be higher. If he wants to produce OM_1 units of output, the cost per unit is the minimum compared to that of output O_3 or OM_2 . The OM_1 level of output is the least-cost output. That is why it is called the OPTIMUM OUTPUT. In Figure 12.4, the plant SAC_3 is producing OM_1 output with the minimum cost OP_2 . The minimum point C of SAC_3 coincides with the minimum point of LAC. That is why it is the OPTIMUM FIRM.

SHAPE OF LAC CURVES

LAC curves are U-shaped just as the short-run average cost curves are. But LAC is flatter than the SAC. The shape of LAC is like the shape of a saucer. As output increases, the LAC declines upto a stage where it reaches the minimum point, i.e., optimum output. After this point, if production increases, the LAC rises. The shape of LAC depends on the operation of the laws of returns to scale in a particular type of production. There are different points of view to explain why the LAC declines and then rises. One such point of view is referred to by Chamberlin.

According to Chamberlin, initially the LAC slopes downwards due to increasing returns to scale. He attributes the increasing returns to scale to increased division and specialisation of labour and equipment on the one hand and employment of qualitatively different and technologically more efficient units of factors (particularly machines) on the other. In the long run, if the entrepreneur expands production, the firm enjoys internal economies of production such as installing better machines, borrowing money cheaply, procuring the services of a more efficient managers and workers, etc. These internal economies contribute to increasing returns to scale.

If the output is OP then the LAC reaches its minimum. If the production is further expanded at the minimum level of LAC, it may become flatter. In such a situation the economies and diseconomies of scale equal each other and the LAC has a disc base. If output is further increased, diseconomies like the difficulties of co-ordination, managerial problems, labour problems, etc. erupt and outweigh the economies. Then the long-run average cost curve begins to rise.

In this manner, the LAC curve falls or rises more slowly than the short-run cost curve. In the long run all costs become variable. That is why the LAC is flatter than the short-run average curve.

Similarly, the long-run marginal cost curve (LMC) is flatter than the short-run marginal cost curve (SMC). In the short run there are fixed as well as variable costs. Thus the SMC falls and rises more rapidly than the LMC. The LMC first falls and then rises intersecting the LAC at its lowest point E. While LMC is falling, it lies below LAC and while it is rising it lies above the LAC curve. A rising LMC intersects LAC at its minimum point and rises further.

12.9 SUMMING UP

This unit has analysed different kinds of costs which are useful in determining the equilibrium of a firm. As a rational human being, every producer wants to minimise his cost of production to produce a unit of output. What is this cost of production? When a producer utilizes some inputs to produce a commodity, he pays remuneration to them. The total remuneration paid to different factors in the process of production of a commodity is called the cost of production. Costs can be of short-run or long-run; of explicit or implicit; of money costs or real costs, and of opportunity costs. We have classified the costs as total costs, fixed costs, variable costs, marginal costs, average costs, average variable costs and average fixed costs. The relationship between and among different costs is explained. At the end, long-run cost curve is derived. In the long-run, all costs are variable costs, but in the short-run, the difference exists between variable costs and fixed costs.

12.10 CHECK YOUR PROGRESS : MODEL ANSWERS

1. The expenses which are imputed for self-owned and self-employed resources, salary of the proprietor or rent to the owner's own building etc., are called implicit costs.
2. The additional cost which is incurred to produce one more unit of commodity is called the marginal cost.

$$MC = \frac{\Delta TC}{\Delta Q}$$

12.11 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. What is short period in economics? Explain and distinguish between fixed and variable cost.
2. Explain and illustrate diagrammatically the short-run cost curves of a firm.
3. Derive the long-run cost curve of a firm and explain its U-shape.

II. Answer the following questions in about 15 lines each.

1. Write a brief note on opportunity cost.
2. Distinguish between real costs and money costs.
3. Explain the relationship between average cost and marginal cost.
4. Distinguish between fixed and variable costs.
5. Describe the shape of LAC curve.

12.12 RECOMMENDED BOOKS

- | | | | |
|----|-------------------|---|---------------------------------------|
| 1. | Stonier and Hague | : | A Text Book of Economic Theory |
| 2. | H.S. Agarwal | : | Micro Economics |
| 3. | M.L. Seth | : | Principles of Economics |

12.13 GLOSSARY

Fixed Costs	:	Costs which in the short run do not vary with output.
Variable Costs	:	Costs which vary directly with the rate of output.
Total Costs	:	The total money spent for producing a given quantity of goods.
Average Cost	:	The total costs divided by the number of goods produced.
Marginal Cost	:	The additional cost which is incurred to produce one more unit of commodity.
Cost-Curves	:	The curves drawn to show average costs, marginal cost and total cost over a range of output.

UNIT-13 : REVENUE ANALYSIS

Contents

- 13.0 Aims and Objectives
- 13.1 Introduction
- 13.2 Types of Revenue
 - 13.2.1 Total Revenue
 - 13.2.2 Average Revenue
 - 13.2.3 Marginal Revenue
- 13.3 Revenue Curves in Perfect Competition
- 13.4 Revenue Curves in Monopoly
- 13.5 Relationship between AR and MR Curves
- 13.6 Revenue Curves in Oligopoly
- 13.7 Summing Up
- 13.8 Check Your Progress : Model Answers
- 13.9 Model Examination Questions
- 13.10 Recommended Books
- 13.11 Glossary

13.0 AIMS AND OBJECTIVES

This unit identifies three concepts in revenue analysis and analyses the revenue curves in perfect competition, monopoly, and oligopoly. It also discusses the relationship between average revenue and marginal revenue.

After studying this unit, you should be able to :

- define the concepts of revenue - TR, AR and MR;
- derive the revenue curves in perfect competition, monopoly and oligopoly; and
- distinguish between AR and MR.

13.1 INTRODUCTION

The concepts of revenue are necessarily to be known to understand the notion of the equilibrium of a firm. You will be knowing in the next few units that there are two types of markets, namely, perfect and imperfect competition. Revenue curves will be different in different markets.

13.2 TYPES OF REVENUE

There are three concepts of revenue viz., (i) Total Revenue, (ii) Average Revenue and (iii) Marginal Revenue.

13.2.1 TOTAL REVENUE (TR)

A firm's total revenue is the quantity of goods sold multiplied by the price of the articles. The total revenue includes the quantity of the product sold and the price. For example, a firm sold 10 books and it received Rs. 200 for the ten books sold. This amount is called the total revenue. Total revenue can be calculated if the price of a product is known.

$$T.R. = \text{Price} \times \text{Quantity sold}$$

13.2.2 AVERAGE REVENUE (AR)

A firm's average revenue is nothing but the price per unit. This can be derived by the firm's total revenue divided by the number of goods sold. Suppose the firm receives a total revenue of Rs. 200 by selling 10 books, the average revenue is

$$\begin{aligned} A.R. &= \text{Total Revenue} / \text{Output} \\ &= 200/10 = \text{Rs. 20 per book} \end{aligned}$$

Revenue per unit or price of the article is Rs. 20.

$$A.R. = TR/Q$$

A.R. = Average Revenue

T.R. = Total Revenue

Q = Number of goods sold

13.2.3 MARGINAL REVENUE (MR)

The Marginal Revenue is the change in total revenue received by selling an additional unit of the commodity. By selling an additional unit, a firm earns an additional revenue which adds to the total revenue and this additional revenue is called marginal revenue. Suppose, a firm receives a total revenue of Rs. 18 by selling 3 books and it receives a total revenue of Rs. 20 by selling 4 books. Then the marginal revenue is Rs. 2 because it indicates the additional to the total revenue due to the sale of the 4th commodity which is an extra or additional or marginal unit sold.

$$MR = \text{Total Revenue of 4 units} - \text{Total Revenue of 3 units}$$

$$MR = \text{Rs. 20} - \text{Rs. 18} = \text{Rs. 2}$$

Similarly, this can also be explained algebraically—

$$MR = TR_{n+1} - TR_n \dots \dots \dots (1)$$

$$\begin{aligned} MR &= \text{Price of } (n+1)\text{th units} - \text{Loss in} \\ &\quad \text{revenue on previous 'n' units} \\ &\quad \text{resulting from a fall in price} \dots \dots \dots (2) \end{aligned}$$

$$TR_{n+1} = \text{Total Revenue of } (n+1) \text{ units}$$

$$TR_n = \text{Total Revenue of 'n' units}$$

Table 13.1 : Total, Average and Marginal Revenue Schedule

No. of Units 'X' Sold	Price or Average Revenue (AR) (Rs.)	Total Revenue (TR) (Rs.)	Marginal Revenue (MR) (Rs.)
(1)	(2)	(3)	(4)
1	8	8	-
2	7	14	6
3	6	18	4
4	5	20	2
5	4	20	0
6	3	18	-2
7	2	14	-4

The law of demand states that when price falls demand increases. Suppose, as in Table-13.1, that a firm sells 3 units at price, Rs. 6. The firm reduces the price of the product so as to attract the consumers. If the firm reduces the price of the product from Rs. 6 to Rs. 5, it now sells 4 units. The total revenue of 3 units is Rs. 18 (Price Rs. 6 x 3 units sold) and the total revenue of 4 units is Rs. 20 (Price Rs.5 x 4 units-sold) Thus,

$$MR = TR_{n+1} - TR_n$$

$$MR = TR \text{ of 4 units} - TR \text{ of 3 units}$$

$$\therefore MR = Rs. 20 - Rs. 18 = Rs.2.$$

Marginal revenue can also be computed by using the second equation. According to the law of demand, more goods will be offered at a lower price. In Table-13.1 (the firm offers 3 units at a price of Rs.6. The firm sells 4 units of the commodity by reducing the price to Rs. 5. This involves a loss in revenue on the previous goods due to the reduction in price. When the price is Rs.6 only 3 units were sold and when the price fell to Rs. 5 the firm sold 4 units. This must be understood to mean that the previous units plus the additional unit are also sold at Rs. 5. It is necessary to reduce the price of the previous goods to the selling price of the 4th article. There is a loss of Rs. 1 on each of the previous 3 units. The total loss in revenue on the previous 'n' (or 3 units) is Rs. 3. This loss in revenue of Rs. 3 must be deducted from the price (Rs.5) of the last unit sold or (n+1)th unit or 4th unit sold. Thus,

$$MR = \text{Price of (n+1)th (or 4th) unit} - \text{Loss in revenue on previous 'n' (or 3) units}$$

$$\therefore MR = Rs 5 - Rs 3 = Rs. 2.$$

For instance, when 2 units are sold, the marginal revenue is Rs.6 (Rs.14 - Rs. 8) : When 3 units are sold, it is Rs. 4 (Rs. 18 - Rs. 14) and so on. It is obvious from Table - 13.1 that the decrease in average revenue will be less than the decrease in marginal revenue. When price is reduced say from Rs. 7 to Rs. 6, the decrease in average revenue is only Re 1 (Rs. 7 - Rs. 6) and decrease in marginal revenue is Rs. 4 (Rs. 18 - Rs. 14)

Average and Marginal revenue curves can be drawn for the above data.

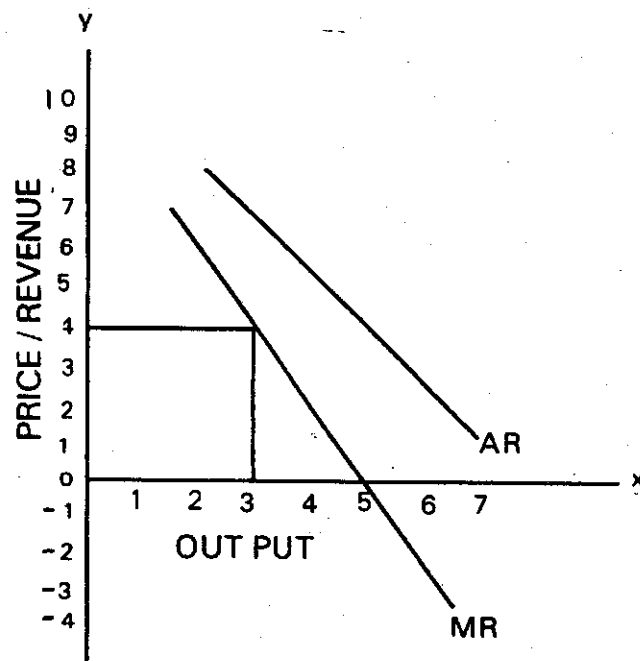


Fig. 13.1 : Average and Marginal Revenue Curves

The quantity of the commodity is measured on the OX-axis and the revenue on the OY-axis. As the decrease in marginal revenue will be higher than the decrease in average revenue, the marginal revenue will be less than average revenue at all levels. When price decreases from Rs. 5 to Rs. 4, the marginal revenue is zero and the MR curve cuts the X-axis. When the price is reduced from Rs. 4 to Rs. 3, 6 units of the commodity are sold and at this level marginal revenue becomes negative. Total revenue also comes down from Rs. 20 to Rs. 18. This is a general diagrammatic representation of marginal revenue and average revenue.

Check Your Progress - 1

What is total revenue ?

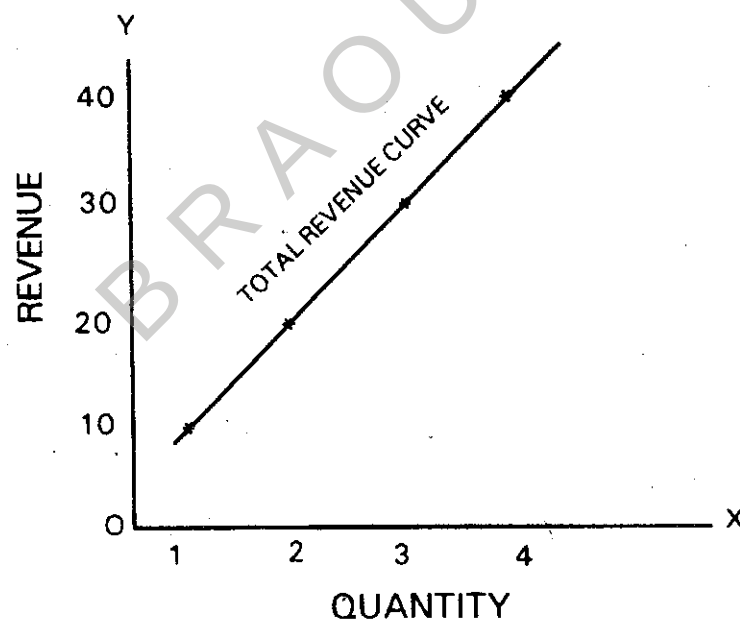
13.3 REVENUE CURVES IN PERFECT COMPETITION

Normally average revenue (price) is greater than marginal revenue as shown in the Figure 13.1. But in perfect competition, an individual firm cannot influence the ruling price, so the firm can offer any quantity of the goods at the given market price. (Different types of markets are discussed in detail in Unit-16) Marginal revenue is equal to average revenue because there is no loss on the previous units.

Table 13.2 : Demand and Revenue Schedule of a Firm in Perfect Competition

No. of Units Sold	Average Revenue or Price (AR) (Rs.)	Total Revenue (TR) (Rs.)	Marginal Revenue (MR) (Rs.)
(1)	(2)	(3)	(4)
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10

As there are a huge number of firms in perfect competition, the price of the product is not determined by a single firm or an individual. When there is no change in the market price, if more goods are sold at the same price the marginal revenue will be equal to the average revenue ($MR = AR$). Table 13.2 shows the demand and revenue schedule of a firm in perfect competition. Let us assume that the market price remains constant at Rs. 10. As demand increases the firm will prefer to sell any quantity of the goods at the existing price. Suppose the firm sells one commodity at price 10, it earns a total revenue of Rs. 10 only, if it sells 2 units at the same price, it gets a net revenue or additional revenue or marginal revenue of Rs. 10 (Rs. 20 - Rs.10). As more and more units are offered at the same market price, the total revenue will increase but there will be no change in marginal revenue. The rate of increase in total revenue will be the same as the average revenue or price and will be equal to the marginal revenue.

**Fig. 13.2: Total Revenue Curve in Perfect Competition**

In Figure - 13.2 we have drawn a total revenue curve (TR). As the quantity sold increases at the ruling price, the total revenue also increases. When one unit is sold the total revenue is 10; when 2 units are sold at the same price the total revenue is Rs. 20 and so on. The total revenue curve (TR) rises upwards from left to right.

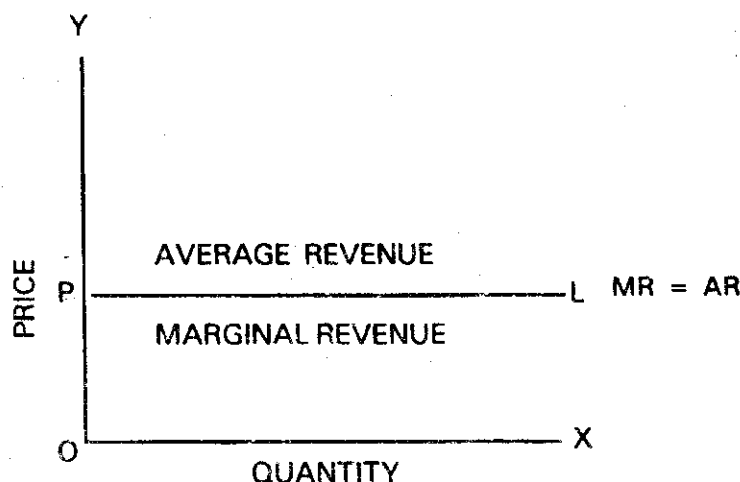


Fig. 13.3 Average and Marginal Revenue Curves in Perfect Competition

In Figure 13.3 we have drawn the average revenue (AR) and marginal revenue (MR) curves. The firm sells any quantity of output at the given price Rs. 10. The price is constant in perfect competition, as the volume of output increases the total revenue increases but, the additional revenue received (MR) by selling an additional unit is equal to the price (AR). Hence, the marginal revenue curve coincides with the average revenue curve. In Figure 13.3, at a price of Rs. 10 the average revenue and marginal revenue are the same straight line curve PL, which is parallel to OX axis.

13.4 REVENUE CURVES IN MONOPOLY

In Imperfect competition, a competition where the assumptions made under perfect competition will not prevail, the demand curve or average revenue curve of a firm is less than perfectly elastic which means that the average revenue curve has a negative slope and the marginal revenue curve lies below the average revenue curve. In monopoly, there is only one seller or producer in the market. He clears off his goods according to the law of demand. In other words, he sells more goods in the market because he reduces the price of the goods. If the monopoly firm offers more goods at a lower price, it is clear that the average revenue curve will fall and the marginal revenue curve which lies below the average revenue curve will also fall. This phenomenon can easily be understood from the following imaginary demand and revenue schedules for a firm under monopoly.

Table 13.3 : Demand and Revenue Schedule for a Firm in Monopoly

Quantity of X	Average Revenue or Price (AR)	Total Revenue (TR)	Marginal Revenue (MR)
(1)	(2)	(3)	(4)
1	7	7	-
2	6	12	5
3	5	15	3
4	4	16	1
5	3	15	-1

In Table. 13.3, Columns 1 and 2 represent the relationship between demand and price. This relationship gives the demand curve of the monopolist. As price falls the demand for the commodity will increase. When the price falls from Rs. 7 to Rs. 6, the demand increases

from one unit to two units. But the total revenue increases from Rs. 7 to Rs.12. This is shown in column 3. The total revenue can be obtained by multiplying the quantity demanded and the price of the product. By selling an additional unit, the monopolist receives net revenue which is called marginal revenue as shown in Column 4. If one unit of the product is sold, he earns a total revenue of Rs. 7. If he sells 2 units at the reduced price of Rs. 6, he gets a total revenue of Rs. 12. The marginal revenue of the second unit can be derived by subtracting the total revenue of one unit sold from the total revenue of 2 units sold. For example, the marginal revenue of the second unit is Rs. 12 - Rs. 7 = Rs. 5. Similarly, the marginal revenues of other units can also be obtained.

These facts can be explained with the help of a diagram.

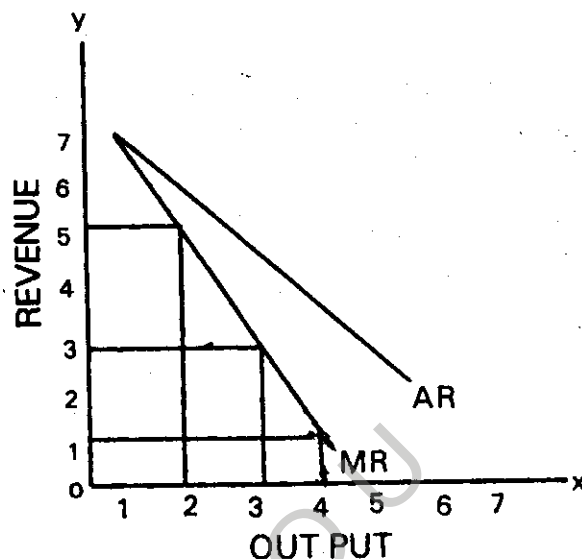


Fig. 13.4 Average and Marginal Revenue Curves in Monopoly

It is clear from Figure - 13.4 that the demand curve or average revenue curve (AR) is sloping downward to the right which indicates that more commodities are sold as the price falls. Marginal Revenue (MR) is the corresponding marginal revenue curve. This curve is also sloping downward to the right but it lies below the average revenue curve at all levels.

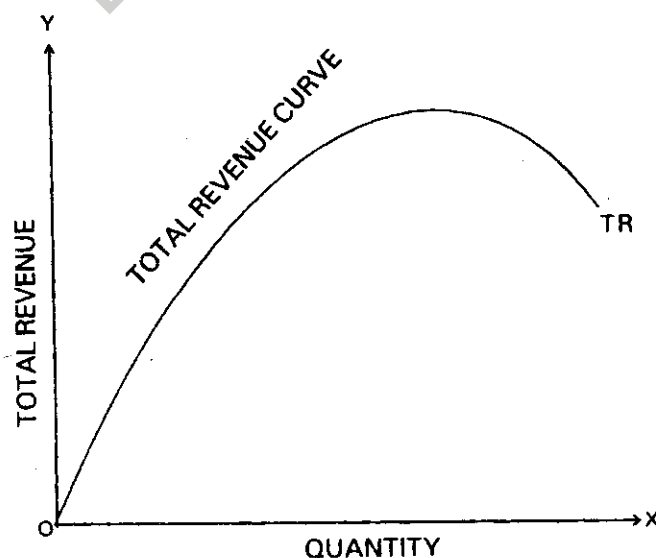


Fig 13.5 Total Revenue Curve in Monopoly

In Figure, 13.5 TR is the total revenue curve. Total revenue increases as the sale of commodities increases due to a reduction in the price of the product. The rate of increase in total revenue is not the same as in perfect competition, but it increases at a diminishing rate. Total revenue increases upto the sale of 4 goods only. If the price is further reduced, more goods will be sold but the total revenue will decline.

13.5 RELATIONSHIP BETWEEN AR AND MR CURVES

Here we shall concern ourselves with the AR and MR curves which are important in the analysis of the theory of price. The relationship between AR and MR is explained. Now we have to explain the relationship between the AR curve and the corresponding MR curve geometrically with the help of the following figure.

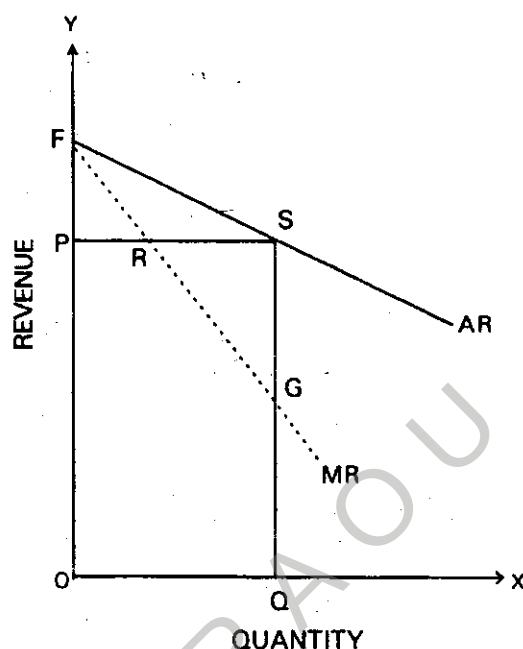


Fig. 13.6 : Relationship between Average and Marginal Revenue Curves

As shown in Figure - 13.6 MR must be less than AR, as long as Average Revenue Curve (ARC) is falling. The marginal revenue curve (MRC) normally falls downwards. Sometimes it may be horizontal or rising depending on the market situations. In the case of a straight line, the AR and MR curves fall downwards and MRC is lower than ARC. The rate of fall in marginal revenue curve is double to that of the rate of fall in AR curve. If we draw a perpendicular line from AR to the OY axis, the MR curve, the dotted line, cuts the perpendicular line when it is half way to AR curve. In Figure 13.6 $PR = RS$.

13.6 REVENUE CURVES IN OLIGOPOLY

Oligopoly means that a few sellers or producers sell a commodity in the market. In oligopoly, the demand curve or AR curve and MR curve will not be smooth curves. They will have kinks. As the number of sellers and the markets are small, if a firm reduces the price for its product, the other oligopolists will also reduce the price to a greater extent. As a result the firm reducing the price will only experience a relatively small increase in sales.

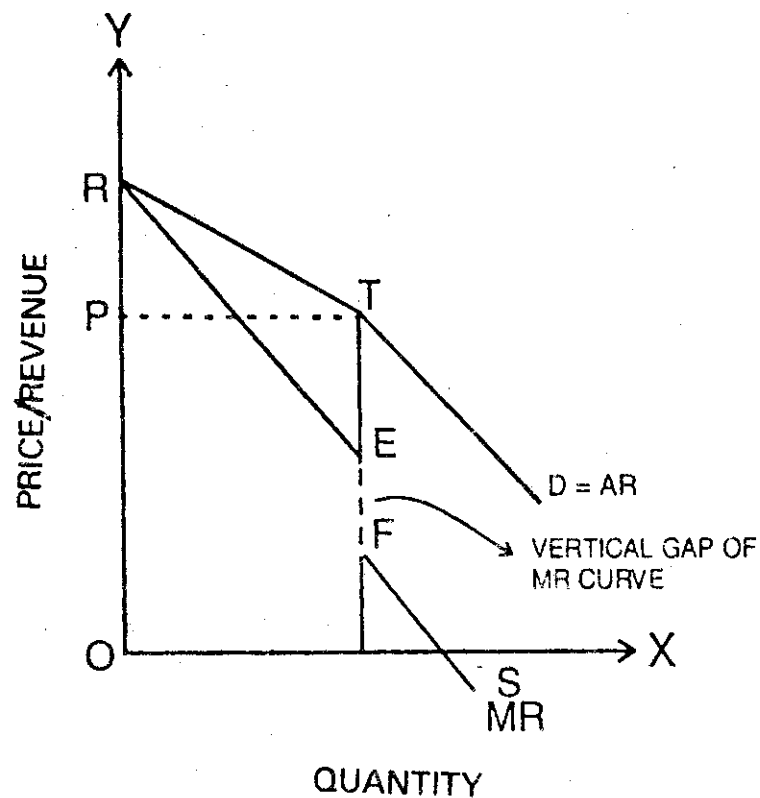


Fig. 13.7 : Elasticity of Demand, MR and AR in Oligopoly

In the above Figure 13.7 we observe that there is a kink in the demand. This is associated with a vertical jump EF in the marginal revenue curve MR. It is discrete at the point of the kink. There are two linear branches in the demand curve. They are RT and TD which is steep. We have to draw the MR curve corresponding to the RT demand curve. This is RE in Figure 13.7. Next, draw the MR curve for the second part of the demand curve TD. This is FS. EF is the vertical displacement in the marginal revenue curve MR.

If the firm in Figure 13.7 wants to sell more by reducing its price P, all the other firms will follow by matching the price cut, so that the firm will earn only a relatively small increase in sales. In the region below the initial price P or T, the demand curve D will be steep. There is a kink at point T. The AR and MR curves are important tools in economic analysis. AR is the demand of the firm in question. The AR curve indicates the price line for the producer in all market conditions. The relationship of the AR and AC curves reveals whether the firm reaps normal or abnormal profits or incurs losses. If AC at the point of equilibrium lies above the AR curve, the firm incurs loss. If AC lies below the AR curve the firm earns more than normal profits. If the AR curve is at a tangent to the AC curve at the point of equilibrium, it yields normal profits.

We can also judge whether the firm is utilising its capacity or not by taking into consideration the relationship between AR and AC. If AR is tangential to the AC curve at its minimum in the equilibrium condition, the firm is running at its full capacity. The equality of MR and MC determines the equilibrium position of the firm under all market situations. This will show the profit maximising output.

Check Your Progress - 2

Explain the revenue curves in oligopoly ?

.....

.....

.....

.....

13.7 SUMMING UP

The equilibrium of a firm is determined on the basis of revenue and cost. This unit has touched upon different concepts pertaining to revenue. The shapes of different revenue curves in different markets are also explained. Here you should not forget that the shapes of total revenue curve, average revenue curve and marginal revenue curve in perfect competition differ from those of monopoly.

In perfect competition, total revenue increases proportionately to number of units sold as the price does not change. As no individual can change the price, marginal revenue will be equal to average revenue. But in monopoly, a producer can change either his production or the price of his produce. So, total revenue increases as the sale of commodities increases but it increases at a diminishing rate (see total revenue curve in fig. 13.5) if a monopolist prefers to sell more goods at a lower price, average revenue curve will fall, marginal revenue will also fall and it will be below the AR curves. The rate of fall in MR curve is double to the rate of fall in AR curve. This is the relationship between AR and MR curves. The relationship between AR and MR is explained in the later part. In the end, special cases of revenue curves are illustrated diagrammatically.

13.8 CHECK YOUR PROGRESS : MODEL ANSWERS

1. A firm's total revenue is the quantity of goods sold multiplied by the price of the articles. The total revenue includes the quantity of the product sold and the price.

T.R. = Price x Quality Sold

2. Oligopoly means that a few sellers or producers sell a commodity in the market. In oligopoly, the demand curve or AR curve and MR curve will not be smooth curves. They will have kinks. As the number of sellers and the markets are small, if a firm reduces the price for its product, the other oligopolists will also reduce the price. As a result, the firm reducing the price will only experience a relatively small increase in sales.

13.9 MODEL EXAMINATION QUESTIONS

I Answer the following questions in about 30 lines each.

1. Explain and show the shape of marginal and average revenue curves of a firm in perfect competition.
2. Explain diagrammatically the relationship between AR and MR Curves.

3. Depict and explain the shapes of average, marginal and total revenue curves of a firm in monopoly.

II Answer the following questions in about 15 lines each.

1. Depict and explain Kinky demand curve of an oligopoly firm.
2. Distinguish between perfect competition and monopoly in regard to total revenue curve.
3. Describe the following concepts :
(i) Total revenue, (ii) Average revenue and (iii) Marginal revenue.

13.10 RECOMMENDED BOOKS

- | | | |
|----------------------|---|---------------------------------------|
| 1. Stonier and Hague | : | A Text Book of Economic Theory |
| 2. M.L. Seth | : | Principles of Economics |
-

13.11 GLOSSARY

- | | | |
|----------------------------|---|--|
| Average Revenue | : | Total revenue divided by the number of goods sold. |
| Marginal revenue | : | The change in total revenue received by selling an additional unit of the commodity. |
| Monopoly | : | A situation where a firm or individual produces and sells the entire output of some commodity. |
| Perfect competition | : | A theoretical environment in which prices are determined. |
| Total Revenue | : | The quantity of goods sold multiplied by the price of the goods. |

UNIT - 14 : BREAK-EVEN ANALYSIS

Contents

- 14.0 Aims and Objectives
- 14.1 Introduction
- 14.2 Break-Even Point
- 14.3 Break-Even Chart
- 14.4 Assumptions of Break-Even Analysis
- 14.5 Algebraic / Formula Method for Determining Break-Even Point
 - 14.5.1 Concepts of Contribution and P/V Ratio
 - 14.5.2 Break-Even point in terms of Physical Units
 - 14.5.3 Break-Even point in terms of Value of Sales
 - 14.5.4 Composite Break-Even Point
- 14.6 Margin of Safety
 - 14.6.1 Computation of Margin of Safety
 - 14.6.2 Importance of Margin of Safety
- 14.7 Application of Break-Even Point in Profit Forecasting
- 14.8 Advantages of Break-Even Analysis
- 14.9 Limitations of Break-Even Analysis
- 14.10 Summing Up
- 14.11 Check Your Progress : Model Answers
- 14.12 Model Examination Questions
- 14.13 Recommended Books
- 14.14 Glossary

14.0 AIMS AND OBJECTIVES

The aim of unit is to explain the concept of Break-Even Point, its measurement and application in business decisions.

After going through this unit, you should be able to :

- explain the concept of the Break-Even Point;
- determine the Break-Even Point;
- explain the concept of Margin of Safety;
- apply the technique of Break-Even Point in business decisions; and
- list out the assumptions and limitations of Break-Even Analysis.

14.1 INTRODUCTION

In simple words, "Break-Even Point is that point at which the firm attains either no profit or no loss." The analysis of this point / stage is called break-even analysis. The Break-even analysis has considerable significance for business decision making, company management, economic research, investment analysis and public policy. Break-even analysis studies the relationship between the volume and cost of production, on the one hand, and the revenue and profits from the sales on the other hand. Break-even analysis shows the relationship among the factors affecting profit. It helps the decision maker in the choice of the optimal price, cost and output levels for each product. Break-even analysis indicates the level at which costs and revenues are in equilibrium. Whatever may be the other objectives of the firm, profit maximisation is considered as one of the important objectives. In this context, the firm is interested in finding out the sales volume to maximise the profits or to minimise the losses. In the words of Joel Dean, "Break-Even Analysis presents flexible projections of the impact of the volume of output upon cost, revenue and profits".

14.2 BREAK EVEN POINT

Break-even analysis is also called the profit and loss analysis. In Break-even Analysis, the Break-even point is located at the level of output or sales at which the net income or profit is zero. At this point, total cost is equal to the total revenue hence, the break-even point is the no profit no loss level. However, the object of the break-even analysis is not just determine break-even point but understanding the financial relationship between costs, revenues, and the level of output. In the business, one is interested to know the minimum level of output to meet all the costs and also the level of output from which the profits start coming. Therefore, the break-even point may be taken as the one indicating the minimum level of production or sales which the company has to achieve in order to become economically viable.

There are two approaches for representing a break-even point :

- i) The graphical method, where one takes the help of break-even charts; and
- ii) The algebraic method

Let us now study these two approaches.

14.3 THE BREAK-EVEN CHART

Break-even Chart helps the management in visualising the profit or loss implications a different levels of sales. It shows the extent of profit or loss to the firm at different levels of activity. The Break even chart is illustrated in Fig 14.1

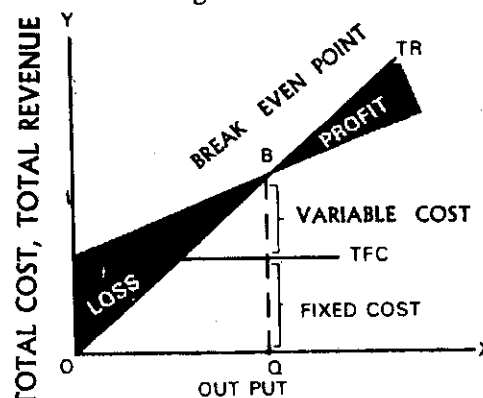


Fig. 14.1 The Break-Even Chart

The volume of output is measured along the 'X' axis and costs and revenue are measured along the 'Y'-axis.

A linear revenue line (TR) representing total sales is drawn, assuming constant factors. A total cost line (TC) is drawn starting at the Y-axis fixed cost point and moving to the right. This total cost line represents at each point the total of all items of cost i.e., fixed and variable. In the chart the point 'B' is the break-even point (BEP) when total revenues are equal to total costs. At this point the loss ends and profit starts coming after this point. This point is also known as "no profit-no loss" point. The break-even output is OQ. The area to the left of the BEP between the total cost line and the revenue line is the loss, indicating that the firm incurs losses when it produces output below OQ level. The profit area lies to the right of the BEP above the total cost line indicating that when it expands the output beyond BEP, it makes profit.

This type of Break-even charts are often used for determining - i) break-even production volume, ii) profit appropriation for a given level of output; iii) choice of optimum level of output; and iv) impact of rate of change in sales on costs and profits.

Check Your Progress-1

Construct a break-even chart on a graph paper with hypothetical figures.

.....

.....

.....

.....

14.4 ASSUMPTIONS OF BREAK-EVEN ANALYSIS

The break-even analysis is based on a set of assumptions, some of which are quite restrictive. The assumptions underlying the analysis are the following :

- i) It assumes that costs can be classified into fixed and variable costs.
- ii) Sale price of the product is assumed constant, thus giving, linearity property of total revenue curve.
- iii) It assumes constant rate of increase in variable costs, thereby imparting linearity of total cost curve.
- iv) It assumes no improvement in technology and labour efficiency.
- v) Changes in input prices are also ruled out.
- vi) Break-even analysis also assumes that the production and sales are synchronised, in the sense that there is no addition to or subtraction from inventory.

14.5 ALGEBRAIC/FORMULA METHOD FOR DETERMINING BREAK-EVEN POINT

Earlier, we have discussed the graphic method of constructing break-even chart. Now, let us calculate the BEP with the help of different formulae. When sufficient information is available, this mechanism helps us to get more accurate results on scientific lines.

In order to understand the concept of BE analysis, it will be useful to know certain basic terms, viz., (i) Contribution; (ii) Profit Volume Ratio

14.5.1 CONCEPTS OF CONTRIBUTION AND P/V RATIO

a) Contribution

The concept of Contribution margin indicates the profit potential of a business enterprise and also highlights the relationship between cost, sales and profit. It is highly useful technique for planning and decision making by the management. Contribution margin is the excess of sales revenue over variable costs. For example, if a product sells at Rs. 10 per unit and the variable expenses are Rs. 6 per unit, the contribution per unit is Rs. 4. (Rs. 10- Rs 6). From the contribution margin, fixed costs and expenses are deducted giving finally operating income or loss. Contribution margin is thus used to recover/cover fixed costs. Once the fixed costs are covered, any remaining contribution margin adds directly to the operating income of the firm. This can be expressed in equation form as:

$$\text{Contribution} = \text{Sales} - \text{Variable Cost}$$

b) Profit-Volume Ratio (P/V Ratio)

P/V ratio is important for studying the profitability of operations of a business. Profit-volume ratio establishes a relationship between the contribution and the sales value. The ratio can be shown in the form of a percentage. This can be expressed as :

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{\text{Sales} - \text{Variable cost}}{\text{Sales}} \times 100$$

This ratio is also be called as Contribution/Sales ratio. This ratio can also be determined by comparing the change in contribution to change in sales or change in profit due to change in sales. Any increase in contribution would mean increase in profit only because fixed costs are assumed to be constant at all levels of production. This can be expressed as—

$$\text{P/V Ratio} = \frac{\text{Change in Contribution}}{\text{Change in Sales}} \text{ or } \frac{\text{Change in Profit}}{\text{Change in sales}}$$

The following illustrations help you to understand these circumstances :

Illustration-1

Total variable costs	=	Rs. 7,500
Total fixed costs	=	Rs. 4,500
Total sales	=	Rs. 15,000

Solution

$$\text{P.V. Ratio} = \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}} \times 100$$

$$\text{Therefore, P/V ratio} = \frac{15,000 - 7,500}{15,000}$$

$$= \frac{7,500}{15,000} \times 100 = 50\%$$

Illustration-2

Sales of a Company were Rs. 60,000 producing a profit of Rs. 1,600 in a week. In the next week, sales amounted to Rs. 76,000 producing a profit of Rs. 4,800. Calculate P/V ratio.

Solution

$$\text{Change in Sales} = \text{Rs. } 76,000 - \text{Rs. } 60,000 = \text{Rs. } 16,000$$

$$\text{Change in Profit} = \text{Rs. } 4,800 - \text{Rs. } 1,600 = \text{Rs. } 3,200$$

$$\begin{aligned} \text{P/V ratio} &= \frac{\text{Change in Profit}}{\text{Change in Sales}} \\ &= \frac{3,200}{16,000} \times 100 = 20\% \end{aligned}$$

The following are the special features of P/V ratio :

- i) It helps the management in ascertaining the total amount of contribution for a given volume of sales.
- ii) It remains constant so long the selling price and the variable cost per unit remain constant or so long they fluctuate in the same proportion.
- iii) It remains unaffected by any change in level of activity. In other words, P/V ratio for a product will remain the same whether the volume of activity is 1000 units or 10,000 units
- iv) The ratio also remains unaffected by any variation in fixed costs, since these are not considered while calculating the PV ratio.

In case of multi-product organisation, PV ratio is of vital importance for the management to find out which product is more profitable. Management tries to increase the value of this ratio by reducing the variable costs or by increasing the selling price.

Check Your Progress - 2

Determine the contribution and P/V ratio from the following information.

Sales = 10,000 units @ Rs. 20; and Variable Costs = Rs. 12/- per unit

.....

.....

.....

.....

COMPUTATION OF BREAK-EVEN POINT

There are two ways of determining the break-even point by means of a formula. It can be determined either in terms of physical units of output or in terms of sales value of the output i.e. in money terms.

14.5.2 BREAK-EVEN POINT IN TERMS OF PHYSICAL UNITS

Viewing in terms of per unit cost and revenue, the break-even point is located at that level of output of which the price or average revenue is equal to the average cost. Thus, the selling price should cover the average variable cost (AVC) in full as well as a part of the fixed cost. The price of the excess of the average cost is regarded as contribution margin per unit, which contributes towards the fixed cost. This can be expressed as an equation in the following manner.

$$\text{BEP} = \frac{\text{TFC}}{\text{P} - \text{AVC}}$$

Where BEP = Break-Even Point

TFC = Total Fixed Cost

P = Selling Price

AVC = Average Variable Cost.

The application of the above equation can be understood with the help of the following example :

Suppose, the TFC is Rs. 2,00,000 Price per unit is Rs. 3 and the average variable cost is Re. 1 per unit, then the Break-even Point will be-

$$\begin{aligned}\text{BEP} &= \frac{2,00,000}{30-10} \\ &= 1,00,000 \text{ units}\end{aligned}$$

Break-even point is reached when 1,00,000 units are produced and sold. Because when 1,00,000 units are produced, TC = Rs. 2,00,000 (FC) + Rs. 1,00,000 (VC) = Rs. 3,00,000 and TR = 1000 x 3 = Rs. 3,00,000.

Thus, TR=TC, so that there is no profit, no loss. Net profit is zero, hence, the Break-Even Point. This method is suitable only in case of single product firm.

14.5.3 Break-Even Point in terms of Sales value

BEP is to be measured in terms of sales value, by expressing the contribution margin as a ratio to sales. Thus,

$$\text{BEP} = \frac{\text{Total Fixed Cost}}{\text{P/V Ratio}}$$

Here, P/V ratio is measured as -

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

The following example helps us to understand this mechanism :

Illustration - 3

A firm incurs fixed cost of Rs. 4,000 and variable cost of Rs. 10,000. Its total sales receipts are Rs.15,000. Determine break-even point.

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{\text{Sales} - \text{TVC}}{\text{Sales}} \times 100$$

$$= \frac{15,000 - 10,000}{15,000} \times 100 = \frac{5,000}{15,000} \times 100 = 33.33\%$$

$$\text{BEP} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}} = \frac{4,000}{\frac{1}{3} \text{ or } 33.33} = \text{Rs. } 12,000$$

Solution

Here, TFC = Rs. 4,000 TVC = Rs. 10,000

Sales = Rs. 15,000

14.5.4 Composite Break-Even Point

In case a firm is dealing in several products, the mechanism we have discussed so far, need to be applied in a little different way. In such cases, all the products produced by the firm need to be considered for computing the firm's overall Break-Even Point. This is called "Composite Break-Even Point." A composite break-even point can be computed according to the following formula :

$$\begin{aligned} \text{Composite Break-even point} &= \frac{\text{Total fixed cost}}{\text{Composite P/V ratio}} \\ \text{(Sales in Rs.)} & \\ &\text{or} \\ &= \frac{\text{Total fixed cost} \times \text{total sales}}{\text{Total contribution}} \\ \text{Composite P/V ratio} &= \frac{\text{Total contribution}}{\text{Total sales}} = 100 \end{aligned}$$

This can be understood with the help of the following illustration :

Illustration-4

1. The budget of a firm includes the following data for the forthcoming financial year.

a)	Fixed expenses	3,00,000
b)	Contribution per unit	
	Product X	Rs. 6.00
	Product Y	Rs. 2.50

Product Z

Rs. 4.00

c) Sales forecast

Product X

24,000 units @ Rs. 12.50

Product Y

1,00,000 units @ Rs. 7.00

Product Z

50,000 units @ Rs. 10.00

Calculate composite P/V Ratio and composite B.E.P.

Solution

Sales mix forecast :

X	:	24,000 x 12.50	3,00,000
Y	:	1,00,000 x 7.00	7,00,000
Z	:	50,000 x 10.00	5,00,000
Total			<u>15,00,000</u>

Therefore sales mix = 3 : 7 : 5

$$\text{Composite P/V ratio} = \frac{(3/15 \times 6) + (7/15 \times 2.50) + (5/15 \times 4)}{(3/15 \times 12.50) + (7/15 \times 70) + (5/15 \times 10)}$$

$$= \frac{1,44,4000 + 2,50,000 + 2,00,000}{15,00,000}$$

$$= \frac{594}{1500}$$

$$\text{Composite B.E.P.} = \frac{\text{Total Fixed expenses}}{\text{Composite P.V. Ratio}}$$

$$= 3,00,000 \div \frac{594}{1500}$$

$$= \frac{3,00,000 \times 1500}{594}$$

$$= 7,57,575$$

B.E.P. Sales for the 3 products :

$$X = 7,57,575 \times 3/15 = \text{Rs. } 1,51,515 \text{ (or) } 12,121 \text{ units}$$

$$Y = 7,57,575 \times 7/15 = \text{Rs. } 3,53,535 \text{ (or) } 50,505 \text{ units}$$

$$Z = 7,57,575 \times 5/15 = \text{Rs. } 2,52,525 \text{ (or) } 25,253 \text{ units}$$

14.6 MARGIN OF SAFETY

The concept of margin of safety is very important in the Break-Even Analysis. It is the excess of budgeted or actual sales over the break-even sales volume. That is, the margin of safety represents the difference between the actual sales volume and the sales volume arrived by the break-even point. The following helps you to understand this concept.

14.6.1 COMPUTATION OF MARGIN OF SAFETY

Suppose, the total sales of a firm are 5000 units, sold at a price of Rs. 3 each. The total value of sales is Rs. 15,000. If the break-even point is Rs. 10,000, the margin of safety is Rs. 5,000 (15,000 - 10,000).

The following formula helps in calculating the margin of safety :

$$MS = \frac{Pr \times S}{S - V}$$

(Pr = Profit, S = Sales, V = Variable Cost)

Illustration - 5

Total sales = Rs. 15,000

Total variable cost = Rs. 3,000

Total profit = Rs. 4,000

Solution

$$MS = \frac{4,000 \times 15,000}{15,000 - 3,000} = \text{Rs. } 5,000$$

In the above example, the total sales exceeds the break-even point by Rs. 5000. This is the margin of safety. The margin of safety can be expressed in terms of a percentage of the total sales as under.

$$\begin{aligned} MS &= \frac{MS}{\text{Total Sales}} \times 100 \\ &= \frac{5,000}{15,000} \times 100 = \frac{100}{3} = 33.33\% \end{aligned}$$

Margin of safety can be found out simply by deducting from the total value of sales, the break-even sales value.

Eg : If the total fixed cost is Rs. 8,000, then

$$\text{BEP} = \frac{F \times S}{S - V} = \frac{8,000 \times 15,000}{15,000 - 3,000}$$

$$= 10,000$$

$$\text{MS} = \text{Total sales value} - \text{BEP}$$

$$= 15,000 - 10,000$$

$$= \text{Rs. } 5,000$$

14.6.2 IMPORTANCE OF THE MARGIN OF SAFETY

A firm will always be happy to have a reasonable margin of safety. The extent of the margin of safety depends upon the ratio of fixed overheads to the total cost. If this ratio is high, in other words if fixed cost is very high, the BEP is reached at a higher output, profits are reduced and the margin of safety becomes low. If fixed overheads are low, then MS tends to be high. Higher fixed overheads means a firm must have a high level of production activity to maintain the margin of safety at a higher level. During recession and depression periods, the higher margin of safety helps a firm when the sales start falling till the break-even point is reached. It gives the firm enough breathing time for adjustment. A low margin of safety in such a case may take the sales down below the BEP and the firm incurring losses.

Check Your Progress - 3

Determine Margin of Safety of a firm from the following information :
Fixed expenses Rs. 90,000 Sales Rs. 3,00,000 and net Profit Rs. 60,000.

.....

.....

.....

.....

14.7 APPLICATION OF BREAK-EVEN ANALYSIS IN PROFIT FORECASTING

Break-Even analysis is one of the techniques of forecasting profits. Break-even point indicates that volume or value of sales at which the firms costs and revenue are equal i.e. it makes neither profit nor loss. This technique is not only helpful in ascertaining the level of sales required to break-even but also enables the firm to know (with the help of the concept of margin of safety) the margin in sales over the break-even level of sales which the firm is enjoying. It, thus, helps the firm to plan in advance the changes in costs or sales or both. The following example helps you to understand this application better.

Illustration-6

Determine the level of sales to earn a profit of Rs. 6,000 with the help of the following information.

Total fixed costs	=	Rs. 4,500
Total variable costs	=	Rs. 7,500
Total sales	=	Rs. 15,000

Solution

$$\begin{aligned} \text{P/V Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \\ &= \frac{15,000 - 7,500}{15,000} \times 100 \\ &= 50\% \end{aligned}$$

$$\begin{aligned} \text{Required sales for desired level of profit} &= \frac{\text{Fixed Costs} + \text{Desired Profit}}{\text{P/V Ratio}} \\ &= \frac{4,500 + 6,000}{50\%} \\ &= \text{Rs. 21,000} \end{aligned}$$

14.8 ADVANTAGES OF BREAK-EVEN ANALYSIS

The following are some of the important advantages of break-even analysis :

- i) It helps in determining the optimum level of output, above which it would be profitable for a firm to produce.
- ii) With the help of the break-even analysis, the firm can determine minimum cost for a given level of output.
- iii) It helps in determining the target capacity for a firm to get the benefit of minimum unit cost of production.
- iv) It helps the firm in deciding which products are to be produced and which are to be bought from outside.
- v) The break-even analysis can be used in finding the selling price which would prove most profitable for the firm.
- vi) Impact of changes in prices and costs on profits of the firm can also be analysed with the help of break-even analysis.
- vii) Business expansion or contraction decisions are often based on the break-even analysis.
- viii) Decisions relating to adding or dropping a product from product-line are possible with break-even analysis.

- ix) By finding out the break-even point, the break-even analysis helps in establishing the point where from the firm can start the payment of dividend to its shareholders.

14.9 LIMITATIONS OF BREAK-EVEN ANALYSIS

The preceding discussion on assumptions gives a fair idea of the limitations of Break-Even Analysis. Now, let us discuss some of the important limitations of this analysis to view its applications properly.

- i) Generally material prices, wages, etc., undergo change over a period of time. Since break-even analysis is based on the past data, those data need to be adjusted for the changes in input prices. Such adjustments are generally avoided in the analysis because of their complexity.
- ii) The Break-Even charts are drawn on the basis of given product price. In fact, the product prices change frequently. The non-inclusion of the changes in prices is basically due to difficulty of precisely estimating the sales volume at various prices. Hence, the results may deviate from reality.
- iii) The Break-Even analysis is static in nature in the sense that it assumes a constant relationship of output to costs and revenue.
- iv) It is assumed in the analysis that the relative share of different products in the total output remains the same. In practical situations, one finds frequent changes in the composition of demand and product-mix.
- v) It is a known fact that profits depend on various factors viz., technological improvement, managerial effectiveness, etc., and not only on the level of output. The break-even analysis, by assuming that profits are a function of output alone, gives us only a partial view of the situation.
- vi) Since break-even analysis is generally based on accounting data, it suffers from many limitations like omission of imputed costs.

In spite of the limitations, the break-even analysis is an accepted and widely used method of profit planning and control. The following are some of the strong reasons for its popularity :

- i) Break-even analysis is simple, easily understandable and quite inexpensive. Though it ignores complexity, it helps in focusing attention on fundamental relationships.
- ii) It can be used for multiple purposes, viz., for determining the sales volume, profit, contribution, optimum output level, etc.
- iii) Usefulness of break-even analysis also varies according to conditions in the industry. This analysis is quite helpful in industries which are not subject to fast changes in technology as well as frequent changes in input prices and in product mix.

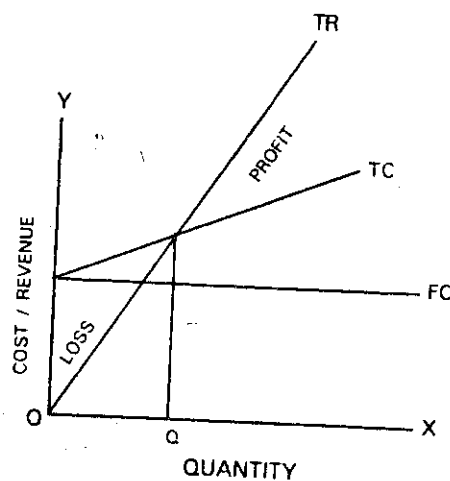
14.10 SUMMING UP

The break-even point is that level of output where total revenue is equal to total cost. It is a point of no loss no profit. The break-even analysis is the analysis of this point. It is also called the profit and loss analysis. It reveals the changes in profits caused by changes in prices and costs. It is a technique to trace the relationship between the costs, revenues and profits at different levels of output. There are two approaches for representing break-even point viz., graphical method and algebraic method. The important concepts of

break-even analysis include contribution, P/V Ratio and margin of safety. There are different advantages of break-even analysis. It is regarded as an important technique in profit forecasting. In spite of certain limitations, that it suffers from, it is widely used method of profit planning and control. However, it must be used with due care, keeping in view its limitations.

14.11 CHECK YOUR PROGRESS : MODEL ANSWERS

1) Break-even Chart



$$\begin{aligned}
 2) \quad P/V \text{ Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \\
 &= \frac{\text{Sales} - \text{V.C.}}{\text{Sales}} \\
 &= \frac{2,00,000 - 1,20,000}{2,00,000} \\
 &= \frac{80,000}{2,00,000} \times 100 \\
 &= 40\%
 \end{aligned}$$

$$\begin{aligned}
 3. \quad P/V \text{ Ratio} &= \frac{\text{Contribution}}{\text{Sales}} \times 100 \\
 &= \frac{1,50,000}{3,00,000} \times 100 = 50\%
 \end{aligned}$$

$$\text{BEP} = \frac{\text{FC}}{\text{P/V Ratio}} = \frac{90,000}{50\%}$$

$$= \frac{90,000}{50} \times 100 = \text{Rs. } 1,80,000$$

MS = Actual Sales - BE Sales

$$= \text{Rs. } 3,00,000 - \text{Rs. } 1,80,000 = \text{Rs. } 1,20,000.$$

14.12 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Explain the concept of break-even point and bring out its significance in decision-making.
2. How do you determine the break-even point? Explain the assumptions, purposes and limitations of break-even analysis.
3. What is break-even point? Using hypothetical figures, determine break-even point in terms of physical units and in terms of sales volume.
4. What are the advantages of break-even analysis in taking business decisions.
5. Explain and illustrate a break-even chart. What is the usefulness of break-even analysis.

II. Answer the following questions in about 15 lines each.

1. How do you construct a break-even chart?
2. What are the advantages of break-even analysis?
3. What are the assumptions of break-even analysis?
4. What are the limitations of break-even analysis?
5. What is Margin of Safety?
6. Explain the concept of P/V Ratio.
7. A firm incurs fixed cost of Rs. 50,000 and variable cost of Rs. 20,000 and its sales are Rs. 30,000. Determine its BEP.
8. Find out the profit from the following :
P/V Ratio 35%; Total sales Rs. 4,00,000;
Fixed Rs. 1,00,000.

14.13 RECOMMENDED BOOKS

V.G. Mankar	:	Business Economics
D.M. Mithani & V.S.R. Murthy	:	Fundamentals of Business Economics
Dean Joel	:	Managerial Economics

Haynes, Mote and Paul : **Managerial Economics**

Varshney R.L. and
Maheshwari K.L. : **Managerial Economics**

14.14 GLOSSARY

Break-Even Point	:	It is the level of sales or output where total revenue is equal to total cost.
Break-Even Chart	:	It graphically shows the cost and revenue relation to the volume of output.
Contribution	:	Excess of total sales value over variable cost.
Margin of Safety	:	It is the amount of sales exceeding Break-Even sales.
P/V Ratio	:	It is the ratio between the contribution and the total sales value.

BRAOU

UNIT - 15 : PROFIT ANALYSIS

Contents

- 15-0 Aims and Objectives
- 15.1 Introduction
- 15.2 Concept and Nature of Profit
- 15.3 Functions of Profit
- 15.4 Factors Affecting the Level of Profits
 - 15.4.1 Short term Factors
 - 15.4.2 Long-term Factors
- 15.5. Theories of Profit
 - 15.5.1 Traditional Views
 - 15.5.2 Modern Views
- 15.6 Profit Policy
 - 15.6.1 Profit Standards
 - 15.6.2 Profit Limits
- 15.7 Summing Up
- 15.8 Check Your Progress: Model Answers
- 15.9 Model Examination Questions
- 15.10 Recommended Books
- 15.11 Glossary

15.0 AIMS AND OBJECTIVES

The aim of this unit is to explain the term "profit " based on various theories developed by economists and other matters relating to it.

After going through the unit, you will be able to :

- explain the concept of profit and its functions;
- recognize the factors affecting level of profits;
- describe different theories of profit;
- explain how a firm designs its profit policy.

15.1 INTRODUCTION

The word "Profit" generally implies the net income of the business. It is the difference between total collections and total expenditure. But profit in this sense is not the same as

defined by economists. Profit maximization lies at the heart of traditional economic theory. Even behavioural and managerial theories have not dispensed with profit concept; rather they have come up with various other concepts of profit such as actual profit, reported profit, critical minimum profit, etc. From the economists' point of view "profit is a return to the entrepreneur for the use of his entrepreneurial ability". Considering all these, 'Profit' is a very mixed and vexed concept. Keeping in mind all these things, we need to relook at the profit concept and its measurement, the role that profit plays in the context of business decisions and the sources and uses of profits. All the firms may generally reveal that profit maximization is not their policy, but they have a profit policy. Hence, there is a need to study the profit analysis.

15.2 CONCEPT AND NATURE OF PROFIT

CONCEPT OF PROFIT

There are different concepts of profit. Sometimes these concepts may not be in agreement with one another. In a capitalist system, profit is the primary measure of the success of a business firm. Profit is the reward earned by an entrepreneur for his contribution to the process of production. The concept of profit entails different meanings. They are:

- i) **Earnings of Management** : Profit may mean the compensation received by a firm for its managerial function. It is called normal profit which is a minimum essential to induce the firm to remain in business.
- ii) **Monopoly Profits** : It is earned by a firm through extortion because of its degree of monopoly power in the market. It is not related to any useful specific function. Thus, monopoly profit is not a functional reward. It is, therefore, socially unjustifiable.
- iii) **Windfall Profits** : Profits may sometimes be in the nature of a windfall. It is an unexpected reward earned by a firm just by a mere chance, say, like an inflationary boom. It is socially unjustified, because it is also an undesired sweat less reward. These come unexpectedly and cannot be treated as a reward for any specific activity of the entrepreneur.
- iv) **Profit as a functional reward** : Wages are a reward for functions performed by labour; interest is income from allowing others to use one's money; rent is the excess of the value produced by a productive factor over the payment required to induce it to work; and profit is the excess of income over the cost of production. Profit in this sense is a functional reward earned by the entrepreneur.

NATURE OF PROFIT

Profit is a reward to the entrepreneur. From the economists' point of view profit is a residual income and from the accountants' point of view, it is the difference between the total revenues and total costs. Thus, Profit = Total Revenue - Total Cost.

In the accounting practice, when total cost is measured, only explicit costs, i.e. contractual payments made to different factor inputs by the firm are considered. These include wages, salaries, expenses on raw materials fuel and power, rents and interests, etc. To these inputs, cost of depreciation is added.

In the economic sense, when total costs are measured, we include explicit as well as implicit costs. Implicit costs refer to costs which are to be deemed and imputed as costs when a

firm uses its own capital for which obviously no interest is payable to anybody. Similarly the entrepreneur provides managerial services for which he does not receive any remuneration by way of salary. In true economic sense, therefore, implicit and explicit costs are included in the cost of production. Thus,

$$\text{Profit} = \text{Total Revenue} - \text{Total Explicit and Implicit Costs}$$

This distinction is made clear with the help of the following simple realistic situation :

A trained mechanic has started a repair shop by investing his own capital Rs. 5,000.. His shop is located in the garage of his own house such that he pays no rent. Annually, he makes a net income of 10,000; this is the difference between his revenue (Rs. 25,000) and his material and other explicit costs (Rs. 15,000). Had he not started and run his business, the mechanic himself could have earned a monthly wage of Rs. 500 i.e. an annual salary of Rs. 6,000. Similarly, had he invested his capital of Rs. 5,000 in the bank, in course of one year, he would have got a 10 per cent return on it, i.e. Rs. 500. In the same way, his garage would have fetched a monthly rent of Rs. 200 i.e., an annual rent of Rs. 2,400. The information can be presented in a tabular form.

Total Revenue Earned	-	Rs. 25,000
Total Costs of Operation	-	Rs. 15,000
Accounting Profit (A)	-	<u>Rs. 10,000</u>
Opportunity Costs of		
-Own labour (wages)	-	Rs. 6,000
-Own Capital (interest)	-	Rs. 500
- Own Building (Rent)	-	Rs. 2,400
Total Opportunity Costs (B)	-	<u>Rs. 8,900</u>

Therefore, economic profit (A-B) - Rs. 10,000-Rs.8,900 = 1,100.

You may note that economic profit is less than accounting profit by the amount of opportunity costs. Sometimes, there may be accounting profit but economic loss in the same operation; such would depend on the order and computation of opportunity costs. In the example, all the opportunity costs were neatly calculable, But in reality it may not be so, because some opportunity costs may be measurable in monetary terms; they may be subjective rather than objective; therefore, the computation of economic profit is a difficult task. This is not to deny that calculation of economic profitability, even if it is just approximate rather than accurate is a useful guide to decision-making. The business firms hardly prepare data on economic profit. The balance-sheet data that you have often access in records show only accounting profit. Such accounting profit reflects the performance of business unit.

Check Your Progress -1

Differentiate between Accounting Profit and Economic Profit.

.....

.....

There are some other concepts of Profits, which are explained below :

Gross and Net Profit

People generally believe that profit is a residual income; that it is an income left after payments to all the limited factors have been made. Actually, this is gross profit. This gross profit also contains interests on the entrepreneur's own capital, rent due to his own land used in the business, and wages of his non-entrepreneurial labour-work. By using his personal factors in his own firm, the entrepreneur is losing what he could have earned had he let out these factors and services which he thus loses (i.e. the implicit costs) must also be added to his paid-out or explicit costs to arrive at total costs. The total cost arrived at in this manner when deducted from total earnings during a particular period gives us, what is called, net profit. In short,

$$\text{Gross Profit} = \text{Total Receipts} - \text{Total Explicit Costs}$$

$$\text{Net Profit} = \text{Gross Profit} - \text{Implicit Costs}$$

Normal and Super Normal Profits

When an entrepreneur enters a particular field of production he expects some minimum return for his function as an entrepreneur. So long as he gets the minimum expected return he stays or else he quits the business. The minimum return that is necessary to keep the producer in his present field of production is his normal profit. If his earnings exceed normal profit, then the earnings which are in addition to normal profit are known as super normal profit. Thus,

$$\text{Actual Profit} - \text{Normal Profit} = \text{Super Normal Profit.}$$

15.3 FUNCTIONS OF PROFIT

The word "profit" has an important role to play in decision situations. According to "Drucker," profits mainly serve the purposes viz. (a) It is an index of performance of the firm; (b) It is premium to cover costs of staying in business; and (c) Ensuring supply of re-investible capital.

Generally, profits are taken as an efficient measure of the use of economic resources by the firm. For the sake of easy understanding, we may categorically state the profit functions as:

- i). Profit is a measure of operation efficiency of the firm. An increasing level of profit, other things remaining the same, is an indicator of effective business strategy and efficient business tactics. It reflects management performance - operational and financial.
- ii). Profit is the premium that covers up the cost of staying in business - replacement, obsolescence, risk and uncertainty.
- iii). Profit is the source of internal finance. The net retained earning is used to finance expansion and replacement programme. Profit reflects the security and solvency of the firm.
- iv). Profit, its level and rate, is the basis of financial decision analysis. Commercial profitability is an established criterion of project evaluation or appraisal.

- v). Profit reflects the income-earning capacity of the firm and thus determined if the firm is capable of discharging social responsibilities (like adoption of village) or not. This is the reason why public enterprises are also required to generate profit as a re-investible source.
- vi). Inter-firm comparison, inter-industry comparison or product-line comparison are all facilitated by the index of profit.
- vii). Profit and its sources also indicate the areas of planning, control and management.

Like this we find many functions of profit. The point remains that no business firm can function without having a profit policy, because profit plays a crucial role in decision-making.

Check Your Progress -2

List out the functions of profit.

.....

.....

.....

.....

15.4 FACTORS AFFECTING THE LEVEL OF PROFITS

Even though, we have some target / goal of profit in the business, it may not be possible to achieve it because of several influencing factors. Hence, it is important to know these factors affecting the goal of profit. For easy understanding we segregate these factors into short-term and long-term.

15.4.1 SHORT-TERM FACTORS

The following short-term factors determine the goal of profit:

- i). **Life Cycle of the Product** : The age of product is vital to influence demand for the product. For example, if the product of the firm is in a growth stage, it will give an optimum outlook to the demand of the product, while if the product has passed the maturing stage the demand for the product will naturally decline, thus affecting profits adversely.
- ii). **Tastes and Preferences of Consumers** : In a dynamic society, tastes and preferences of people change quite fast. Changes in fashions definitely have a role to play in this regard. These dynamic forces influence the profits of the firm.
- iii). **Extent of Competition** : The size of profits is inversely related to the degree of competition. In monopoly situation, profits will be maximum, and as competition becomes more and more intense, the volume of profits will be smaller.
- iv). **Business Environment** : The general business conditions significantly influence the profitability of a firm. During the conditions of boom, all firms make excess profits, while during recession period all firms either make very low profits or incur losses.

- v). **Selling Effort of the Firm** : In the short run, the sales promotion effort, advertising, etc. result in expanding the market, thus resulting in the larger size of profit; but in the long run their impact is nullified to a large extent by the counter selling efforts of the competitors.
- vi). **Fiscal Policies** : The taxation policy of Government has a significant effect on corporate profit.

15.4.2 LONG-TERM FACTORS

The long-term goal of profit must take into account the following main factors:

- i). For long-term profitability, the consideration of growth of the firm is of prime importance. This requires an adequate and regular supply of capital from within the system. Greater the availability of internal finance through profits / surplus, lesser will be the dependence on external finance, which is quite crucial particularly in a state of depression in the market.
- ii). In a dynamic society the main strength of the firm is innovation. The firm must have an effective research and development section so as to up-date the production technology as well as product-line.
- iii). There are certain factors where a conflict arises between long-term and short-term profitability. These are:
 - (i). If a firm ignores after sales services and research, it can definitely show a higher profit for that year, but such a policy will be against the long-term interests of the firm.
 - (ii). If a firm spends on labour welfare imparting skill to labour. etc. it may reduce short-term profits, but will contribute to long-term profits of the firm.
 - (iii). In order to establish goodwill in the society, the firm has to ignore its short-term interests of maximizing the profit. It has to avoid the charge of profiteering and exploitation of the consumers.

The best way in such a case would be to normalize both short and long-term goals. Since long-term consists of several short-terms, the long-term profit policy has to depend to a large extent on how short-term profits are earned.

Check Your Progress -3

Identify the long-term factors influencing the profits of a business.

.....

.....

.....

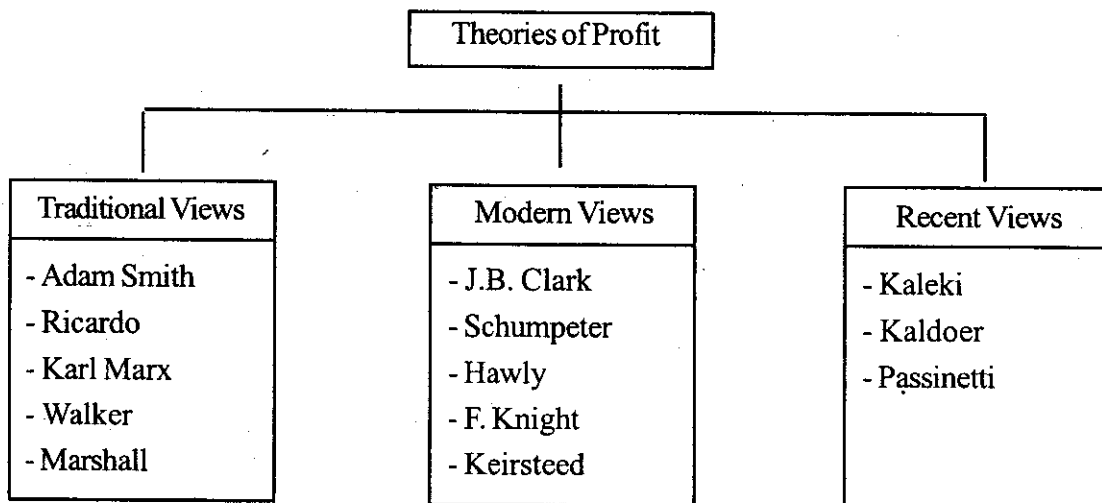
.....

15.5 THEORIES OF PROFIT

So far we have explained the meaning and measurement of economic profit. Now let us discuss the economic profit in detail : Why does profit arise ? Who produces it ?

Answers to such questions throw further light on the nature of economic profits, its sources and uses, its accrual and growth.

In this context we study various theoretical propositions developed by the economists from time to time. We find that there are number of theories, each trying to explain the process of emergence of profits. These propositions are still relevant today. The following table helps you to know the various economists associated with development of theories of profit.



Now, let us discuss some important theories of profit, viz.,

- (1) Dynamic theory of profit by 'clark'
- (2) Innovation theory of profit by 'schumpeter'
- (3) Risk and uncertainty theory of profit by 'knight'.

Before we discuss these theories, let us examine the traditional views of economists in brief.

15.5.1 TRADITIONAL VIEWS

The classical economists like Adam smith and Ricardo regarded profit and interest together as a kind of business income, which was left after paying labour wages and the indestructible powers of the soil. In this view, there was no distinction between ownership of capital and management of enterprises.

Karl Mark aggregated rent, interest and profit in the category of "unearned income" (from property) in contrast to wages as the "earned income" (from labour). According to him, labour produces more than what is needed to maintain labour in the productive process, this "surplus value" is pocketed by the capitalists. Thus profit as 'surplus' value originates in exploitation of the proletariat (labour) by the bourgeois (capitalists). In this view, profit is not socially justifiable.

The neo-classical economists developed functional theories to justify profit as legitimate business income. Walker developed the 'rental ability' theory of profit on lines of Ricordian theory of rent. According to 'Ricardo', the difference in the level of productivity between two grades of land i.e., "differential surplus" over the cost of production of the marginal land. 'Walker' argued that the entrepreneur is a superior grade of labour; the difference in

the level of productivity between ordinary labourers and efficient entrepreneurs entitles the latter to earn a profit; thus profit is a payment for rental ability-the capability of entrepreneur.

'Marshall' also developed a similar functional notion of profit. He categorized all productive factors into four-land, labour, capital and organization and their respective incomes as rent, wages, interest and profits. The neo-classical economists developed this functional notion into the marginal productivity theory of profit. Thus,

Rent	=	Marginal Productivity of land (L)
Wages	=	Marginal Productivity of labour (N)
Interest	=	Marginal productivity of capital (K)
Profit	=	Marginal productivity of entrepreneurship (E)

There may be difficulties in the measurement of marginal productivity of an entrepreneur, but one can follow an accounting rule :

$$\text{Profit} = [\text{Value of the total product}] - [\text{Payments to factors other than entrepreneur}]$$

The greatest achievement of this neo-classical view was to challenge the view of profit as a parasitic income.

15.5.2 MODERN VIEWS

i) Dynamic Theory

The 'Dynamic Theory of Profit' was propounded by 'J.B.Clark'. He defines profit as the difference between selling price and costs resulting on account of changes in demand and supply conditions. According to him, in a stationary economy, the quantum of capital invested, methods of production, managerial organization, technology, demand pattern, etc., remain constant, thus, there is no real or pure profit as surplus. Under competitive conditions, price tends to be equal to average costs; hence, the surplus is zero. Hence, no pure profit. However, there may be some frictional profits emerging due to frictions in the system. But, this cannot be regarded as real profit.

Profit is the outcome of dynamic changes in the economy. It is, thus, a dynamic surplus of the dynamic economy. A dynamic modern economy is full of changes. According to Clark, the 'general' changes cause profit to emerge are (i) Increase in population; (ii) Changes in tastes and preferences; (iii) Multiplication of wants; (iv) Capital formation; (v) Technological advancement; and (vi) Changes in the form of business organization.

On account of these changes the economy tends to be dynamic. Demand and supply conditions are altered. Some entrepreneurs may get advantageous business positions against others and may reap surplus over costs, as a real profit. In short, those who take advantage of changing situation can earn real profits according to their efficiency. Inefficient and careless producers who fail to move with dynamic changes may not get any profit and may even incur losses.

Clark's dynamic theory of profit has an element of truth in it as it emphasizes the dynamic aspect of profit.

But, it has been criticized on the following counts :

- i). Clark's theory indicates that in a stationary state, there is only a frictional profit. But, the concept of frictional profit is vague. Rather, normal profit is earned in a stationary state.

- ii). Clark's theory suggests that all dynamic changes lead to profit. Critics, however, point out that only unpredictable changes would give rise to profits. Predictable changes will not cause surplus to emerge on account of precise adjustments.
- iii). According to Taussig, Clark's theory gives an artificial dichotomy of 'profit' and wages of management.
- iv). Clark's theory does not stress the element of risk involved in business due to dynamic changes. Thus, the best course is to combine elements of risk-dynamic changes to understand true nature of profit in a modern economy.

ii) Innovation Theory

Schumpeter propounded this theory. He considers profits as a reward to innovators for their innovative ability and innovation is a distinctive function of an entrepreneur for which he gets profit.

Here, an innovator is a person with vision, originality and drive. He introduces new products, new techniques of production, fresh methods of management, and so on. He finds new markets for his products. He may not be a scientist who invents the new processes, but he is the man who successfully introduces them in the production process. He seeks to put inventions into commercial use for mass production. It is not necessary that the innovator always succeed. When he does succeed he makes profits, else he incurs losses. A successful innovator earns more than a conventional businessman; and the difference in their earnings is known as **innovator's profits**.

Innovation, as used by Schumpeter, has a very wide connotation. Any new measure or policy adopted by an entrepreneur to reduce his cost of production or to increase the demand for his product is an innovation. This innovations can be divided into two broad categories :

- i) Firstly, those innovations, which reduce the cost of production, i.e., change the production function. The introduction of a new machine, new and cheaper techniques of production, exploitation of new source of raw material, new and better methods of organizing the firm, etc., are included in this type of innovation.
- ii) Second type of innovations is those, which increase the demand for the product, i.e., change in demand or utility function. This category includes factors like the introduction of a new product, a new variety or design of the product, a new and superior method of advertisement, discovery of new markets, etc.

Profits emerge because due to successful innovations either the cost falls below the prevailing price of the product, or the sale proceeds of the product rise as the demand for the product has gone up. Usually, the innovation profits are temporary in nature. They tend to be competed out by imitators and rivals. When an entrepreneur introduces a new innovation, he is initially in a state of monopoly, for the new innovation is confined to him only. He, therefore, is able to make large profits. When after some time others come to know of it and adopt, the innovation ceases to be new, consequently profits will disappear. If law allows patent rights and the entrepreneur is able to get this innovation patented, he will continue to earn the innovational profits.

However, even when imitators and rivals adopt the innovation and eliminate innovational profits from the product, the entrepreneur in a competitive and progressive economy always continues to make profits with the help of fresh innovations. When one source of innovational profits disappears, other sources of such profits emerge. Thus, such profits continue to

exist, as the horizon of conceivable innovations is unlimited. Obtaining profits is a necessary incentive for the entrepreneur to conceive and introduce innovations, which help the economic growth of the society. Since innovations yield profits and the profit is in turn the motive behind innovations, one may say that profit is both the cause and the effect of innovations.

This theory is also not free from criticism on the following grounds :

- i) Considering profit as a reward for innovation only is a narrow view of the functions of an entrepreneur, since he is also equally responsible for the proper organization of business.
- ii) Entrepreneur's profit, according to him, is a result of innovation and not risk bearing. This seems contrary to the facts of life and Schumpeter argued that it is the capitalist and not the entrepreneur who bears risk.

iii) **Risk and Uncertainty Bearing Theory**

The Risk and Uncertainty Bearing Theory is the most popular theory of profit propounded by 'F.Knight'. To understand this theory, first of all, we have to know, what is risk and uncertainty in his opinion. The entrepreneurs have to undertake the work of production under conditions of uncertainty. They have to make estimates of the future conditions regarding demand for the product and other factors in advance and these affect their future price and costs. In view of their estimates and anticipations, they make contracts with the suppliers of factors of production in advance at fixed rates of remuneration. They realize the value of the output produced by the hired factors only after some time when the product is sold in the market. In this process there exists an element of risk and uncertainty.

Knight distinguishes between risk and uncertainty. According to him, risk inherent in any business are of two kinds: (i) insurable, and (ii) non-insurable. Those risks, which can be calculated statistically and thus insured with an insurance company, are called insurable risks. These are of two types : (a) risks of loss of assets, resulting from natural factors like fire, flood etc., and (b) risks of theft, robbery, etc. By paying insurance premium these risks can be taken care of by the entrepreneur. However, there are certain non-insurable risks, which have to be borne by the entrepreneur himself. These risks are :

- i). **Risks of Competition** : These are the risks arising from the policy changes of the rivals, which include things like changes in prices, product-line, advertisement expenditure, etc.
- ii). **Risks of the market conditions** : Whole or a major part of the business sector in an economy may enter a phase of recession or boom, affecting the firms adversely or favourably.
- iii). **Risks of technological change** : This is also called the risks of obsolescence, which grows with advancement of an economy. These risks arise from the possibility of newly installed machinery becoming obsolete with the discovery of new and more economical process of production.
- iv). **Risk of public policy** : Government policy regarding business undergoes a change over time, some of which cannot be precisely predicted. These may relate to price control, foreign trade policy, corporate taxation, etc.

These non-insurable risks are called 'uncertainties' by Knight. According to him, the term risk should be applied only to insurable risks.

Application of the Theory

Application of this Risk and Uncertainty bearing theory can be understood on the basis of the following three important lines, viz.,

- i) According to Knight, the most significant function of an entrepreneur is to bear risk and uncertainty which is rewarded by profit. Knight both agrees and disagrees with Clark. He agrees that profit emerges under dynamic conditions, but he disagrees that this is the change in underlying conditions which brings profit to the entrepreneur. According to Knight, profit emerges due to uncertainty about the changes in underlying conditions and not because of changes to occur in future, all of them will make necessary adjustments, and no profit will result. It is only when entrepreneurs have no knowledge about future that they can make profit. Knight explains that when an entrepreneur takes a decision about production, he is taking decision about future output - the future about which he knows very little. While taking a decision he has, therefore, to bear the risk of business because of uncertainty regarding future course of market conditions. Different rates of profit earned by different firms in the same industry reflect the difference in their capabilities of bearing risk and uncertainty.
- ii) Knight, like Clark, also believes that profit is an income for both uncertainty bearing and organization of business. But then he is confronted with a dilemma that, if profit is an income for organization too, then it means that profit can exist in a stationary state as well. Knight solves this dilemma in the following way. According to him, an organizer is needed only in a dynamic state; he is irrelevant in a stationary state. In a stationary state he is needed only in the initial stage of the firm. Once the initial adjustments are completed no further change is likely to occur, it being a stationary state. Thus, in a stationary state neither uncertainty nor organisational activities exist. It implies that profit can arise only in dynamic state where both organisational activities as well as uncertainties exist.
- iii) Knight makes a distinction between risk and uncertainty. According to him, though everything, which is uncertain, has risk, but everything, which is risky, is not uncertain. For example, there are risks like theft, damage, fire, etc., which can be insured against and, therefore, do not bear any uncertainty. It is only those non-insurable risks of business, which is uncertain and has, therefore, to be borne by the entrepreneur, for which he gets profit. **That is why Knight describes profit as the reward for uncertainty bearing and not risk-bearing.**

15.6 PROFIT POLICY

While explaining the economic theory of firm, we have made a remark, that firms may not maximize profit, but they do have a profit policy. Now let us examine various facts of profit policy decision. Profit planning and profit policy must go together. The former is more technique oriented while the latter is more strategy oriented. The firm has to consider a lot of short-run factors in designing its profit policy.

There are two issues involved in profit policy decisions : (1) Setting profit standards; and (ii) Limiting the target profit.

15.6.1 PROFIT STANDARDS

This involves a choice of particular measure and concept of profit with reference to which achievements and aspirations may be compared. Much would be of course depend

on your ultimate goal. In general, you have to choose from among concepts like - net retained earnings, net operating margin, rate of return on investment, etc., as bases for setting standards.

The next task in profit policy decision is to decide on an acceptable rate of profit based on various considerations such as :

- i) Rate of profit earned by other firms in the same industry;
- ii) Normal or historical profit rate earned by the firm itself in the past;
- iii) Rate of profit sufficient to attract equity capital;
- iv) Rate of profit necessary to generate internal finance for replacement and expansion.

15.6.2 PROFIT LIMITS

In addition, the firm considers a set of environmental factors to limit its rate of target profit. Profit target should be limited such that :

- i) The shareholder does not ask for higher dividends;
- ii) The wage earners do not ask for higher wages;
- iii) The government (tax officials) do not ask for higher taxes;
- iv) The consumers do not ask for lower prices and discounts;
- v) The suppliers do not ask for enhanced rates;
- vi) The goodwill of business is not affected.

In short, while deciding on the target rate of profit, the firm has to minimize the payments of "slack" and to maximize the capacity to absorb external "shocks". Therefore, these profit standards and profit limits are the important elements in determining a profit policy of the firm.

15.7 SUMMING UP

In this unit we have explained various concepts and measures of profits. Accountants and economists view profits differently. We have seen that basic difference between that two views lies with regard to calculation of opportunity costs, real value at constant prices, uses of current prices in valuation, etc. We have also made reference to various theories of profit to explain the emergence and growth of profit. Various theories have been grouped into traditional, modern and recent theories. Finally the profit policy of the firm with a mention to profit standards and profit limit is discussed.

15.8 CHECK YOUR PROGRESS : MODEL ANSWERS

i) Accounting profit is the difference between total revenue and total cost. It is a reward to the entrepreneur. It takes into account only explicit cost. Whereas economic profit is residual profit and it takes into account implicit costs also. The excess of total revenue over both explicit and implicit costs is the economic profit.

2. (i) It works as a measure of operational efficiency of the business.
(ii) It provides for the cost of replacement, obsolescence.
(iii) It is a source of internal finance.

- (iv) It is a criterion of evaluating or appraising the projects
- (v) It facilitates comparisons.
- 3. (i) Generation of internal finance;
- (ii) innovation;
- (iii) Policy of the business as regards after sales service, labour welfare, etc.

15.9 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. "To an accountant, net income is essentially a historical record of the past. To an economist, net income is essentially a speculation about the future." Discuss.
2. Compare and contrast the dynamic theory of profit and innovation theory of profit.
3. Write briefly about different theories of profit.
4. Explain various factors influencing the level of profits.

II. Answer the following questions in about 15 lines each.

1. Explain the concept of 'profit'.
2. What are the functions of profit ?
3. What are the short-term factors affecting the level of profits ?
4. What are the long-term factors affecting the level of profits ?
5. Explain the issues involved in the profit policy decision.

15.10 RECOMMENDED BOOKS

M.L. Jhingan	:	Advanced Economic Theory
M.L. Seth	:	Principles of Economics
P.L. Mehta	:	Business and Managerial Economics

15.11 GLOSSARY

Profit	:	It is reward to the entrepreneurs.
Accounting Profit	:	Excess of total revenue over total cost.
Economic Profit	:	Excess of total revenue over total explicit and Implicit costs.
Super Normal Profit	:	Excess of actual profit over normal profit.
Uncertainties	:	That part of the risks which are non-insurable.

BLOCK-VI : MARKET STRUCTURE AND PRICING

Unit-16 : Types of Markets

Unit-17 : Price and Output Determination

Unit-18 : Pricing Policies and Methods

BRAOU

UNIT-16 : TYPES OF MARKETS

Contents

- 16.0 Aims and Objectives
- 16.1 Introduction
- 16.2 Meaning of Market
- 16.3 Elements of Market
- 16.4 Classification of Markets
- 16.5 Perfect competition
 - 16.5.1 Meaning
 - 16.6.2 Characteristics
- 16.6 Monopoly
 - 16.6.1 Simple Monopoly
 - 16.6.2 Pure Monopoly
 - 16.6.3 Types of Monopoly
 - 16.6.4 Monopoly Price Discrimination
- 16.7 Monopolistic Competition
- 16.8 Duopoly
- 16.9 Oligopoly
- 16.10 Monopsony, Duopsony and Oligopsony
- 16.11 Comparison of Perfect Competition, Monopoly and Monopolistic Competition.
- 16.12 Summing Up
- 16.13 Check Your Progress : Model Answers
- 16.14 Model Examination Questions
- 16.15 Recommended Books
- 16.16 Glossary

16.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain the meaning and elements of different types of market situations.

After studying this unit, you should be able to :

- define the market;

- list out the elements of market ;
- classify the markets;
- describe various forms of market structure;
- identify the differences between different markets; and
- explain the meaning of monopsony, duopsony and oligopsony.

16.1 INTRODUCTION

This unit explains the meaning of market, elements of markets and classification of markets on the basis of area, time and nature of competition. It also describes various competitive market structures such as Perfect Competition, Monopoly, Monopolistic competition, Duopoly, Oligopoly, Monopsony, Duopsony and Oligopsony.

16.2 MEANING OF MARKET

The term 'market' is an elusive concept. The word is generally used to describe the process of exchange. The process of exchange always involves certain elements such as goods or services, prices, buyers, sellers, place and time.

"Originally" says Jevons "a market was public place in a town where provisions and other objects were exposed for sale; but the word has been generalised so as to mean any body of persons who are intimate business relations and carry on extensive transactions in any commodity. A great city may contain as many as there are important branches of trade and these markets may or may not be localised. But the idea of locality is not necessary. The traders may be spread over a whole town, or region, or a country and yet form a market, if they are, by means of fairs, meetings, published price lists, the post office or otherwise, in close communication with each other."

According to Cournot, a French economist, "Economists understand by the term market not any particular market place in which things are bought and sold but the whole of any region in which buyers and sellers are in such free intercourse with one another that the price of the same goods tends to equality and quickly."

A market for a particular good or service consists of all buyers and sellers of that good or service. It need not be one identifiable place. The market for foreign exchange, for example, is a world-wide market, while the market for used cars, furniture etc., consists of sellers advertising in local newspapers together with potential buyers reading those newspapers. Although a market brings together those who are buyers and those who are sellers, the way in which a particular market operates depends on the number of buyers and sellers and the nature of the product.

16.3 ELEMENTS OF MARKET

Some elements of market are :

- (i) there must be a commodity which is to be dealt with;
- (ii) there must be buyers and sellers;
- (iii) there must be a place, be it a certain province, a country or the entire world,

where the process of exchange takes place; and

- (iv) there must be interaction between buyers and sellers.

For example, in a vegetable market, the buyers and sellers usually meet and an exchange takes place between them. But in a share market or foreign exchange market, the buyers and sellers may not see each other face to face, and transactions still take place through different modes of communication. Thus there are certain goods, which are marketed locally, but there are certain other articles like shares/foreign exchange that can be and their domain of operation may be spread throughout the world. These goods have an international market.

16.4 CLASSIFICATION OF MARKETS

we many classify markets into three categories according to factors such as area, time and nature of competition.

i) on the basis of area

Markets may be categorised on the basis of area. They may be further classified into:

- a) Local Markets –such as weekly fairs in villages and daily transactions in consumer goods in towns;
- b) National Markets–dealing in articles that have demand throughout the country like television, computers, clothes, etc.
- c) International Markets –there are certain commodities the transactions of which are carried on throughout the world. For example, Indian Garments, Kashmiri Carpets, Jute products, etc.

ii) On the basis of Time

Markets may be classified on the basis of time into:

- a) Very short period market
- b) Short period market
- c) Long period or secular market which cover a generation.

iii) On the basis of Nature of Competition

On the basis of nature of competition, markets are classified into two-Perfect and Imperfect competition. We shall discuss them briefly here. They will be dealt with in detail later.

- a) **Perfect Competition** is characterised by a large number of buyers and sellers essentially with a homogeneous product, which are perfect substitutes to each other. No single buyer/sellers can influence the price of the product in the market. Individual buyers and sellers are essentially price takers. The Market determines the price of a commodity. Entry into or exit out of market is free hence: no firm can earn excessive profits in the long run. The market for perishable goods like vegetables, eggs, etc., to certain extent resembles this type of competition.
- b) **Imperfect Competition** is characterised by a large number of buyers and sellers, but less than the number of buyers and sellers in perfect competition.

The buyers and sellers are not aware of the offers made by others. Naturally, the same price cannot prevail for the same commodity at the same time in imperfect competition. Goods are not homogeneous and are not perfect substitutes. Most of the firms resort to product differentiation strategy to survive for a longer period. Product differentiation refers to the degree that the output of one firm differs from that of other firms in a market. Product differentiation is an important market characteristic because it indicates a firm's ability to affect prices. If a firm's product is perceived as having unique features it can command premium price.

16.4 PERFECT COMPETITION

Perfect competition is a market situation. It does not exist in reality anywhere in the world. It is a hypothetical concept which economists make use to analyse the competitive market.

16.5.1 MEANING

Perfect competition refers to the market structure where competition among the sellers and buyers prevails in the most perfect form. In the perfect competition there are a large number of buyers and sellers. The sellers sell homogeneous products and the buyers as well as sellers have perfect knowledge about the market. According to Joan Robinson, "perfect competition prevails when the demand for the output of each producer is perfectly elastic. This entails first, that the number of sellers is large, so that the output of any one seller is a negligibly small proportion of the total output of the commodity, and second, that buyers are all alike in respect of their choice between rival sellers, so that the market is perfect".

In a perfectly competitive market, a single market price prevails for the commodity, which is determined by the forces of demand and supply in the market.

16.5.2 CHARACTERISTICS

Perfect competition in the market prevails when the following conditions exist in the market. These are also known as assumptions or characteristics of perfect competition.

(i) Large Number of Buyers and Producers

There must be a huge number of buyers and sellers in the market. Any one seller or buyer cannot influence the ruling price in the market. Each buyer's demand is a negligible part of the total market demand. The individual buyer's activity will have no control on the market price. Similarly as there are a huge number of firms, each firm's output forms a very small fraction of total output and cannot influence the market price. That is why each individual buyer and producer will have to accept the ruling price. In other words, the firm is a 'price taker', but not a 'price giver'. Hence, the demand curve for the product will be perfectly elastic at the existing price and the demand for the quantity of the product will be as per its sale.

ii) Homogeneous Product

In perfect competition, the product produced by all firms is identical. A commodity produced by one firm is the same as that produced by another firm. The quantity and quality, colour and weight of the product produced by various firms are the same. That is why the buyers

in the market are indifferent to the firm when they go to purchase their commodities. Similarly the producers are indifferent to the buyers to whom they sell. The consumer feels no difference whether he buys the commodity from one firm or another in the industry, because the commodity is identical. Hence, there is a single price for the product in the market. In perfect competition, there is absolute elasticity of demand. In other words, the demand curve is a straight line horizontal to the X axis. The demand curve or the average revenue curve and the shape of marginal revenue are the same.

iii) Horizontally Straight Line Demand Curve

In perfect Competition, the average revenue curve or demand curve of a firm will be a horizontal straight line which is parallel to the X-axis. This type of demand curve indicates perfect elasticity of demand which means that any firm can sell any quantity at the existing price. As there are a huge number of firms in the market, market price cannot be influenced by an individual firm. Since homogeneous commodities are produced by various firms, the price paid by the consumers cannot be different. This can be illustrated with the help of diagram as shown below.

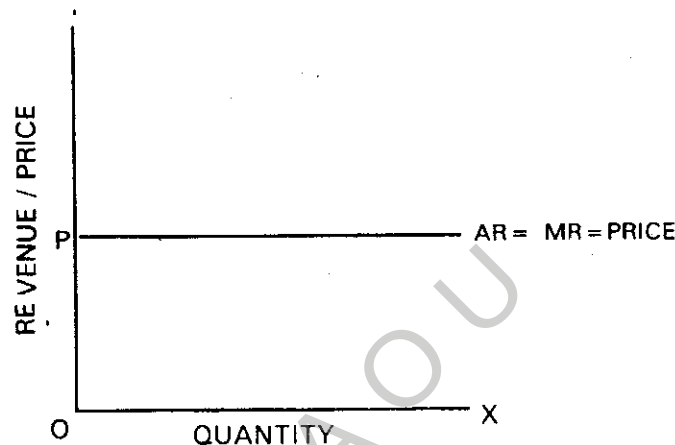


Fig 16.1 Shape of Demand or Average Curve of a Firm Under Perfect Competition

Price and Revenue are measured on 'OY' axis, Quantity is measured along the X-axis. At price OP, the producers sell as much as they like. Because at OP price the demand curve is perfectly elastic, the producers offer as many goods as they can. Neither can the price be increased nor decreased. If the price is reduced, the sellers lose their customers.

We have discussed three conditions which are necessary for pure competition to exist. We find pure competition for agricultural goods such as rice, wheat, etc. In other sectors, we rarely come across pure competition. In addition to the three conditions mentioned above, certain other features must be required to create perfect competition.

iv) Free Entry and Free Exit

In perfect competition, there are numerous firms in the industry. Any firm can expand its production or a new firm may be set up when the firms in the industry are making abnormal profits in the short-run. No restriction is imposed on the expansion of existing firms or the installation of new firms. Producers are also at liberty to curtail the firm's scale of production. Complete freedom prevails in perfect competition for entry into an industry or exit from it. In the long-run all the firms earn normal profits and no firm either leaves the industry or enters the industry. In these circumstances each firm operates at an optimum output in the long-run.

iv) Artificial Monopoly

Individual producers and firms create artificial monopolies for the purpose of maximising profits. The individual producers of the same product come together and form into a single organisation so as to liquidate competition among themselves and to maximise profits. Such types of amalgamation of individual firms into a single organisation is known as **artificial monopoly** or **private monopoly**. The Associated Cement Companies (ACC) in our country is an example of this kind of monopoly.

16.6.4 MONOPOLY PRICE DISCRIMINATION

Price discrimination means charging different prices from different consumers for different units of the same product or service. According to Joan Robinson, "The act of selling one article, produced under single control at different prices to different buyers is known as **price discrimination**". Price discrimination will not occur under perfect competition. It only occurs in monopoly or in imperfect competition. The monopolist governs the supply of the product that is why he charges different prices from different buyers or in the different markets. The theory is an extension of monopoly pricing.

Forms of Price Discrimination

- i) **Personal Discrimination** : This is based on the incomes of the consumers. Doctors and lawyers charge higher fees to rich persons and lower fees to poor people for the same service.
- ii) **Natural of Product** : Price discrimination depends on the nature of the production. Suppose, there are two types of editions of the same book, one is a paper back edition and the other is a deluxe edition. The former is cheaper than the latter.
- iii) **Local Discrimination** : This is based on the locality in which the product is sold. The monopolist charges a high price in the domestic market for the product whereas he charges a lower price in the international market for the same product.
- iv) **Trade Discrimination** : This may also be called use discrimination. For example the State Electricity Boards charge low rates for agricultural purposes, but they charge high rates for industrial use.

CONDITIONS FOR DISCRIMINATION

Here we discuss important conditions for price discrimination. Price discrimination is possible under imperfect competition or monopoly. If a monopolist is in a position to get profit by charging different prices for different units of the same product, he will formulate a policy of price discrimination. Price discrimination is practicable under the following conditions.

i) Separate Markets

There must be two separate markets. The buyer of one market should not move to the other market. The monopolist will then be able to charge a high price for a product in one market and a low price in other market for the same product.

ii) Different Elasticities of Demand

There must be different elasticities of demand for the same product. If the product possesses less elasticity of demand in one market, then it should have more elasticity of demand in the other market. The monopolist sets the profit by selling his products at different prices

in different markets which have different elasticities of demand for the same product.

Now, we shall discuss the most common type of price discrimination. The Monopolist classifies the buyers into two categories. He charges different prices from different markets. The monopolist produces certain amounts of commodities, which are sold in two separate markets. The cost of production is ignored here. This output is adjusted in each market such that the marginal revenue derived from the first market equals the marginal revenue derived from the second market. Prices are different due to differences in elasticities of demand in the two markets: but marginal services are not different.

Check Your Progress-2

What is pure monopoly?

.....

.....

.....

.....

Check Your Progress-3

What do you mean by local discrimination?

.....

.....

.....

.....

16.7 MONOPOLISTIC COMPETITION

We have already discussed, the market situations of perfect competition and monopoly. In the actual world, we do not find either perfect competition or pure monopoly. But in reality, we find a region of imperfect competition lying between these two limits.

Under monopolistic competition both the elements of monopoly and perfect competition are present. In this situation every individual producer differentiates his product in quality, by branding, trade mark, etc. In our country we find monopolistic competition in the case of products like washing powder, soaps, tooth paste etc.

Meaning

Monopolistic competition is that where there are large number of producers of a differentiated product in the market. According to A.W. Stonier and D.C. Hague, "There is competition which is keen, though not perfect, between many firms, making very similarly products". In monopolistic competition, the price-output policies will not be influenced by others. There is competition among large number of producers who produce close but not perfect substitute goods. Monopolistic competition is some times known as "group equilibrium."

Characteristics

The main characteristics of monopolistic competition are explained below :

- i) **Relatively small number of firms** : In monopolistic competition sellers are less than that of perfect competition. For this reason, the producers enjoy some monopoly power. Price-output decisions of individual sellers will not influence other actions. There is an independent course of action. The producers produce differentiated products and charge different prices for their products.
- ii) **Product differentiation** : In monopolistic competition product differentiation is an important feature. According to Prof. Chamberline, there are many firms which produce a particular product, but the product of each firm is in some way different from that of the other firm. Product differentiation may be in the form of trade marks, patent rights, brand names, etc. Product differentiation means that the products are different in some way from each other. They are heterogeneous. There is slight difference between one product and other in the same category. Products are close substitutes with high cross elasticity but not perfect substitutes. For example, toothpastes are produced by different companies under different brand names like Colgate, Close-Up, Cibaca, Forhans, etc.
- iii) **Freedom of entry of new firm** : Under Monopolistic competition, there is monopoly power to individual firms for its product. The individual firm faces keen competition from other firms which are producing similar products. So the individual firm cannot restrict the entry of new firms. Each firm in a way behaves like a monopolist but it faces competition from others as it also sells almost a similar product that is why it has been a blend of monopoly and competition and named as Monopolistic Competition.
- iv) **Competitive advertisement** : The practice of competitive advertising is the important characteristic of monopolistic competition. Advertisement creates some difference between two brands say X and Y in the minds of the consumer though they may be almost identical in their technical or chemical composition. The effective and efficient advertisement creates difference of images of the same product in the minds of consumers due to which the products look different from the point of view of consumers. Thus, advertisement technique is very important feature of monopolistic competition. For example, every soap producer advertises in all types of media like newspapers, radio and television.
- v) **Shape of demand curve** : The shape of demand curve is based on the product differentiation under monopolistic competition. There is some monopoly power for the firm as there is product differentiation. Due to the product differentiation, close substitutes are available. Thus the firm will have more elastic demand curve for its product. The demand curve under monopolistic competition will be less steep as compared to that of monopoly firm. This means a slight fall in price will lead to a large increase in the demand for its product provided the prices of other firms remain the same. The demand curve slopes downward to the right.

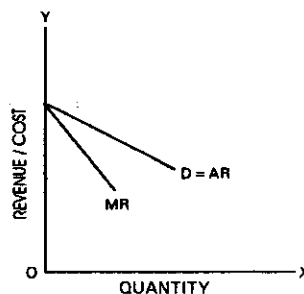


Figure 16.2 : Shape of Demand Curve in Monopolistic Competition

16.8 DUOPOLY

Duopoly is a type of market situation in which there will be two producers producing identical products. But there will be many buyers in the market. The producers adopt a product differentiation strategy to give an impression to the buyers that the products they manufacture are different and possess unique characteristics. Firms in duopoly manage to earn normal profits over a long period.

16.9 OLIGOPOLY

The term "oligopoly" is derived from two Greek words 'oligo' means a few and 'Pollein' means to sell. Oligopoly represents the market situation where there are a few sellers of a particular commodity. The commodity is a differentiated one. In Oligopoly, there are a few sellers whereas in monopoly there is only one firm in the market. It also differs from perfect competition and monopolistic competition where there are many sellers in the market. The actions of a seller in oligopoly will be reacted and taken into consideration by others in the market. He also reacts to the actions of others. In Oligopoly, a single seller has got sufficient important position in the market. He will take the changes of other firms into consideration and determine price, output and sales activity of his product. The changes in the output and price of one firm will affect the amount of output and price of other firms. In Oligopoly firms are interdependent whereas in perfect competition, firms are independent. Duopoly is the simplest case of oligopoly, where there are only two sellers.

Prof. Stigler defines Oligopoly as the "Situation in which a firm bases its market policy in part on the expected behaviour of a few close rivals". According to Prof. Leftwich "An Oligopolistic industry is one in which the number of sellers is small enough for the activities of a single seller to affect other firms and for the activities of other firms to affect him". For example, prior to nationalisation, the oil companies operating in India like Burma Shell, Calnex represent an oligopoly.

Characteristics

- i) **Very few sellers of Product :** There are very few sellers in the market producing either homogeneous or differentiated products. Pricing and output of a single firm will influence the price and output of the industry. Each firm has large share of the markets and it can affect the market activities by altering its output.
- ii) **Interdependence :** Under oligopoly, actions of one firm will be reacted by other firms. A single firm will also take into account the actions of other firms. As there are close substitutes for the product, there is high cross elasticity of demand for the products.
- iii). **Presence of monopoly power :** There are a few sellers in oligopoly, that is why collusion of firms is possible. When they come to an agreement, they will act as monopoly so that high price is charged for the product. They will enjoy more than normal profits by raising the price. In this manner, firms will enjoy monopoly power to some extent.
- iv) **Existence of price rigidity :** In oligopoly, if any firm wants to reduce its price, it will be reacted by other firms. The other firms would reduce their prices to greater extent. With this type of price war no one will benefit. Suppose, on the other hand, a firm increases its price others will not follow the rise in price. Therefore, no one would like to decrease the price or to increase the price. Thus the firms will stick to the price which is called **price rigidity**.

- v) **Differentiated products** : In oligopoly, firms produce differentiated products which are close substitutes. When each has to stick to the prevailing price, it has to increase its sales by improving quality and design and by spending more on advertising so as to attract the consumers' preferences.

Check Your Progress - 4

What do you mean by oligopoly?

.....

.....

.....

.....

16.10 MONOPSONY, DUOPSONY AND OLIGOPSONY

Till now we have discussed seller dominated markets. There are certain situations where a buyer or a few buyers dominating the markets. Monopsony is an opposite of monopoly situation. The most important feature of monopsony is a single buyer buying the total quantity of identical products manufactured by a number of sellers in the market. As a result, the buyer dictates the price, quality, size and shape of the product. Similarly, if there are two buyers it is called duopsony. If there are more than two buyers dominating the market, it is called oligopsony. Some of the examples are milk buying organisations, auto component industries. The group buyers have a control over the market. The main features of oligopsony are:

- (i) Buyers in a particular market are few;
- (ii) Each one of them is of such a size that an increase or decrease in his demand will considerably affect the price.

No single buyer can afford to ignore the reactions of his rivals to the policies he might initiate.

16.11 COMPARISON OF PERFECT COMPETITION, MONOPOLY AND MONOPOLISTIC COMPETITION

The comparison of Perfect Competition, Monopoly and Monopolistic Competition in terms of various features is shown below :

Characterisites	Perfect Competition	Monopoly	Monopolistic Competition
Number of buyers and sellers	many buyers, many sellers	many buyers, one seller	many buyers many sellers
Entry and Exit	free entry & exit	no entry & exit	free entry & exit
Product	homogeneous	only one	differentiated
Knowledge of Infomration	perfect knowledge	only one product and one seller	imperfect Knowledge

Slope of demand curve faced by firm	horizontal	downward	downward
Long-run profit	normal profits	excess profits	normal profits

16.12 SUMMING UP

Market is explained as a process of exchange of goods or services from sellers to buyers. Every commodity will have its own market. On the basis of area, time, nature and competition markets are classified. In the market, quantity demanded and quantity supplied determine the price. Perfect competition is a hypothetical concept which economists make use to analyse the competitive market. Perfect competition refers to the market structure where competition among the sellers and buyers prevails in the most perfect form. Perfect competition is characterised by large number of buyers and sellers having complete knowledge of the market. The products offered in the market are homogeneous.

Monopoly is a complete opposite of perfect competition. In monopoly there will be only one seller manufacturing a product, which has no near substitute. Monopolist enjoys protection from competition in the form of patents, copyrights, heavy investment, and technology. Monopolist firms earn excess profits in the long run. Duopoly is a market situation with only two sellers adopting product differentiation strategy. The term Oligopoly has a Greek base and means few sellers. Product differentiation is a popular strategy even in oligopoly market situation. There are two types of oligopoly situations namely, homogeneous and heterogeneous. Oligopoly is characterised by vigorous competition where firms manipulate both prices and volumes in an attempt to outsmart their rivals. The actions of each firm in an oligopoly do affect the other sellers in the market. Price cutting by one firm will reduce the market share of other firms. Similarly, advertising or a new product line may increase sales at the expense of other sellers. The most distinctive feature of an oligopolistic industry is that sellers must recognise their interdependence.

Monopolistic competition is a combination of perfect competition and monopoly. The features of monopolistic competition are large number of buyers and sellers, free entry and exit, imperfect knowledge about market to both buyers and sellers, differentiated products etc. Differentiated products exist where consumers do perceive differences in quality between brands produced by different firms.

A market dominated by a single buyer is called monopsony. Monopsony is an opposite of monopoly situation. The most important feature of monopsony is a single firm buying the total quantity of identical products manufactured by a number of sellers in the market. As a result, the buyer dictate the price, quality, size and shape of the product. Similarly, if there are two buyers that is called duopsony and more than two buyers dominating the market is called oligopsony.

16.13 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Pure competition means 'competition' unalloyed with monopoly elements, whereas perfect competition involves perfection in many other respects than the absence of monopoly only. When the three conditions i.e., large number of buyers and sellers, homogeneous product, and free entry and exit are satisfied there exists pure competition among buyers and sellers. The competition becomes perfect when other conditions are also satisfied.

2. Pure monopoly is that where cross elasticity of demand of the monopolist's product is zero. Pure monopoly never occurs in the real world. A monopolist can either fix the price or the output to be sold. The total revenue of a pure monopolist remains constant at all levels of output. Thus, the marginal revenue would be always zero.
3. This is based on the locality in which the product is sold. The monopolist charges a high price in the domestic market for a product where as a lower price in the international market for the same product.
4. oligopoly is a market situation where there are a few firms producing a product. It is characterised by vigorous competition where firms manipulate both prices and volumes in an attempt to outsmart their rivals. The actions of each firm do affect the other sellers in the market. Price cutting by one firm will reduce the market share of other firms. The most distinctive feature of an oligopolistic industry is that the sellers must recognise their interdependence. The firms produce differentiated products which are close substitutes.

16.14 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Examine the characteristics of perfect competition.
2. What do you mean by monopoly? Explain different kinds of monopoly.
3. What is meant by monopoly price discrimination?
State the conditions for price discrimination.
4. What is monopolistic competition? Explain its characteristics.
5. What is monopoly? How is it different from perfect competition?
6. Compare monopoly, monopolistic competition and perfect competition?
7. What is a market? What are its elements?

II. Answer the following questions in about 15 lines each.

1. Define oligopoly. Explain the characteristics of oligopoly.
2. Explain the kinds of monopoly.
3. What are the main forms of price discrimination?
4. Explain the characteristics of monopoly.
5. Differentiate between pure competition and perfect competition.
6. What is optimum firm?
7. What do you mean by monopsony and oligopsony ?
8. Differentiate between monopsony and duopsony.
9. What do you mean by monopolistic competition?

the monopolised product cannot perceptibly be affected by the other products. In other words, the monopolies cannot have control over the price and output policies of other firms. As there is only one firm producing a product in the industry, it is simultaneously a firm and an industry. The demand curve of a monopoly firm slopes stably downward to the right. The producer is a price setter and the price set by him yields him maximum profits. But this does not mean that he can decide both the price and the output. He can decide only one of the two things. The producer either chooses for himself the level of output or he determines the price of the product depending on the conditions of demand. Once he fixes the price for his product, he leaves the level of output to be determined by the demand for the product at that price in the market. In any event, the sole goal of the monopolist is to earn maximum profits.

The type of monopoly which was discussed above is called the *Simple or imperfect monopoly*. We shall briefly describe pure monopoly also, though our main concern is with simple monopoly and discriminating monopoly.

16.6.2 PURE MONOPOLY

In pure monopoly, there is only one producer. Competition in this form is absolutely absent. This means that the producer has no rivals, no substitutes. Neither does the monopolist influence the price-output policies of other firms nor are the price-output policies of his firm influenced by other firms. In the words of Triffin, "Pure monopoly is that where cross-elasticity of demand of the monopolist's product is zero" According to Stonier & Hague, "it (Pure Monopoly) would occur when the average revenue curve of the firm was a rectangular hyperbola with an elasticity of demand equal to one, and then the monopolist looks the whole community's income all the time".

Pure monopoly never occurs in the real world. This limiting case is merely a theoretical one.

16.6.3 TYPES OF MONOPOLY

We shall now discuss the different kinds of monopoly.

i) Natural Monopoly

There are certain commodities which are available in a small or single place. Their supply is localised. Such localisation of any commodity in a single place is called **natural monopoly**. Diamonds are extracted in South Africa. The extraction of diamonds is controlled by South Africa. India possesses manganese mines. These are examples of natural monopolies.

ii) Legal Monopoly

Any legal right which is sanctioned to a firm to produce a unique commodity is known as legal monopoly. For example, if the right of manufacturing a medicine with the brand name has been given by law to a company, no other company can produce the medicine using the same brand name. This type of monopoly is what we find in the case of products produced by multi-nationals like Petroleum Companies, Pharmaceuticals, etc.

iii) Public Monopoly

There are some utility services which are meant for the welfare of the public. Such services are only controlled and provided by public agencies and are called public utilities. Municipalities providing the water supply, electricity, telephones, etc., public monopolies.

iv) Artificial Monopoly

Individual producers and firms create artificial monopolies for the purpose of maximising profits. The individual producers of the same product come together and form into a single organisation so as to liquidate competition among themselves and to maximise profits. Such types of amalgamation of individual firms into a single organisation is known as **artificial monopoly** or **private monopoly**. The Associated Cement Companies (ACC) in our country is an example of this kind of monopoly.

16.6.4 MONOPOLY PRICE DISCRIMINATION

Price discrimination means charging different prices from different consumers for different units of the same product or service. According to Joan Robinson, "The act of selling one article, produced under single control at different prices to different buyers is known as **price discrimination**". Price discrimination will not occur under perfect competition. It only occurs in monopoly or in imperfect competition. The monopolist governs the supply of the product that is why he charges different prices from different buyers or in the different markets. The theory is an extension of monopoly pricing.

Forms of Price Discrimination

- i) **Personal Discrimination** : This is based on the incomes of the consumers. Doctors and lawyers charge higher fees to rich persons and lower fees to poor people for the same service.
- ii) **Natural of Product** : Price discrimination depends on the nature of the production. Suppose, there are two types of editions of the same book, one is a paper back edition and the other is a deluxe edition. The former is cheaper than the latter.
- iii) **Local Discrimination** : This is based on the locality in which the product is sold. The monopolist charges a high price in the domestic market for the product whereas he charges a lower price in the international market for the same product.
- iv) **Trade Discrimination** : This may also be called use discrimination. For example the State Electricity Boards charge low rates for agricultural purposes, but they charge high rates for industrial use.

CONDITIONS FOR DISCRIMINATION

Here we discuss important conditions for price discrimination. Price discrimination is possible under imperfect competition or monopoly. If a monopolist is in a position to get profit by charging different prices for different units of the same product, he will formulate a policy of price discrimination. Price discrimination is practicable under the following conditions.

i) Separate Markets

There must be two separate markets. The buyer of one market should not move to the other market. The monopolist will then be able to charge a high price for a product in one market and a low price in other market for the same product.

ii) Different Elasticities of Demand

There must be different elasticities of demand for the same product. If the product possesses less elasticity of demand in one market, then it should have more elasticity of demand in the other market. The monopolist sets the profit by selling his products at different prices

16.15 RECOMMENDED BOOKS

- | | | | |
|----|-------------------|---|---------------------------------------|
| 1. | A.Koutsoyiannis | : | Modern Micro Economics |
| 2. | Stonier and Hague | : | A Text Book of Economic Theory |
| 3. | M.L. Seth | : | Principles of Economics |
| 4. | H.S. Agarwal | : | Micro Economics |
| 5. | D.M.Mithani | : | Principles of Economics |

16.16 GLOSSARY

Duopoly	:	A type of market in which two sellers and many buyers exist.
Homogeneous Product	:	A Product that is undifferentiated and identical in the eyes of consumers.
Oligopoly	:	A type of market in which few sellers and many buyers exist.
Market	:	A market is that area which brings buyers and sellers into contact with one another for the purpose of exchange.
Monopoly	:	A market situation of single seller and many buyers.

iii) Effects of Combined Changes in Demand and Supply

Now we shall study the effects of combined increase and or decrease in demand and supply

When both demand and supply increase, the quantity of the product will increase definitely. But it is not certain whether the price will rise or fall. If an increase in demand is more than an increase in supply, then the price goes up. On the other hand, if an increase in supply is more than an increase in demand, the price falls but the quantity increases. If the increase in demand and supply is same, then the price remains the same.

When demand and supply decline, the quantity decreases but the change in price will depend upon the relative fall in demand and supply. When the fall in demand is more than the fall in supply, the price decreases. On the other hand, when the fall in supply is more than fall in demand, the price rises. If both demand and supply decline in the same ratio, there is no change in the equilibrium price, but the quantity decreases.

If the increase in demand is greater than the decrease in supply, the price rises. If the decrease in supply is greater than the increase in demand, then also the price increases. If the increase in demand is exactly equal to the decrease in supply, then the price rises, but the equilibrium quantity remains the same.

Thus the price is determined at the point where both demand and supply cut each other. The only really accurate answer to the question whether it is supply or demand which determines the price, is that it is in fact both. At times it seems that one is more important than the other, for one will be active and the other passive. For example, if demand remains constant but supply conditions vary, it is demand which is passive and supply active. But neither is more or less important than the other in determining price.

17.6 TIME ELEMENT IN PRICE THEORY

The forces of demand and supply determine price. The influence of time on the determination of price was first recognised by Marshall. When the demand for a commodity changes, its supply will also change. But the changes in demand and supply will not be possible at the same time. For example, an increase in demand will lead to an increase in supply, but the increase in supply will be possible only after some time. The supply will take time to adjust itself to a change in demand. Moreover, supply is based on costs of production, which change over time. In the short period, it is not possible to change the size of a firm, as costs of production are high. In the long run there is enough time to change the size of the firm to any extent as it should be able to produce at a lower cost. Hence, the element of time is very important in the determination of the price of a commodity. Marshall indicates that there are four periods in the theory of value. (i) The Market Period or Very Short Period (ii) The Short Period, (iii) The Long Period, and (iv) The Very Long Period or the Secular Period. Here we shall discuss only the first three types. Marshall classified the periods in terms of operations or in terms of the period required for economic forces to work. *Market period* is one in which there is no time to change the supply of the product. The *Short period* refers to a period in which the supply can be changed to some extent without changing the size of the firm. The *Long period* is that which is long enough to adjust the supply even by altering the size of the plant to meet changes in demand.

After studying this unit, you should be able to:

- explain the concept of the firm, equilibrium of the firm and equilibrium price;
- show the determination of price under different time periods viz; market period, short period and long period;
- differentiate the market price from the normal price;
- describe the equilibrium position under perfect competition in different periods;
- demonstrate the point of optimum firm; and
- explain how the price and output are determined under simple monopoly and discriminating monopoly.

17.1 INTRODUCTION

In the previous unit we have explained different types of market structures. Every business firm continues its production till it reaches the level of maximum profits. Profits of a firm depend on the price of the product which is determined according to different periods such as market period, short period and long period. Determination of price and output differs from one market structure to other. In this unit we deal with the determination of price and output in general and in perfect competition and monopoly in particular.

17.2 THE CONCEPT OF FIRM

In economics the "firm" refers to a unit of control. It controls productive operations by hiring the services of factors of production. It sells services to other firms. A firm may have a variety of business undertakings. The firm takes decisions to produce any commodity. It also designs the nature and quality of the product. It plans to adopt the method of producing the commodity.

Taking into consideration the capacity required and the conditions in the market, the firm has to decide the quantity of goods to be produced. Finally it has to frame selling costs and pricing policies. The purpose behind all these decisions is to maximise profits. Thus it mobilises resources such as raw-materials, labour, etc., to produce goods and services. It sells goods and services to individuals and to other firms. The firm is an individual organising unit of control of business activity. Considering the legal commitment, the firm may be an individual one, which is owned and controlled by a single person or it may be a partnership firm, owned and controlled by a group of persons, or a corporation, a co-operative firm. According to different economists, to run a business concern or to start or to continue productive activity, the owners of the firm must own some capital goods and other materials required for it. According to Karl Marx and Marxist writers, ownership of capital is an important pre-condition for controlling production. The operation of the firm has various goals. (These have been already explained in unit-2.)

The concept of firm is to be differentiated from industry. Industry is a group of firms producing similar commodity. If we take automobile industry, the Bajaj Auto Ltd., Hero Honda Motors Ltd., LML Ltd. etc. are the firms in that industry.

17.3 EQUILIBRIUM OF THE FIRM

When a firm starts producing a commodity, it continues production of it till it receives maximum profits. From this level of output if the firm either expands or contracts its output, it will earn less than maximum profits.

Suppose, a firm produces commodity X, it continues the production of X commodity till it reaches a certain level of output say, 100 units of X. At this level of output the firm secures maximum profits. If the firm increases its production beyond 100 units of output of X, the profits will not be at the maximum. If it contracts its output below 100 units of X, the profits will again be reduced. In either of the above two levels of output, the firm will not earn maximum profits. The firm would, therefore, not like to change the production from 100 units of output of X. Thus the firm is said to be in equilibrium, where it has no tendency either to increase or to decrease the production when it earns maximum profits.

Assumptions

To explain a firm's equilibrium position, we must assume the following:

- (i) The entrepreneur is rational and wants to maximise profits.
- (ii) The firm produces only one product.

i) Total Cost-Total Revenue Criteria

We can discuss the equilibrium of the firm from two points of views. One is the total cost and the total revenue approach. This device is known as the Break Even chart. The Break-Even chart is used for determining the level of output where profits are maximum. Every firm wants to gain more returns on the investments made. If the firm intends to earn huge profits, the difference between the total revenue and the total cost must be the maximum. Table-17.1. gives the different costs and revenues of the firm under perfect competition. The fixed costs remain constant, i.e., Rs. 20. The total costs are shown on the total cost curve in Figure - 17.1 In the Table, the price is Rs.20. per unit and it is fixed for the firm's output. In perfect competition, it can sell any or all of its output at the given market price. The total receipts (revenues) are shown on the straight line marked "Total Revenue Curve". The last column, of Table-17.1 shows the profit or the loss.

Table 17.1

No. of Units (Output)	Total Fixed Cost (TFC)	Total Variable Cost (TVC)	Total Cost (TC) (2+3)	Marginal Cost (MC)	Average Revenue (AR)	Total Revenue (TR)	Marginal Revenue (MR)	Profit or Loss
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	20	6	26	-	10	10	-	-16
2	20	12	32	6	10	20	10	-12
3	20	17	37	5	10	30	10	-7
4	20	20	40	3	10	40	10	-0
5	20	24	44	4	10	50	10	+6
6	20	29	49	5	10	60	10	+10
7	20	39	59	10	10	70	10	-11
8	20	50	70	11	10	80	10	+10
9	20	70	90	20	10	90	10	0
10	20	92	112	22	10	100	10	-12

We can observe from Table-17.1 and from Figure 17.1 that the entrepreneur earns maximum profits where the difference between total cost and total revenue is maximum. The firm will be in equilibrium when it produces 7 units of output. At this level of output, the distance between TR and TC is at the maximum and thus profits are maximised. If the firm produces a few units less than 4 units, the total costs exceed the total receipts. Because, the fixed costs are not distributed over a large number of units to bring the cost per unit below the selling price. But if the firm produces more, the losses come down until a break-even point is reached (at 4 units of output). At this level of output, total revenue is just equal to total cost (Rs.40). This is shown in Figure 17.1 at point A, where the total cost curve and the total revenue curve coincide. If the firm produces more and more goods, the total revenue exceeds the total costs resulting in profit. The profits increase with greater output. Having reached the maximum capacity of the plant, if it increases its production beyond seven units, the profits will decline again. Costs then rise up on the selling price, until profits reduce to zero. In Figure 17.1 if the firm produces 9 units of output, the profits will be zero at point B. If the firm produces beyond this point B, it will incur losses. Thus the firm will tend to increase its output to the point (i.e., 7 units) at which it earns maximum profits.

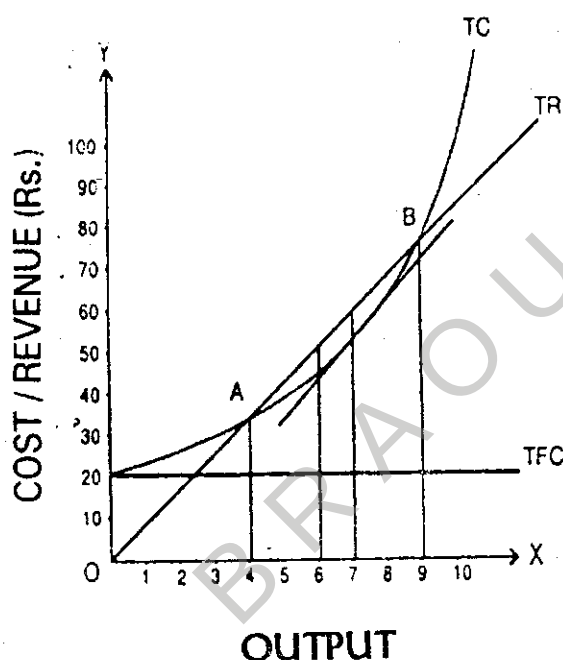


Fig. 17.1 : Equilibrium of a firm from the point of view of Total Cost and Total Revenue

We have to draw a line tangent to TC at 7 units of output which is parallel to the TR curve. Thus the slopes of the TR and TC curves at 7 units of output are equal. The slope of the total cost curve indicates marginal cost (MC). The slope of the TR curve is called the MR Curve. At the output of 7 units, $MR=MC$. When $MR=MC$, the profits will be maximum.

(ii) Marginal Cost-Marginal Revenue Approach

We can analyse the equilibrium of the firm in terms of marginal revenue and marginal cost. The firm earns maximum profits only at the output of 7 units at which $MR=MC$. If

we look at Table-17.1, we see that the firm gets maximum profits at 7 units of output where, $MR=MC= \text{Rs.}10$. If we produce more than 7 units, MC exceeds MR and the firm incurs a loss on each extra unit produced. Loss means that the total profits decrease.

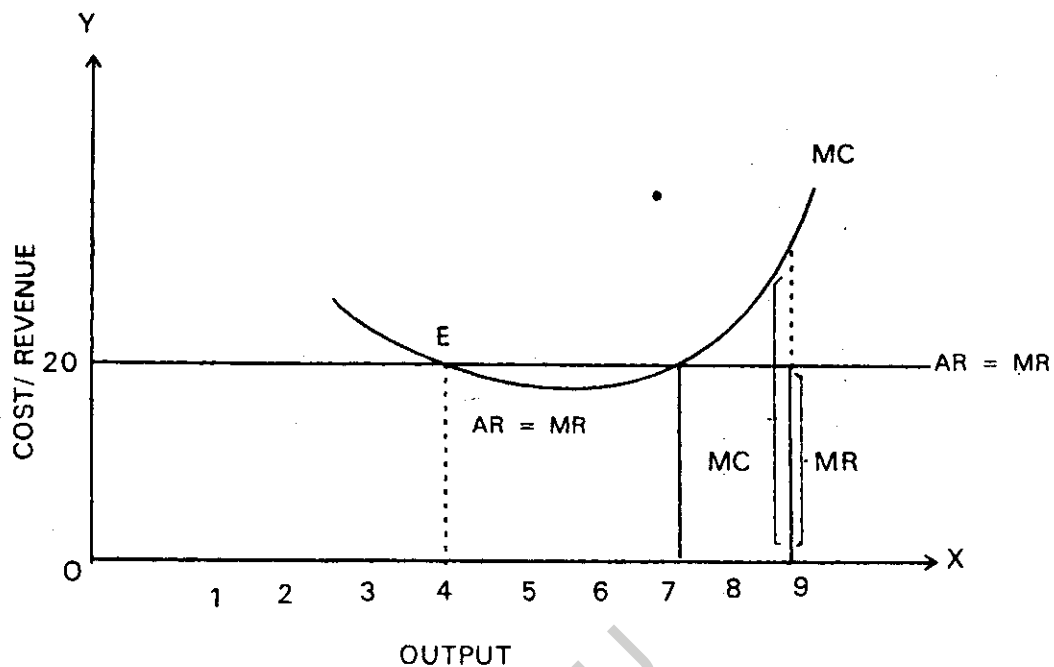


Fig - 17.2 : Equilibrium of a firm from the point of view of Marginal Cost and Marginal Revenue

It is shown in the figure 17.2 that at 7 units of output the difference between TC and TR is maximum where profits are maximised. This is also shown in Figures 17.2 in which the MC curve cuts the MR curve from below at the same level of output (7 units). The MR is equal to AR in perfect competition, which is horizontal to the X-axis. In this competition, an individual firm cannot influence the market price. The firm can sell any or all of its output at the ruling price. That is why the price for the output is fixed. It is clear from Figure 17.2, that when the output is slightly less than 7 units, MR is greater than MC. Thus the producer increases profits by expanding output. If the producer increases the output slightly more than 7 units, the MC is greater than the MR. Thus the firm faces a decline in total profits if the output is increased beyond 7 units. The profits are maximised only when $MR=MC$.

conditions for Equilibrium

Two conditions are necessary for a firm to remain in equilibrium. They are :

- (i) $MC=MR$
- (ii) The MC curve must cut the MR curve from below the point at which profits are maximised.

Check Your Progress - 1

List out the two conditions for a firm to be in equilibrium.

.....

.....

.....

.....

17.4 EQUILIBRIUM PRICE

The buyers and sellers in the market bargain about the price of goods and services. They agree to purchase and sell goods and services at a certain price. In this manner the price is determined by the interaction of buyers and sellers. In other words, demand and supply determine prices of goods and services.

Buyers in the market follow the law of demand. The *law of demand* reveals that when the price falls the demand increases and when the price rises the demand decreases. The sellers follow the *law of supply*. According to this law, when the price rises the supply is increased and when the price falls the supply is decreased. Thus, demand and supply move in opposite directions. Price is determined by the interaction of demand and supply and the price at which demand and supply are equal is known as the **equilibrium price**. Equilibrium quantity is the quantity supplied and the quantity demanded at equilibrium price. If the price is more or less than the equilibrium price, the equilibrium output is disturbed. But ultimately the quantity demanded and the quantity supplied will be balanced at some equilibrium price. We can explain this process of reciprocity with the help of a schedule and figure. In Table 17.2 the quantity demanded and supplied is shown.

Table 17.2 Quantity Demanded and Supplied

	Price (In Rs.)	Quantity Demanded	Quantity Supplied (In Kgs.)	
	2	200	50	
	3	150	75	
	4	130	100	
Equilibrium Price	5	110	110	Equilibrium quantity
	6	90	120	
	7	80	130	

When the price of mangoes is Rs.2 per Kg., the demand for them is 200 Kgs, but the quantity supplied is 50 Kgs. If the price increases to Rs.3 the supply increases to 75 Kgs, whereas the demand falls to 150. If the price is again raised, the supply will increase to 100, and the demand will be further reduced to 130Kgs. Again, when the price goes up to Rs. 5 per Kg. the quantity demanded or supplied is 110 Kgs. at this price. At a price of Rs.5 per Kg, the buyers are ready to purchase 110Kgs. and the sellers are ready to offer 110 Kgs. This is the equilibrium price and the quantity supplied at this price is called **equilibrium quantity**, i.e., 110 Kgs. Once the equilibrium price is determined, there is no tendency to change from this price as this satisfies both the consumers and the producers. If, at any

time, the price is more or less than Rs.5, the forces of demand and supply will adjust it back to Rs.5. For instance, if the price increases to Rs.6 the quantity demanded is decreased, but the quantity supplied is increased. At Rs.6, the demand will be 90 Kgs. and the supply will be 120Kgs. When the supply is greater than the demand, the seller has to reduce the price to Rs.5. As a result, the supply will fall to 110 Kgs. and demand will also increase to 110 Kgs. Thus, the equilibrium price is re-established. On the contrary, if the price decreases to Rs.4, the demand will increase to 130 Kgs. The supply will fall to 100 Kgs. Here the supply is less than the demand. Decreased supply and an increased demand will lead to a rise in the price to Rs.5 where the demand and supply will be in equilibrium. In this manner the equilibrium is maintained again.

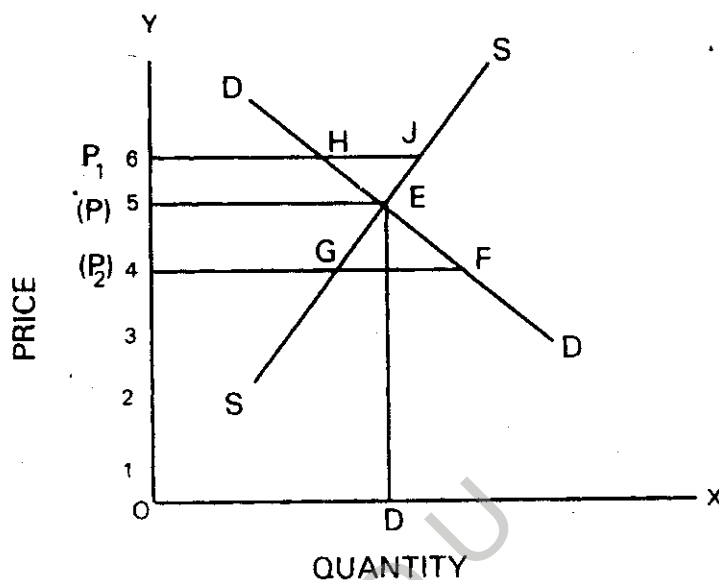


Fig. 17.3 : Equilibrium Price

In Figure 17.3 DD is the demand curve and SS is the supply curve. These two curves intersect at point E. The point, at which demand equals supply, is called the equilibrium point. OP is the equilibrium price at which OM, the equilibrium quantity, is demanded and supplied. If demand is less than supply, every seller will try to sell his quantity of the product first by reducing the price a little. Sellers compete among themselves to bring down the price to the equilibrium level. Thus demand and supply determine the equilibrium price. Once it is established, any disturbance from this equilibrium level will be restored by the forces of demand and supply.

17.5 EFFECTS OF CHANGES IN DEMAND AND SUPPLY ON EQUILIBRIUM PRICE

Changes in demand and supply bring about changes in the equilibrium price level and the equilibrium quantity: When there is a change in either the demand or the supply or both, a new equilibrium price is established. Thus, whenever change in either demand or supply takes place, a new equilibrium price is determined.

i) Effects of Changes in Demand

There are some conditions which bring about changes in demand. A change in incomes, tastes, prices of substitute goods and preferences of consumers will lead to a change in demand. Figure-17.4 shows the effects of a change in demand and the resultant equilibrium price and quantity. DD is the demand curve and SS is the supply curve. The supply curve

remains the same. The DD and SS curves intersect at point E and the quantity demanded and supplied is OM at OP equilibrium price. Given the supply, if the demand increases the demand curve shifts upward to the right. Due to a change in demand, the demand curve D_1D_1 intersects SS supply curve at point E_1 . The equilibrium price is increased from OP to OP_1 and the equilibrium quantity from OM to OM_1 . On the other hand, if demand falls, the demand curve shifts downwards to the left. Due to a change in demand, the curve D_2D_2 intersects the supply curve SS at point E_2 . The equilibrium price is OP_2 which had decreased from OP to OP_2 and the equilibrium quantity from OM to OM_2 . Supply being given, a decrease in demand reduces both the price and the quantity and vice versa.

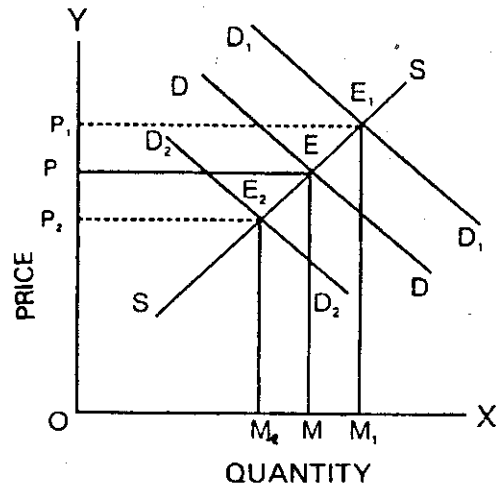


Fig. 17.4 : Equilibrium Price : Effects of Changes in Demand

ii) Effects of Changes in Supply

Changes in supply are brought by changes in technical knowledge and factor prices. Figure - 17.5 explains the effects of changes in supply. Demand being given, the supply curve is SS and the demand curve is DD. SS and DD intersect at point E, where supply and demand are equal at OM quantity at OP equilibrium price. Given the demand, if the supply increases, the supply curve shifts to the right S_1S_1 and the new supply curve, which intersects DD curve at E_1 , reduces the equilibrium price from OP to OP_1 and increases the equilibrium quantity from OM to OM_1 . On the contrary when the supply falls, the supply curve moves to the left (S_2S_2) and cuts the DD curve at point E_2 at which the equilibrium price is raised from OP to OP_2 reducing the equilibrium quantity from OM to OM_2 .

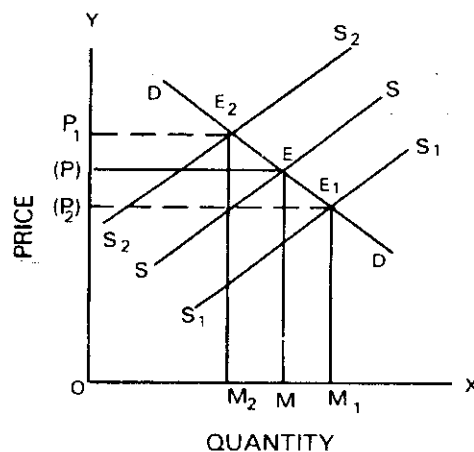


Fig. 17.5 : Equilibrium Price : Effects of Changes in Supply

iii) Effects of Combined Changes in Demand and Supply

Now we shall study the effects of combined increase and or decrease in demand and supply

When both demand and supply increase, the quantity of the product will increase definitely. But it is not certain whether the price will rise or fall. If an increase in demand is more than an increase in supply, then the price goes up. On the other hand, if an increase in supply is more than an increase in demand, the price falls but the quantity increases. If the increase in demand and supply is same, then the price remains the same.

When demand and supply decline, the quantity decreases but the change in price will depend upon the relative fall in demand and supply. When the fall in demand is more than the fall in supply, the price decreases. On the other hand, when the fall in supply is more than fall in demand, the price rises. If both demand and supply decline in the same ratio, there is no change in the equilibrium price, but the quantity decreases.

If the increase in demand is greater than the decrease in supply, the price rises. If the decrease in supply is greater than the increase in demand, then also the price increases. If the increase in demand is exactly equal to the decrease in supply, then the price rises, but the equilibrium quantity remains the same.

Thus the price is determined at the point where both demand and supply cut each other. The only really accurate answer to the question whether it is supply or demand which determines the price, is that it is in fact both. At times it seems that one is more important than the other, for one will be active and the other passive. For example, if demand remains constant but supply conditions vary, it is demand which is passive and supply active. But neither is more or less important than the other in determining price.

17.6 TIME ELEMENT IN PRICE THEORY

The forces of demand and supply determine price. The influence of time on the determination of price was first recognised by Marshall. When the demand for a commodity changes, its supply will also change. But the changes in demand and supply will not be possible at the same time. For example, an increase in demand will lead to an increase in supply, but the increase in supply will be possible only after some time. The supply will take time to adjust itself to a change in demand. Moreover, supply is based on costs of production, which change over time. In the short period, it is not possible to change the size of a firm, as costs of production are high. In the long run there is enough time to change the size of the firm to any extent as it should be able to produce at a lower cost. Hence, the element of time is very important in the determination of the price of a commodity. Marshall indicates that there are four periods in the theory of value. (i) The Market Period or Very Short Period (ii) The Short Period, (iii) The Long Period, and (iv) The Very Long Period or the Secular Period. Here we shall discuss only the first three types. Marshall classified the periods in terms of operations or in terms of the period required for economic forces to work. *Market period* is one in which there is no time to change the supply of the product. The *Short period* refers to a period in which the supply can be changed to some extent without changing the size of the firm. The *Long period* is that which is long enough to adjust the supply even by altering the size of the plant to meet changes in demand.

17.7 PRICE DETERMINATION IN THE MARKET PERIOD

Market period is a very short period, in which the production is neither decreased nor increased. In other words, the supply of the product remains fixed. Here the nature of commodity plays its role in the determination of price. Certain commodities are perishable in nature, such as fish, vegetables, flowers, and cannot last long or cannot stay fresh for more than a few days, or for some time in a day. That is why they must be sold within a short period, say a day (market time). Otherwise they will deteriorate; there will no demand for them after a particular time is over. In the above case, the supply curve of the goods is a vertical line as depicted in Figure-17.6

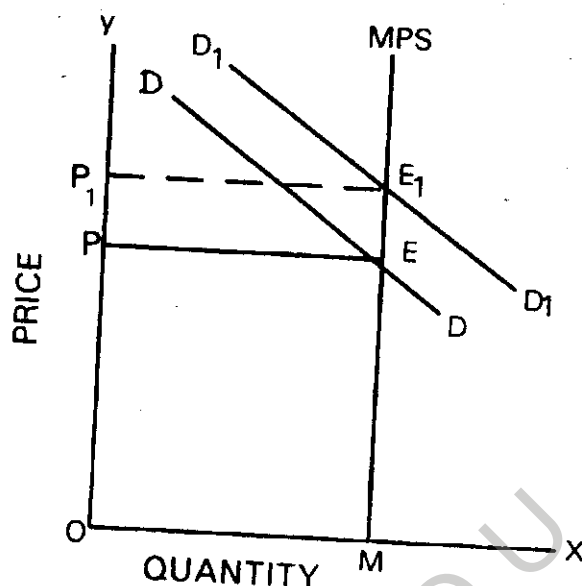


Fig. 17.6 Market Period Price Determination : Perishable Goods

The vertical supply curve reveals that the supply of goods which are to be sold in the market period at any price is fixed. Whenever there is no change in the supply, there may be changes in demand in the market period. In this situation, demand determines the price. If demand is more in the market, a higher price will prevail and vice versa. MPS is the market period supply curve, which is fixed. DD is the demand curve. DD intersects the MPS curve at point E and OP is the equilibrium price. If demand increases, supply being constant, the price increases. D_1D_1 is the increased demand curve which cuts MPS at point E_1 . The equilibrium price increases from OP to OP_1 , which is higher than the initial price. This shows that supply being constant, demand has full influence on the determination of the price of the product.

Non-perishable goods unlike perishable goods, can be stored. Such goods will have a reservation price, below which the producer will not like to sell them. The cost of production of a commodity influences the reservation price. In the market period all costs are fixed and fixed costs do not influence prices. In the market period, supply is fixed and changes in demand exert an influence on the determination of price. But according to Marshall even in the market period in the case of durable goods, both supply and demand are equally required for the determination of price. The firm will sell no commodity below its reservation price. This is shown in Figure 17.7 The market period supply curve is MPS for durable goods. This curve indicates that nothing can be sold below the reservation price OS.

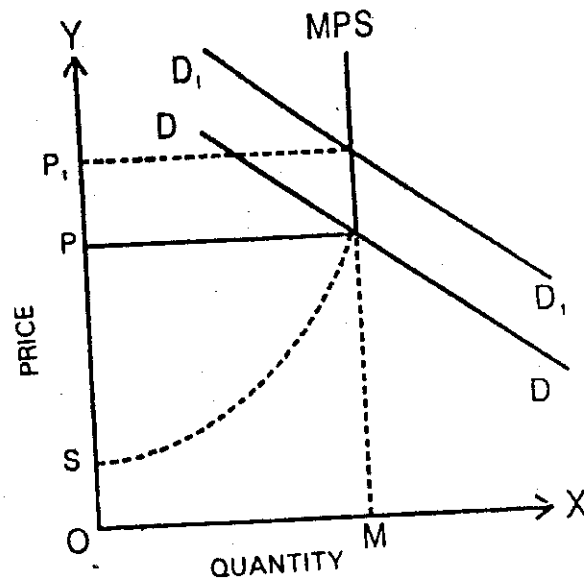


Fig. 17.7 Market Period Price Determination : Non-Perishable Goods

DD is the demand curve which interacts with MPS at point E. The market price is OP at which the whole production is supplied. Below this price OP, or from the reservation price OS, as demand increases supply is also increased upto OP, the market price. In the market period, if demand increases further, the supply remains fixed at OM level but the price rises. D_1D_1 is the changed demand curve which intersects the vertical part of the MPS curve at point E_1 where price is increased from OP to OP_1 . This will occur in the case of durables and semi-durables.

Check Your Progress -2

What is market period?

.....

.....

.....

.....

17.8. PRICE DETERMINATION IN THE SHORT PERIOD – SHORT RUN NORMAL PRICE

Short run is the period in which a firm varies its output by changing variable factors while fixed factors remain constant. In the short-run period, if a firm wants to increase or decrease its production it will employ more labour, raw-materials, etc. or less labour, raw-materials, etc., to match the increase or decrease in demand. But fixed factors or the size of the plant remain same.

In the short-run, the forces of supply and demand determine the price. The supply curve will rise upwards from left to right. The price at which the demand and supply curves intersect each other is known as the *short-run equilibrium price*. The short-run price is also called the short-run normal price. It is illustrated in Figure 17.8

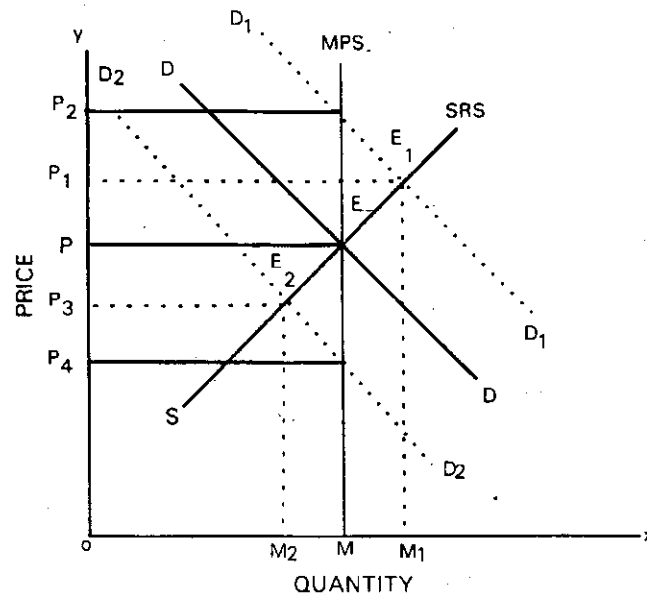


Fig. 17.8 Price Determination in Short Period

MPS is the market period supply curve and DD is demand curve, which intersects MPS at E, and OP price and OM quantity are established. If the demand for the product rises, this is shown by the demand curve, D_1D_1 . In the market period the supply is fixed and it is not possible to increase the production beyond OM. That is why, the market price will immediately be increased from OP to OP_2 . But in the short period, it is possible to increase the production with the help of existing plant capacity by employing more labour, raw-materials, etc. Thus the supply will be increased along the SRS (Short run supply) curve by increasing the variable capital. D_1D_1 is a new demand curve. The SRS curve intersects D_1D_1 . The short-run normal price is OP_1 at equilibrium quantity OM_1 . This price OP_1 is higher than the original market price (OP) but is lower than the market price OP_2 after the increased demand.

17.9 PRICE DETERMINATION IN THE LONG PERIOD – LONG RUN NORMAL PRICE

Long-run is such a long period that in it production may be changed by varying the fixed as well as the variable factors. In the long period, supply fully adjusts itself to the changes in demand. The long period demand and long period supply of the industry determine the normal price of a product.

In the long period, there is sufficient time for new firms to enter the industry and for old firms to leave the industry. When the firms in the industry are earning more than normal profits, new firms enter the industry so that production increases and brings the price down to the original normal price. When firms in the industry are incurring losses, some old firms leave the industry, due to which production decreases. This results in raising the price to the original normal price. The long-run new price may be equal to or less or more than the initial price. It depends on the laws of returns of the industry. If the industry is operating under increasing cost conditions or diminishing returns, the normal price is higher than the original price. If it is operating under decreasing cost conditions or increasing returns, the normal price is lower than the original price. If it is operating under constant cost conditions or constant returns, the normal price is equal to the original price. Thus there is no change in normal price in constant returns.

We shall discuss below the determination of the long period normal price under various cost conditions.

17.9.1 LONG - RUN NORMAL PRICE IN INCREASING COST INDUSTRY

If the industry is operating under increasing cost conditions the long-run supply curve of the industry will rise upwards to the right as production increases.

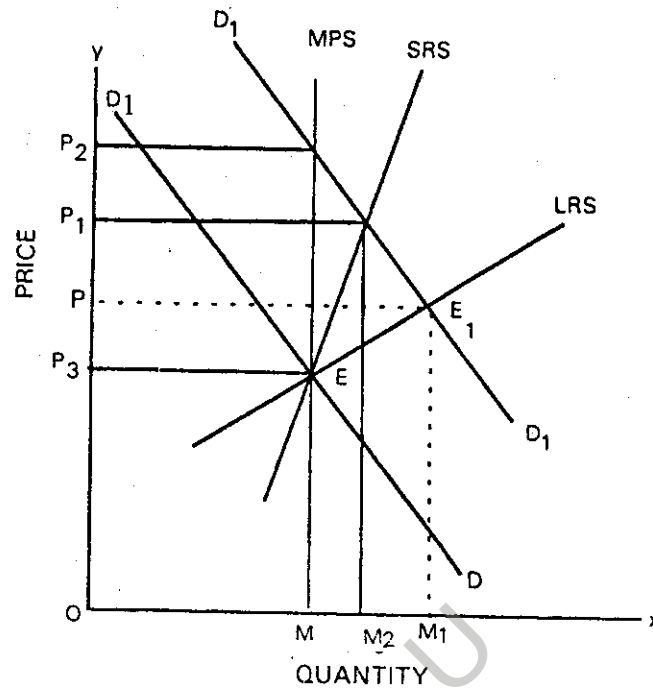


Fig. 17.9 : Long Period Equilibrium Price Determination in Increasing Cost Industry

In Figure -17.9 LRS is the long run supply curve, SRS is the short run supply curve and MPS is the market period supply curve. DD is the industry demand curve which intersects LRS, SRS, and MPS at E. At this point the industry is supplying OM output at OP equilibrium price. If the demand curve shifts upward from DD to D_1D_1 in the short period, due to the increase in demand, the industry increases its supply to OM_2 level of output by increasing only the variable factors at OP_2 price. But in the long run, the industry can fully adjust the supply to the increase in demand by changing the fixed as well as variable factors of the firm. In the long run new firms will also enter the industry. The industry will increase its supply to OM_1 which is more than the increase in supply in the short - run. The new equilibrium price OP_1 is established where D_1D_1 intersects LRS at E_1 at which equilibrium output is OM_1 . The long - run equilibrium price OP_1 is more than the initial price OP. But the long run equilibrium price OP_1 at output OM_1 is less than the short run equilibrium price OP_2 at OM_2 output and market price OP_3 at OM output.

17.9.2 LONG-RUN NORMAL PRICE IN CONSTANT COST INDUSTRY

If the industry is operating under constant cost conditions, the long run supply curve of the industry is horizontal to the OX-axis as illustrated in figure 17.10 by the LRS straight line. DD is the industry demand curve which cuts LRS, SRS and MPS at point E. The equilibrium price is OP at OM equilibrium output. If the demand curve shifts to D_1D_1 , the supply is increased to OM_2 due to increase in demand in the short run, the equilibrium price is increased from OP to OP_1 . In the long run there is sufficient time to increase the scale of the plant. The long run industry demand curve D_1D_1 intersects LRS at E_1 where

the equilibrium output is OM_1 at OP equilibrium price. LRS is horizontal to the X-axis. This shows that under constant cost conditions, the long period normal price is the same as the initial price whether the output increases or decreases. Thus it remains at the same level as it was in the short - run.

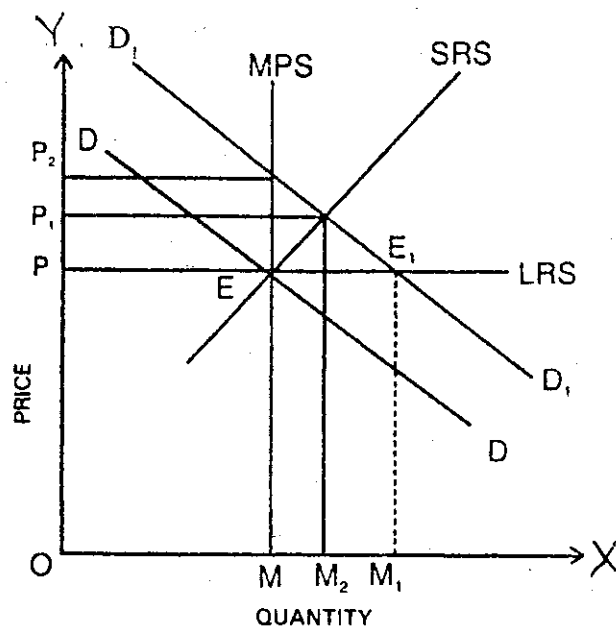


Fig. 17.10 : Long Run Equilibrium Price in Constant Cost Industry

17.9.3 LONG-RUN NORMAL PRICE IN DECREASING COST INDUSTRY

If the industry is operating under decreasing cost conditions, the supply curve in the long run will slope downwards. In the long run, as the industry expands it will enjoy the advantage of external economies, which lead to the firm's cost curves shifting downwards. While in the short run the price will increase as a result of increased demand, in the long-run the price is less than the initial price.

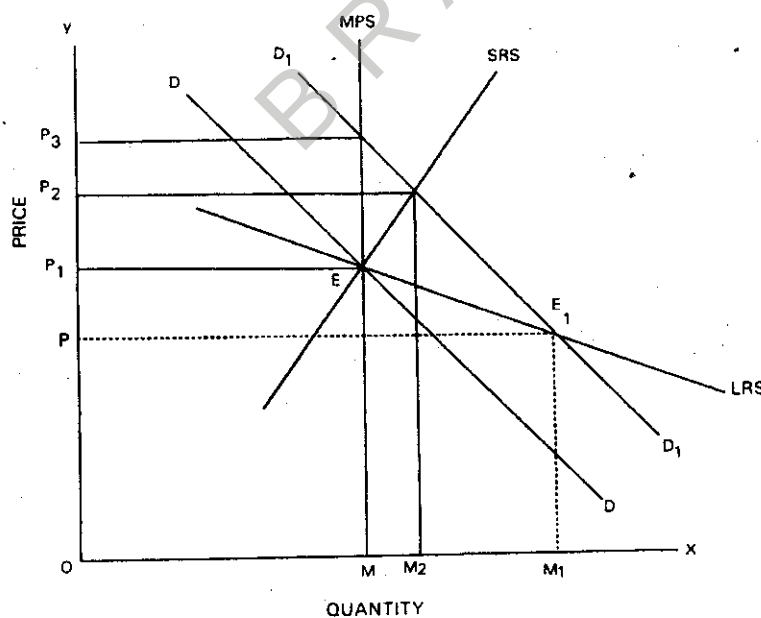


Fig. 17.11 : Long Run Price in Decreasing Cost Industry

In figure 17.11, DD is the original demand curve, which cuts MPS, SRS and LRS at E. At this point, the equilibrium price is OP_1 and the output bought and sold is OM. If the demand curve shifts to the right, it intersects LRS at E_1 in the long run. In the long run, as demand increases, the equilibrium price OP_1 is less than the original price OP which is the result of increasing returns to scale. But the output bought and sold is increased, from OM to OM_1 . In the short period, as demand is increased, the supply is also increased but less than the increase in supply in the long run. That is why the price is higher than the original price in the short run.

In the long period, it is obvious that the normal price is higher, lower or the same as compared with that of the initial market price. This depends on the cost conditions of the industry in question. It also depends on internal economies or dis-economies and external economies or diseconomies. However, in the short run, the normal price will invariably be higher than the long run normal price.

17.10 COMPARISON OF MARKET PRICE AND NORMAL PRICE

The following points will make clear the distinction between market price and normal price:

- a) Market price prevails in a market on a single day or in a very few days. It prevails at a particular time. Whereas, normal price tends to prevail in the long run. It has a tendency to prevail over a period of time.
- b) Demand is important in the determination of market price while supply is passive. As demand increases or decreases, the market price goes up or comes down, while supply is fixed. On the other hand, the determination of normal price depends more on the role of supply which tries to adjust itself fully to any change in demand.
- c) Market price may vary many times in a day or a week as a result of passing events and temporary events which influence it greatly. For example, if there is a bandh on a particular day, the price of perishable goods may shoot up. But it is only a temporary phenomenon as the very next day they may come to normalcy again.

Market price is temporary price. In the long run, demand and supply may be changed by permanent forces. The changes in demand and supply determine normal price. That is why normal price is permanent and stable. Market price oscillates around normal price.

- d) In the long-run, normal price always coincides with the long run average cost at its minimum point. Therefore, firms gain only normal profits under normal price.
- e) All commodities have a market-price. The goods which are produced again and again have a normal price. Non-supply of such goods can be increased in the long-run to adjust increases in demand. Non-reproducible goods such as collections of rare coins and paintings etc. cannot have a normal price, but they have a market price. The supply of such goods cannot be increased.
- f) Normal price is not a real one whereas market price is real. Normal price may occur when demand equals the changes in supply in the long run. But these may not be

same in the long run. Changes in demand may be more or less than changes in supply. That is why normal price is never arrived at in the long run. In practice, a long period normal price is never arrived at. There is usually a change in some of the conditions underlying the long period equilibrium before it has had time to come into being. The price which is existing in the market is always the market price rather than the normal price.

17.11 PRICE AND OUTPUT DETERMINATION UNDER PERFECT COMPETITION

We shall now discuss how an equilibrium price is determined in a perfectly competitive market. In perfect competition, an individual firm cannot influence the prevailing price. As we have already discussed equilibrium price is the price which the firm has no tendency to change. A firm is said to be in equilibrium when it has no motive to change or alter its scale of operations. The firm neither expands nor contracts its level of output. The firm earns maximum profits in equilibrium where marginal cost coincides with marginal revenue. This is already explained with the help of a diagram (Fig 17.2). In perfect competition the MR curve of a firm coincides with the AR curve. At the given price the demand curve is perfectly elastic. The firm can sell as much as it wishes to sell so that demand curve is horizontal to the X-axis.

To recapitulate, two conditions are to be fulfilled to achieve the equilibrium position of a firm. They are :

- (i) Marginal Cost = Marginal Revenue; and
- (ii) MC curve must cut the MR curve from below.

The firm will be in equilibrium when $\text{price} = \text{MC} = \text{MR} = \text{AR}$.

Assumptions

For the purpose of explaining the equilibrium of a firm in short-run and the long-run under perfect competition the following assumptions are usually made :

- (i) Identical cost conditions - MC and AC cost conditions are the same for all the firms in the industry.
- (ii) The efficiency of entrepreneurs is the same for all the firms.
- (iii) Factors of production used by various firms are homogeneous.

17.11.1 EQUILIBRIUM IN THE SHORT - RUN

The short-run is the period when the firm varies its production by changing variable factors, where the fixed capital remains unchanged.

Hitherto, we have explained equilibrium conditions to be fulfilled by a firm to achieve the equilibrium conditions. But we cannot understand a firm's absolute profit or loss position. To understand profit or loss position, we must consider three possibilities.

- (a) When a firm earns abnormal profits

- (b) When a firm earns normal profits
- (c) When a firm incurs losses

(i) When A Firm Earning Abnormal Profits

In the Figure 17.11 if price is OP, PL is the average revenue and marginal revenue curve in perfect competition. SMC is the short-run marginal cost curve and SAC is the short-run average cost curve. They are generally U-shaped curves. The firm is in equilibrium at output OM_2 where the MC curve cuts the MR curve from below at R, i.e., $MC = MR$ or M_2R . Here the price or AR is greater than the average cost. The firm is earning $M_2R - M_2T = RT$ profits per unit.

$$\text{Total Revenue} = AR \times \text{output} = OP \times OM_2 = \boxed{} OPRM_2$$

$$\text{Total Cost} = AC \times \text{output}$$

$$= OC \times OM_2 = \boxed{} OCTM_2$$

$$\begin{aligned} \text{Abnormal Profits} = TR - TC &= \boxed{} OPRM_2 - \boxed{} OCTM_2 \\ &= \boxed{} CPRT \end{aligned}$$

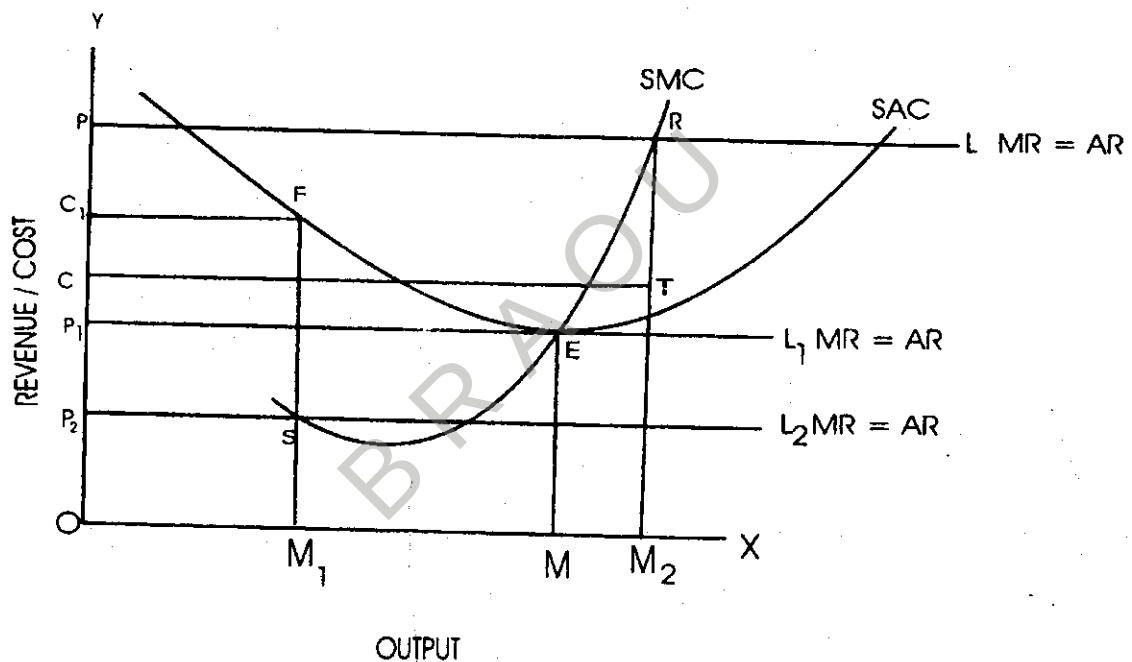


Fig. 17.12 Equilibrium of the Firm in the Short-Run

The firm is earning more than normal profits. The arc CPRT shows abnormal profits. There are number of firms in the industry earning abnormal profits. In perfect competition, when firms with identical cost conditions are earning supernormal profits in the industry, new firms enter the industry so as to compete and draw away the abnormal profits. But in the short-run, it is not sufficient for new firms to enter the industry. So the existing firms continue to earn supernormal profits. Though the firms are in equilibrium, the industry will not be in equilibrium as there is a chance for new firms to enter the industry.

(ii) When A Firm Earning Normal Profits

Suppose the market price is OP_1 , P_1L_1 is the average revenue and marginal revenue curve. The SMC curve cuts the P_1L_1 marginal revenue curve at point E from below where the firm at output OM is in equilibrium. The minimum SAC is at a tangent to the average revenue curve at point E, where $AR = AC$ and $MR = MC = AR = AC$. At output OM, the firm earns the total revenue of the area OP_1EM and the firm bears the total costs of the area OP_1EM . Here total cost is equal to total revenue. That means the firm earns only normal profits. All the firms with identical cost conditions earn only normal profits where there is no tendency to leave or enter the industry. Here the firm as well as industry will be in equilibrium in the short-run. This type of equilibrium occurs by accident only. Therefore, firm neither gains abnormal profits nor incurs losses.

(iii) When A Firm Incurring Losses

In the short-run, the prevailing market price is OP_2 , P_2L_2 is both the average and the marginal revenue curve. The SMC curve cuts P_2L_2 marginal revenue curve at point S at OM_1 level of output, where the firm is in equilibrium. Though the firm is in equilibrium, it incurs losses, the cost per unit being greater than price. Average cost is M_1F or OC_1 , and the average revenue is OP_2 or M_1S . The firm is incurring loss, i.e., $M_1S - M_1F = FS$ per unit.

$$\begin{aligned}
 \text{Total Cost} &= AC \times \text{output} \\
 &= OC_1 \times OM_1 = \boxed{} OC_1FM_1 \\
 \text{Total Revenue} &= AR \times \text{output} \\
 &= OP_2 \times OM_1 = \boxed{} OP_2SM_1 \\
 \text{Total Loss} &= \text{Total Revenue} - \text{Total cost} \\
 &= \boxed{} OP_2SM_1 - \boxed{} OC_1FM_1 \\
 &= \boxed{} P_2C_1FS
 \end{aligned}$$

The firm is incurring losses in the short-run. All the firms with identical cost curves are also incurring minimum losses. There is a tendency for the firms to leave the industry. Even though, they incur losses, the firms do not do so because, in the short-run, the industry is not in equilibrium and there is a tendency for firms to quit the industry. In the short run firms change production by varying the variable capital. If the price is more than the average variable cost, the firm covers the full variable costs and a part of the fixed costs, so that they remain in the industry instead of leaving the industry. If losses are greater than the variable costs and the fixed costs, then the firm will close down so as to avoid unnecessary losses.

17.11.2 EQUILIBRIUM IN THE LONG-RUN

Long-run is a period which is long enough to change the level of output by altering the variable capital as well as the fixed capital. Unlike short-run in the long-run, all factors are variable. Nothing remains fixed. If production is to be increased, or decreased, the plant size will be increased or decreased according to the demand conditions in the market. In the long-run, to meet the demand situation, the plant size or fixed capital or plant capacity is changed, but this is not the situation in the short-run. In the long run, the long-run average cost and marginal cost curves are relevant in determining the equilibrium level of output. In the short-run, a firm has to be in equilibrium when MC is equal to MR . This holds valid even in the long-run period. In the long-run, when MC is equal to MR and the price is

equal to the average cost, the firms in the industry earn normal profits. Encouraged by the abnormal profits new firms enter the industry, with the result that production is increased. Competition for the extra profit compels firms to keep the price down to the average cost. If the price is below the average cost, the firm in the industry incurs losses. To avoid heavy losses some firms leave the industry. This decreases the production and forces the price to stay at the average cost, so that the firms remaining in industry make normal profits.

In the long-run, a firm is said to be in equilibrium if two conditions are fulfilled:

(i) Price (AR) = MC = MR

(ii) Price (AR) = MC = AC

Hence, in perfect competition in the long-run the firm will be in equilibrium if Price = AR = MR = AC.

In the long-run while LAC is falling, LMC is below it; while LAC is rising, the LMC is above; if LAC is neither rising nor falling, the LMC intersects it at its minimum, where $LMC = \text{minimum } LAC = MR = \text{Price (P)}$. That is, when a firm is said to be in equilibrium earning normal profits, the LMC intersects the LAC at its minimum which is equal to price. Price = Marginal cost = Minimum AC. We can understand this with the help of a diagram.

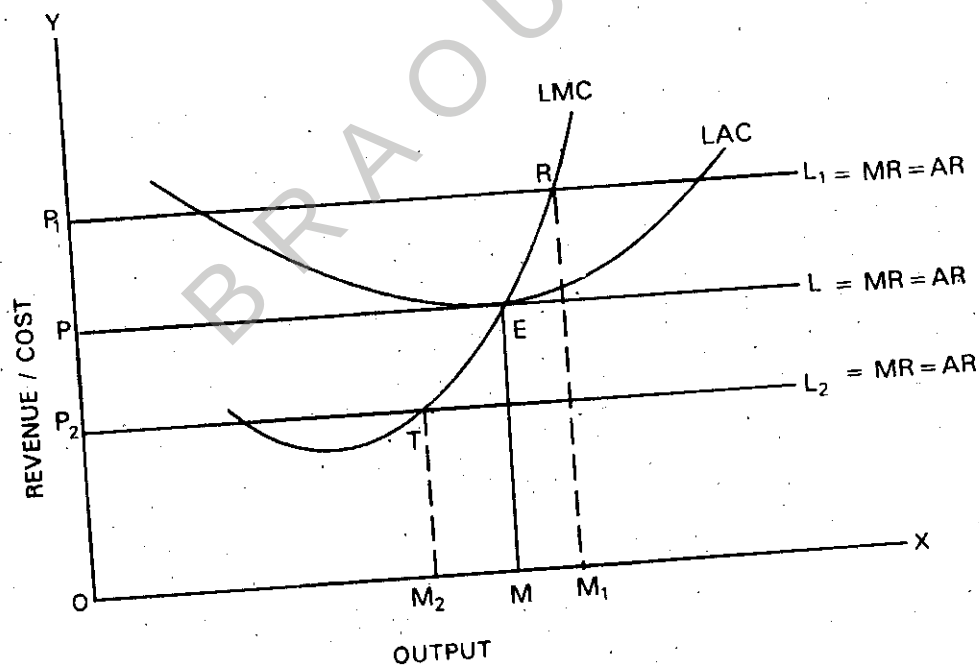


Fig 17.13 Equilibrium of Firm and Industry in the long-run

In the figure 17.13 above, LAC is the long-run average cost curve and LMC is the long-run marginal cost curve. If the market price is OP , P_1L_1 is the average and marginal revenue curve in the perfect competition. At price OP_1 , the firm is in equilibrium at point R at output OM_1 . All the firms with identical cost curves earn abnormal profits, with the

result that new firms enter the industry and increase production. The increase in production presses down the price to OP level and equates it to the average cost at its minimum, where the firm and industry will be in equilibrium.

If the price is OP_2 , which is below AC , the firm will be in equilibrium at point T where $MC = OP_2$, which is less than AC . All the firms with identical cost curves will incur losses. In consequence, to avoid losses, the firm in perfect competition will leave the industry in the long-run. This reduces the level of output in the market raising the price from OP_2 to OP to equal average cost, where the firm will be making normal profits. In such a situation a firm will not leave or enter the industry. The firm and industry are said to be in equilibrium in the long-run.

OPTIMUM FIRM

An entrepreneur produces commodities with the given scale of the plant. As he increases production, the cost per unit decreases. He continues to increase the level of output till he gets economies of scale. After a stage, he however stops the production of the commodity, when the firm reaches its minimum cost of production. The average cost is the lowest at this point. If he still expands his level of output, diseconomies will set in. The point where the average cost of the firm is lowest is considered as the optimum level of output for the firm concerned. This is the optimum size of the firm with minimum average cost.

We can explain this with the help of Figure 17.14

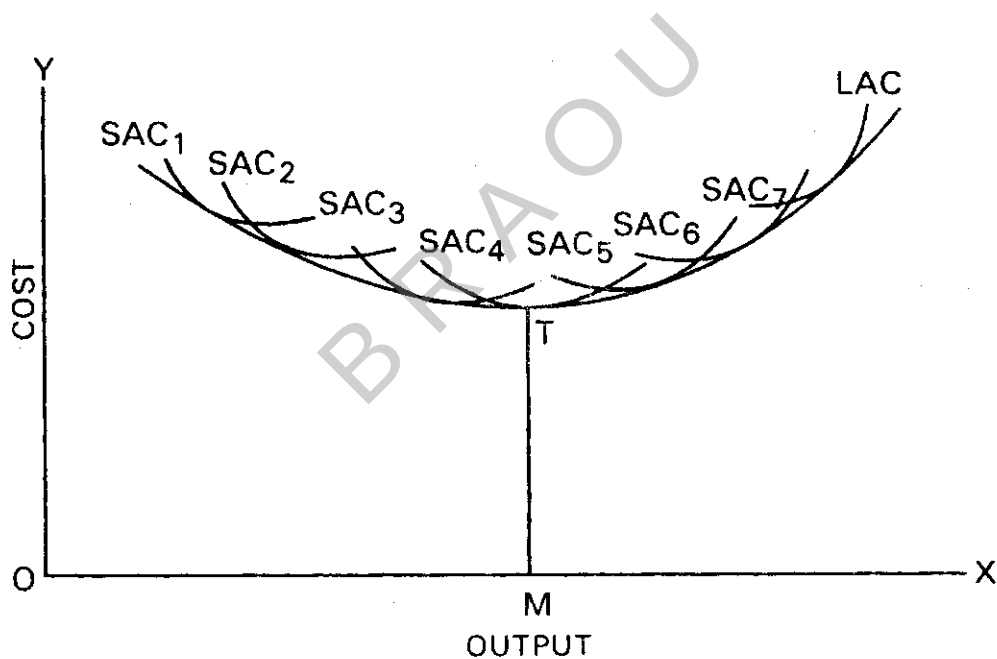


Fig 17.14 : Optimum Firm

We measure units of output on the OX -axis and cost production of the OY -axis. LAC is the long-run average cost curve. It indicates average cost of production at different levels of production in the long-run. SAC_1, SAC_2 etc., are the short-run average cost curves of different scales of firms. SAC_4 represents the short-run average cost curve, which produces OM level of output with the minimum average cost at point T .

TM is the minimum average cost at this level of output. At the level of output OM , the cost per unit is the lowest with the plant of SAC_4 compared to that of the other plants. Suppose, the entrepreneur increases the size of the plant beyond SAC_4 , various diseconomies of scale will result and the average cost of production will increase. Similarly as he decreases the size of the plant, which is smaller than SAC_4 , the average cost of production will also be high. This is because the scale of the plant is smaller and the producer will not be able to avail all the economies of scale. Thus SAC_4 is the position where the firm will be functioning at the optimum. OM is the optimum level of output with the least-cost output of the firm. The firm which produces the optimum level of output with the optimum plant is known as an optimum firm.

Check Your Progress - 3

What is the optimum size of a firm?

.....

.....

.....

.....

17.12 PRICE DETERMINATION UNDER SIMPLE MONOPOLY

We study here the determination of price, output and profit under monopoly. The determination of price is based on the following assumptions:

- i) Simple monopoly
- ii) Very low cross-elasticity of demand with other goods
- iii) Rational monopolist
- iv) Aim of maximum profits
- v) Full competition in terms of demand
- vi) No price discrimination
- vii) Uncontrolled power of monopolist

Price and Output under Monopoly

Given these assumptions, the forces of demand and supply determine the price, output and profit under monopoly. The supply of the product is completely governed by the monopolist. The price is fixed by monopolist to yield him the maximum profit. But both the price and the level of output cannot simultaneously be controlled by him. He can either decide the level of output, and leave the price of the output to be determined by consumer's demand or he can fix the price and leave the level of output to be decided by the demand for the product at that price. Thus the conditions of demand decide the price fixation and the level of output to be produced by the monopolist.

Under monopoly conditions, the demand curve or average revenue or sales curve slopes downward to the right. The average revenue curve will indicate that the monopolist can sell more only by reducing its price. The AR curve has its corresponding MR curve, which lies below it. If the AR curve is a negatively sloping straight line, the MR curve will also be a straight line sloping negatively.

The monopolist influences price or output depending on the elasticity of demand for his product. If the elasticity of demand is high for his product, he reduces the price and sells a greater quantity earning maximum profits. If the elasticity of demand for his product is inelastic, he raises the price and by selling less still gains the maximum profits.

The monopolist can produce the most profitable output against the demand for his product. This will depend on the conditions of supply. The cost of production may rise, fall or remain constant.

If the cost of production rises, every increase in output will lead to an increase in cost per unit, and the monopolist can produce less and fix a higher price. If the cost of production decreases, every increase in output will lead to a decrease in cost per unit, and he will be able to fix a lower price. If the cost of production remains constant, there will be no change in cost per unit with every increase in output, but the price will be fixed according to the demand for the product. Whatever the cost of production may be, the monopolist continues to produce the commodities as long as the total revenue is greater than the total costs. In other words, he continues to produce so long as additional units add more to revenue than to cost. That is likely to happen irrespective of whether the marginal cost curve cuts the MR curve while it is falling, rising or perpendicular to the MR curve under monopoly conditions. In perfect competition however, the firm will be in equilibrium when the MC curve cuts the MR curve from below.

We shall now discuss the price-output equilibrium of the monopolist.

Price and Output Equilibrium under Monopoly

The sole aim of the monopolist is to maximise profits. He goes on producing goods till MR equals MC, where the firm will be in equilibrium. At this level of price-output, the profits are maximum. The following figure reveals the price-output equilibrium of the monopolist.

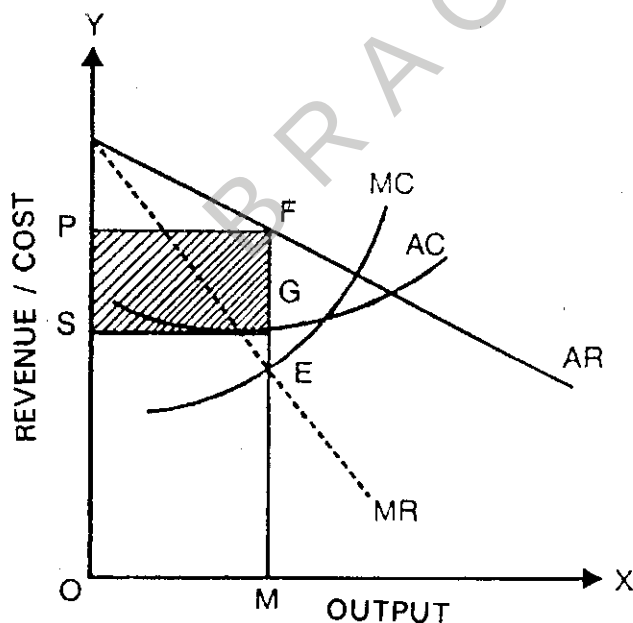


Fig. 17.15 : Price and Output Equilibrium Under Monopoly

AR is the average revenue curve and MR is the marginal revenue curve. AC is the average cost, and MC is the marginal cost. The monopolist continues his production upto OM level where MR equals MC at point E. Thus the firm is in equilibrium at E. As the production is increased beyond the OM level when profits are maximised, the marginal

revenue is less the marginal cost. The firm will not be in equilibrium as it will earn less than maximum profits.

If we look at the average revenue curve or demand curve AR, we find that the OM output is sold in the market at price OP. In figure 17.15 the price or demand or average revenue is MF (=OP) corresponding to the equilibrium output. Under the cost-revenue situation, where MC=MR at point E in Figure 17.15, the firm will be in equilibrium at output OM. The monopolist fixes a price equal to MG (=OP). MF or OP is the average revenue and MG or OS is the average cost at the equilibrium output OM. PS or EF is the profit per unit.

$$\begin{aligned}
 \text{Now the total Revenue} &= \text{AR} \times \text{output sold} \\
 &= \text{OP} \times \text{OM} = \boxed{} \text{ OPFM} \\
 \text{Total cost} &= \text{AC} \times \text{output produced} \\
 &= \text{OS} \times \text{OM} = \boxed{} \text{ OSGM} \\
 \text{Therefore profits} &= \text{TR} - \text{TC} \\
 &= \boxed{} \text{ OPFM} - \boxed{} \text{ OSGM} \\
 &= \boxed{} \text{ SPFG the shaded area} \\
 &\text{or} \\
 \text{Monopolist's profits} &= \text{Profits per unit} \times \text{total output sold} \\
 &= \text{PS} \times \text{OM} \\
 &= \text{PS} \times \text{SG} = \boxed{} \text{ SPFG}
 \end{aligned}$$

The monopolist earns total profit equal to the shaded area rectangle SPFG, when the firm is in equilibrium at E in Figure 17.14. Thus the equilibrium price-output and profits are determined under monopoly. Under monopoly conditions, when there is no competition, the total revenue earned by the monopolist is greater than the total costs. Normal profits for the services of entrepreneurial capacities are included in the total costs. When TR exceeds TC, the monopolist earns more than normal profits and the extent of the excess profits earned by the monopolist may be called the *degree of exploitation*. We need to study the causes for this exploitation and consider who (among the four factors of production employed in the process of production) gets exploited in this situation.

The exploitation may arise from the price which is fixed at a higher level than the cost incurred per unit or AC in which normal profits are included. It may be difficult to say exactly who is exploited unless the services rendered by different factors of production are calculated at the prevailing prices for them. Or the monopolist may have exploited the customers by extracting more money from the pockets than he should have. In imperfect competition, the exploitation is bound to occur in some form or the other. Exploitation is inherent in imperfect competition. Exploitation is inherent in perfect competition also as it was pointed out by Marx, but normal profits are treated in economic literature as just profits, which under monopoly or imperfect competition, are treated as the firm's abnormal profits.

Check Your Progress - 4

When does a monopolist reach equilibrium?

.....

.....

.....

.....

17.13 PRICE AND OUTPUT UNDER DISCRIMINATING MONOPOLY

We have dealt with the distribution of output in two different markets. To maximise profit, the monopolist charges different prices in different markets. Price discrimination, the monopolist's method of maximisation of profits, is explained above ignoring the costs of production. Here, we shall explain price discrimination and profit maximisation taking into account the costs of production. The aim of a monopolist is to maximise his total profits. For this, he has to consider costs of production and revenues. We assume as we have done earlier that there are two markets. The monopolist earns maximum profits when marginal revenues in the two markets are equal. And at the same time the marginal revenues are also equal to the marginal costs of the monopolist's total production.

This can be explained with the help of the figure below.

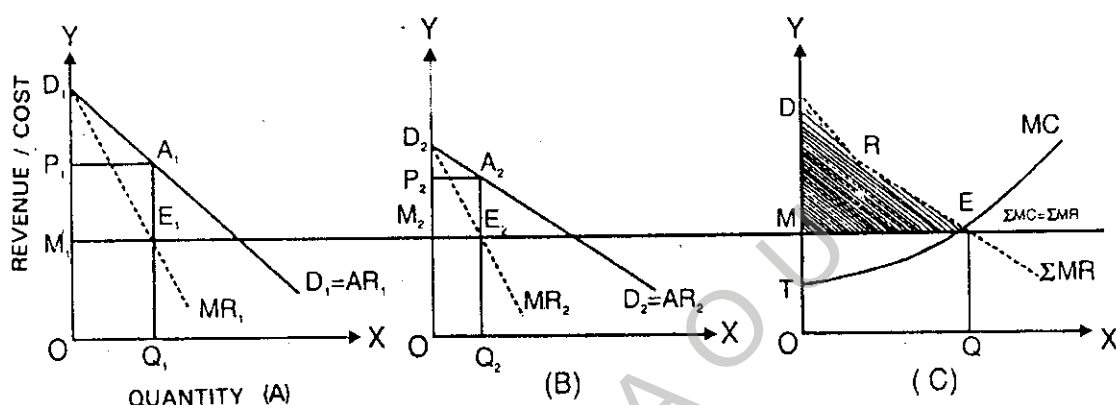


Fig. 17. 16 : Determination of Price and Output under Discriminating Monopoly

Suppose, in Fig. 17.16 there are two markets, I and II and AR_1 and AR_2 respectively are the average revenue curves for them. MR_1 and MR_2 are the corresponding marginal revenue curves respectively. These two markets have different elasticities of demand at each price. Now the monopolist must determine his total output regardless of how it is distributed. For this the monopolist follows the profit maximisation rule where $MC = MR$. We have shown in Figure-17.16 (c) that total (combined) Marginal revenue MR and the marginal cost curve MC for the total output is the horizontal addition of the two separate marginal revenues MR_1 and MR_2 of the individual markets. Now the monopolist will be in equilibrium at point E where $MC = MR$. OQ is the equilibrium level of output. The monopolist faces the problem of distributing the output between the two markets I and II. For this reason, he has to follow the rule $MR_1 = MR_2 = \Sigma MR$. Following this rule, OQ_1 output should be sold in market I and OQ_2 in market II. As the monopolist distributes his total output between the two markets, the marginal revenue MR_1 in market I is equal to the marginal revenue MR_2 in market II. E_1 and E_2 are equilibrium points of market I and II respectively. The price in market I is P_1 and the price in market II is P_2 . The monopolist earns total maximum profits which are equal to the shaded area $DREM$ shown in Figure - 17.-16

17.14 COMPARISON BETWEEN PERFECT COMPETITION AND MONOPOLY

When perfect competition is compared with monopoly, it may be considered superior to the latter because of some merits that it has. Perfect competition and monopoly have some apparent similarities. The aim of both the markets is to maximise profit. Firms in both the markets reach equilibrium situation when $MR=MC$. But there are also fundamental dissimilarities between these two. They are:

- i) In perfect competition, there are number of buyers and sellers. There is distinction between a firm and an industry. There is free competition among the producers. The forces of demand and supply determine the price for the entire industry. All firms sell their product at the ruling price. No firm can change the price by individual actions. Every firm adjusts its output to that price. There is only one price for the same product throughout the market. On the other hand, the firm and industry are one and the same under monopoly. The producer is a price-setter. There is only a single firm and there is no competition.
- ii) In perfect competition, the AR curve or demand curve of a firm is a horizontal straight line parallel to the X-axis. It is perfectly elastic. The marginal revenue curve coincides with it. Under monopoly, the AR curve of a firm slopes downward to the right and the MR curve lies below it.
- iii) Under perfect competition and monopoly, the firms reach the equilibrium stage under the same conditions, i.e $MC=MR$. But there is a difference between price and marginal cost relationship. Under perfect competition when a firm is in equilibrium $MC=MR$ and $MR=AR$ because MR coincides with AR. Then the marginal cost is equal to MR and AR as they are horizontal straight lines parallel to the X-axis. Under monopoly, AR slopes downward to the right, and MR also slopes down and lies below it. That is why, the MR does not coincide with AR. When a firm is in equilibrium $MC=MR$, but MC is not equal to price AR, but $MC=MR < \text{Price} = (AR)$.
- iv) Under perfect competition the firm is in the equilibrium position when the marginal cost curve cuts the MR curve, the horizontal straight line is parallel to the X-axis from below, and MC curve rises upwards from left to right. On the other hand, under monopoly, the firm is in equilibrium, when the MC curve cuts the MR curve from below not only when the MC curve rises, or falls but when it is constant because of MR sloping downward to the right.
- v) In perfect competition, the firm in the long-run will earn only normal profits, but in the short-run it will earn more than normal profits, On the contrary, under monopoly, as there is only one firm in the industry even if the firm incurs losses in the short-run, it will earn abnormal profits in the long-run as there is no chance for new firms to enter the industry.
- vi) Some other important differences between perfect competition and monopoly are explained with the help of figure given below:

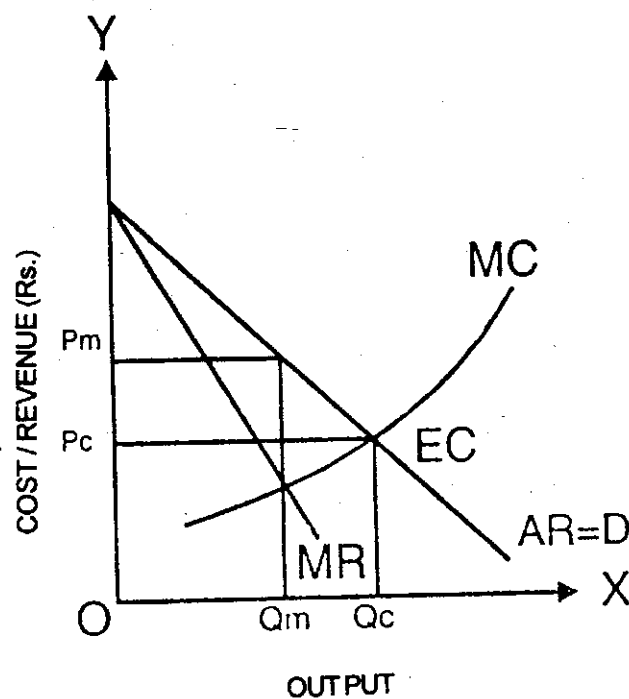


Fig. 17.17 Output Difference between Perfect Competition and Monopoly

EM = Monopoly Equilibrium ($MR = MC$)

EC = Equilibrium in Perfect Competition ($MR = AR = MC$)

If we look at figure 17.17 we notice that under perfect competition the firm reaches equilibrium at EC when MR coincides with AR at the point where $MC = MR = AR$. The quantity produced is OQ_c and the price is OP_c . Under monopoly, the firm reaches equilibrium at E_m where $MC = MR < AR$. The quantity produced is OQ_m and the price is OP_m . Let us compare output and price under both markets. Take monopoly output. It is OQ_m which is less than the output produced under perfect competition OQ_c and the price charged under monopoly is PM which is more than the price charged under perfect competition P_c . This shows that under perfect competition, more goods are available at a lower price, whereas under monopoly, fewer goods are available at higher price. Consumers thus forgo surplus under monopoly. That is why, in recent times there has been a growing demand that public utilities which are under the control of public authorities like Provincial Governments should adopt marginal cost pricing which will be beneficial to the consumer.

17.15 SUMMING UP

This unit has introduced the concept of firm and explained two approaches through which a firm attains equilibrium. A firm is an individual organising unit of control of business activity. It has a basic objective of maximising profits. Equilibrium of the firm is discussed from two view points. Maximising the difference between total revenue and total cost is the first approach. Equalisation of marginal cost with marginal revenue is the other approach. This view point needs two conditions to be fulfilled i.e., $MC = MR$ and the MC curve must cut the MR curve from the below at which profits are maximised.

In the market, quantity demanded and quantity supplied determine the price. Equilibrium price is achieved if the demand and supply are equal. Changes in demand and supply bring about changes in the equilibrium price level and the equilibrium quantity. The importance

of time element in price theory is explained by prof. Marshal. In the market period, demand affects the price. In the short-run the forces of demand and also of supply determine the price. But supply depends on variable inputs only. Fixed capital cannot be changed in the short period. In the long run, there will not be any fixed capital as fixed factors can also be changed. Therefore in the long period, supply and demand forces determine the price, where supply becomes an active variable.

In perfect competition, a firm will be in equilibrium when it gets abnormal profits or normal profits or even losses in the short period. But in the long-run, a firm will always get normal profits. The reason is that, when an industry gets abnormal profits, other firms enter into the industry. In the same way if the industry gets losses, a few firms leave the industry. This process leads to normal profits in the industry in the long-run. Thus, in long-run firms will be in equilibrium when they get normal profits. A monopolist goes on producing goods till the Marginal Revenue equals the Marginal cost. The firm will be in equilibrium at that level of output where it gets maximum profits. The monopolist bifurcates the market on the basis of elasticity of demand and sell the commodity at different prices. This enables him to earn more profits.

17.16 CHECK YOUR PROGRESS : MODEL ANSWERS

1. The two conditions necessary for a firm to attain equilibrium are:
 - (i) $MC=MR$
 - (ii) The MC curve must cut the MR curve from below the point at which profits are maximised.
2. Market period is a very short period in which the production is neither decreased nor increased. In other words, the supply of the product remains fixed. Here, the nature of commodity plays its role in the determination of price
3. The optimum size is the level of output at which the average cost of production is the lowest. If the production is increased beyond this level, diseconomies will set in.
4. The aim of the monopolist is to maximise profits. He goes on increasing his production till marginal revenue equals marginal cost. At this point the firm will be in equilibrium and the firm will get maximum profits.

17.17 MODEL EXAMINATION QUESTIONS

- I. Answer the following questions in about 30 lines each.
 1. What is the equilibrium of a firm? Explain the equilibrium of a firm from the point of view of total cost and total revenue.
 2. Explain diagrammatically the equilibrium of a firm from the point of view of marginal cost and marginal revenue.
 3. What is equilibrium price? How is it determined at different demand and supply conditions?
 4. Explain the price determination in market period and short period.
 5. Explain the determination of the long-run normal price under various cost conditions.
 6. Distinguish between normal price from market price.

7. Explain the equilibrium of a firm and industry in the short-run under perfect competition.
8. Explain the determination of equilibrium price under perfect competition in the long-run.
9. How are price and output determined under monopoly? Illustrate diagrammatically.
10. Explain diagrammatically the determination of price and output under discriminating monopoly.
11. Distinguish between perfect competition and monopoly.

II. Answer the following questions in about 15 lines each.

1. What do you mean by the concept of 'firm'?
2. Distinguish between firm and industry?
3. What are the conditions for a firm to be in equilibrium?
4. Explain the importance of time element in price theory.
5. What is market period? Explain the price determination in the market period.
6. What is normal price? How is it determined in the short period?
7. What is equilibrium price?
8. Explain briefly the concept of optimum firm with the help of a diagram.
9. What is optimum price?
10. Explain the price determination under simple monopoly.

17.18 RECOMMENDED BOOKS

- | | | | |
|----|-------------------|---|---------------------------------------|
| 1. | M.L. Seth | : | Principles of Economics |
| 2. | M.L. Jhingan | : | Micro-Economic Theory |
| 3. | Stonier and Hague | : | A Text Book of Economic Theory |
| 4. | V.G. Mankar | : | Business Economics |
| 5. | D.M. Mithani | : | Principles of Economics |
| 6. | H.S. Agarwal | : | Micro Economics |

17.19 GLOSSARY

- | | | |
|-----------------------------|---|--|
| Equilibrium | : | A state in which forces making for change in opposing directions are perfectly balanced. |
| Equilibrium Price | : | The price at which a market is in equilibrium |
| Equilibrium Quantity | : | The quantity of a good which bought and sold when a market is in equilibrium. |

Firm	:	A business formed for the purpose of carrying down some kind of economic activity.
Normal Profit	:	The amount of profit required to keep an entrepreneur in a particular line of production.
Optimum Firm	:	A firm which has reached its most efficient size.
Price Discrimination	:	The practice of charging different prices to different customers for the same commodity.
Short-Run	:	A time period within which a firm is not able to vary all its factors of production
Short Run Cost Curves	:	Curves showing the functional relationship between short - run total costs, average costs, marginal costs and output.

BRAOU

UNIT-18 : PRICING POLICIES AND METHODS

Contents

- 18.0 Aims and Objectives
- 18.1 Introduction
- 18.2 Meaning of Price and Pricing
- 18.3 Objectives of Pricing
- 18.4 Determinants of Price
- 18.5 Pricing Policies and Pricing Methods
- 18.6 Pricing of New Products
- 18.7 Price Discrimination
- 18.8 Summing Up
- 18.9 Check Your Progress : Model Answers
- 18.10 Model Examination Questions
- 18.11 Recommended Books
- 18.12 Glossary

18.0 AIMS AND OBJECTIVES

The aim of this unit is to explain the objectives of pricing, different pricing policies and methods, and price discrimination adopted by various firms.

After studying this unit, you should be in a position to :

- explain the meaning of price and pricing;
- list out the objectives of pricing;
- identify the features of different pricing methods ;
- describe various pricing strategies ;
- explain new product pricing ; and
- analyse the concept of price discrimination.

18.1 INTRODUCTION

Pricing decision is a major factor in determining a firm's long-term success or failure. Economic theory explains the determination of price by the forces of supply and demand which, in turn, are influenced by some other factors. It may, therefore, be said that the interaction of supply and demand depends upon several factors. How prices are determined under different market situations-namely, Perfect Competition, Monopoly, Oligopoly-has been explained in the previous unit. This explains the objectives of product pricing, the

policies of product pricing and various methods determining the basic price, and also the concept of price discrimination. The unit also reviews the various practices that help management in taking proper pricing decisions....

18.2 MEANING OF PRICE AND PRICING

The economists' focus on price for two reasons. Firstly, price is readily measurable, and provides an objective, quantifiable means for comparing competing products. Secondly, the price of its product is something over which the firm has direct control; the firm can quickly and easily change price, whereas to change other aspects of the product requires considerable time and effort.

In economic sense, the utility of a commodity expressed in terms of money is price. Hence, price is the amount of money demanded by a seller in exchange for giving a product or service to a buyer. However, pricing is a continuous process with multi-task orientation. The first task of pricing is to determine the basic price of the product, the second task is to plan and provide for discount structure, and the third and final task is to offer the product on a product-line. It is very important that the prices of products shall coincide with the objectives of the firm and ensure easy implementation and better control for the management of the firm.

Check Your Progress-I

Explain the terms 'price' and 'pricing'.

.....

.....

.....

.....

18.3 OBJECTIVES OF PRICING

The price level set by a firm for its product is not simply a technical matter, but will be influenced by the firm's environment, both external and internal. The external environment of the firm includes market structure, potential new entry, and likely government intervention. The internal environment of the firm includes the objectives of the firm. The objectives of the firm are :

- i) To get a target rate of return.
- ii) To achieve the expected rate of growth in sales.
- iii) To sustain and increase the market share.
- iv) To stabilise prices and margins.
- v) To help early recovery of cash
- vi) To continue the existing favourable climate for the firm.

The pricing policy of a firm should be such that profits are maximised for the entire product line. Pricing should take care of the long-run welfare of the firm and at the same

time, should discourage the competition in the market to the extent possible. Prices should be flexible and adoptive to the needs of different competitive situations. Prices shall also take care of cyclical variations. The price of the product is influenced by, and in turn influences, all aspects of the product and the firm. Thus, pricing may be studied from many different perspectives mainly its role and function.

18.4 DETERMINANTS OF PRICE

The setting of prices involves three major areas of information-costs, competition and consumer demand. The first of these is derived from internal sources whereas the second and third involve the external environment. External information will cover such matters as the extent of the market or markets, the nature of competition within these markets and the influence of the Government. Each of these matters involves a wide range of subsidiary questions. Internally there will be questions of costs, volume of production, size of stocks and required profit. The following are the important factors that determine the price of a commodity.

- a) the demand for the commodity
- b) its cost of production
- c) objectives of its producers
- d) nature of the competition in its market, and
- e) government policy pertaining to the product and the industry

Check Your Progress-2

List out the objectives of pricing.

.....

.....

.....

.....

18.5 PRICING POLICIES AND METHODS

It is now imperative to discuss the various pricing methods generally adopted by the firms. These methods are :

a) COST-PLUS PRICING

This method is also known as full-cost pricing. It means the level of price, which covers total cost plus a predetermined mark-up. Mark-up means the contribution margin to cover fixed costs and profits. This method is quite popular with businessmen, as it is-

- (i) simple to compute and is believed to assure profitable business;
- (ii) considered by some as a scientific approach to pricing as it eliminates subjectivity; and

- (iii) considered a satisfactory method of taking care of business uncertainties and ignorance.

Cost-plus pricing may be classified into two categories based on the nature of mark-up viz., rigid cost-plus, and flexible cost-plus. In rigid cost-plus pricing, the price is determined by adding a fixed percentage to cost. The mark-up is added to variable (direct) cost, where mark-up is large enough to cover up overhead (fixed) costs and profits. In the flexible cost-plus pricing different mark-ups are used on the categories of fixed and variable costs rather than a rigidly fixed mark-up over total cost. The mark-up on different cost elements takes account of the competition and demand in the input market and is, therefore, scientific and more reliable. In flexible mark-up, different firms in the industry allow different mark-up for each category of cost; depending on the importance of that category of cost in the total cost and the technology used by the firm.

b) MARGINAL COST PRICING

The marginal cost pricing implies that the price of the product is based on the incremental cost of production. Unlike the full-cost pricing, which is based on average cost, the incremental cost pricing is based on variable cost only. Thus, the difference between the two prices would be fixed cost. The full-cost pricing is a long period phenomenon whereas the incremental cost pricing is a short period phenomenon. Marginal cost pricing is quite useful for pricing over the life cycle of the product. Marginal cost pricing allows a firm to develop a far more aggressive pricing policy than does the cost-plus. It will be useful for multi-product, multi-process and multi-market firms.

c) TRANSFER PRICING

Vertical integration is common in modern economic systems. A firm is said to be vertically integrated when it operates at more than one stage of the production process. Transfer pricing refers to the determination of the price of the intermediate products sold by one semi-autonomous division of the same firm. It is essential in determining the optimal output of each division and of the firm as a whole, and in evaluating divisional performance and determining divisional rewards. However, profit maximisation for the combined firm requires that those intermediate products be correctly priced. The correct transfer price for an intermediate product will be as follows :

- i) If there is a perfectly competitive external market for an intermediate good, market forces will cause the price of the good to approach marginal cost, and no managerial pricing decision will be necessary.
- ii) In the absence of an external market, profit maximisation requires that the price of each intermediate good is set equal to its marginal cost.

d) TARGET PRICING

This technique aims to provide a target rate of return on total costs at a specified volume. First, estimate percentage of capacity at which the plant is expected to operate in the period under consideration. Calculate the costs of producing this output, and specify the target rate of return. Then mark-up total costs by the target rate of return. The result equals target revenue. Finally, divide the target revenue by planned output. The resultant figure is the price. A special case of target pricing is break-even pricing, where the target rate of return is zero. Given the objective of breaking-even within the time under consideration, management may calculate the prices required to break-even at different levels of output.

The pricing decision then becomes a matter of judgement: "Can we achieve break-even sales quantity at this price?"

e) LOSS LEADER PRICING

Loss leader pricing is also called traffic builder pricing. A firm to build the traffic for the firm adopts such a pricing. A loss leader is a commodity sold at a price that represents a lower than normal mark-up; indeed, loss leaders are often sold below cost. The intention is that the bargain(s) of the loss leader(s) will attract customers, who will then buy other commodities from the seller. The profits earned from these other sales more than make up for the losses sustained on the loss leader(s). Supermarkets often adopt this strategy, offering temporary discounts on certain items, or a more permanent strategy of low price for certain high volume goods, e.g. oil tins. To the extent that loss leaders impose costs on the seller, the strategy may be seen as a type of sales promotion.

f) PRODUCT BUNDLING

Bundling is the practice of selling two or more products together for a single price. When the products are only available as a package, the pricing strategy is referred to as pure bundling. If at least some products can also be purchased separately, then the firm is using mixed bundling. Bundling allows firms to increase their profits by extracting additional consumer surplus. Hotels and restaurants adopt bundling for a meal offered by them. Similarly, motor cars are offered with stereo, air-conditioning, power windows, along with the basic car model.

g) PEAK LOAD PRICING

Peak-load pricing can reduce costs and increase profits. The practice is appropriate when three conditions are met. Firstly, the same facilities must be used to provide product or service at different times. Secondly, the product or service must not be storable. Thirdly, demand characteristics of consumers must vary from period to period. With peak-load pricing, peak-period consumers will pay most of the capacity costs, while off-peak users will be charged a price based on variable costs. Peak load pricing is effectively used by telecommunication industry.

h) PRODUCT-LINE PRICING

Modern firms produce more than a single product. As a result, its pricing policy shall aim at maximising profit on the entire line rather than on an individual product. Price for each item will then be set with consideration for the prices of the other items within the product line. Such considerations arise when items within a product line :

- i) are substitutes or complements;
- ii) share common costs ; and
- iii) face different degrees of competition.

Most of the fast moving consumer good (FMCG) firms adopt product-line pricing, e.g., different brands of detergent powders/cosmetic soaps from the same firm are offered to customers at different prices.

price of its product is something over which the firm has direct control; the firm can quickly and easily change price, whereas to change other aspects of the product requires considerable time and effort. However, pricing is continuous process with multi-task orientation. The first task of pricing is to determine the basic price of the product, the second task is to plan and provide for discount structure, and the third and final task is to offer the product on a product-line.

The price level set by a firm for its product is not simply a technical matter, but will be influenced by the firm's environment, both external and internal. The external environment of the firm includes market structure, potential new entry, and likely government intervention. The internal environment of the firm includes the objectives of the firm. The setting of prices involves there major areas of information-costs, competition and consumer demand. The first of these is derived from internal sources whereas the second and third involve the external environment.

The pricing policy of a firm should be such that profits are maximised for the entire product line. Pricing should take care of the long-run welfare of the firm and at the same time, should discourage the competition in the market to the extent possible. Prices should be flexible and adoptive to the needs of different competitive situations. Various pricing methods generally adopted by firms are-

Full-cost pricing means the level of price which covers total costs plus a predetermined mark-up. The *marginal cost pricing* implies that the price of the product is based on the incremental cost of production. *Transfer pricing* refers to the determination of the price of the intermediate products sold by one semi-autonomous division of the same firm. *Target pricing* aims to provide a target rate of return on total costs at a specified volume. *Loss leader pricing* is also called traffic builder pricing. A firm to build the traffic for the firm adopts such a pricing. *Bundling* is the practice of selling two or more products together for a single price. In *peak-load pricing*, peak-period consumers will pay most of the capacity costs, while off-peak users will be charged a price based on variable costs. Modern firms produce more than a single product; as a result its pricing policy shall aim at maximising profit on the entire line rather than on an individual product. Price for each item will then be set with consideration for the prices of the other items within the product line.

Price is likely to be most important at the early stages of introduction in cases where the product has no more than a small degree of novelty. If there are no close substitutes, price may well be a secondary factor at the early stages of introduction to the market. The product pioneer, as Joel Dean pointed out, has a choice between two basic strategies. The first is Skimming pricing-initially charging a high price to attract quality sensitive customers. The second is Penetration pricing-initially charging a low price to attract the price sensitive customers to have a taste of the commodity.

Price discrimination is charging different prices for the same product in different markets, or market segments. Different buyers may be charged different prices or the same buyer may be charged different prices for the same commodity on the basis of income, nature, age and sex, use, etc.

18.9 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Price is the utility of a commodity expressed in terms of money. It is the amount of money demanded by a seller in exchange for a product. Pricing is nothing but determining the price of the product. It also includes planning and providing for discount.

2. the important objectives of pricing are :
 - (i) to maximise the profits for the entire product line ;
 - (ii) to discourage the competition to the extent possible ; and
 - (iii) to take of cyclical variations.
3. Bundling is the practice of selling two or more products together for a single price. When the products are only available as a package, the pricing strategy is referred to as pure bundling. If at least some products can also be purchased separately, then the firm is using mixed bundling.
4. Firms adopt penetration pricing policy to attract price sensitive customers to have a taste of the product. The motive of the firm is to establish market share first and then gradually move to more profitable price.

18.10 MODEL EXAMINATION QUESTIONS

I Answer the following questions in about 30 lines each.

1. What is price discrimination ? What are the conditions and types of price discrimination?
2. What is pricing ? Explain the pricing of new products.
3. What are the different pricing methods usually adopted by the firms ?

II Answer the following questions in about 15 lines each.

1. What is pricing ? What are its objectives ?
2. What is transfer pricing ?
3. What do you mean by skimming price ?
4. What are the conditions for penetration pricing policy ?
5. Distinguish between cost-plus pricing and marginal cost pricing.
6. List out the determinants of price.

18.11 RECOMMENDED BOOKS

1. H. Craig Petersen & H. Cris Lewis: **Managerial Economics**
2. N.D. Mathur : **Business Economics**
3. P.L. Mehta : **Managerial Economics**
(Analysis, Problems and Cases)
4. Dr. Atmanand : **Managerial Economics**

BRAOU

UNIT-19 : NATIONAL INCOME : CONCEPTS AND MEASUREMENT

Contents

- 19.0 Aims and Objectives
- 19.1 Introduction
- 19.2 Definition of National Income
- 19.3 Circular flow of Income
- 19.4 Methods of Measuring National Income
 - 19.4.1 Product Approach
 - 19.4.2 Income Approach
 - 19.4.3 Expenditure Approach
- 19.5 Concepts pertaining to National Income
- 19.6 Problems in Measurement of National Income
- 19.7 Comparison of National Income Estimates Over Time
- 19.8 Comparison of National Income Estimates Across Countries
- 19.9 National Income and Economic Welfare
- 19.10 Summing Up
- 19.11 Check Your Progress : Model Answers
- 19.12 Model Examination Questions
- 19.13 Recommended Books
- 19.14 Glossary

19.0 AIMS AND OBJECTIVES

This unit aims at discussing various concepts and measurement of national income.

After studying the unit, you should be able to :

- define the concept of national income ;
- explain the circular flow of income in an economy ;
- explain the different concepts pertaining the national income ;
- describe the methods of measuring the national income ;
- identify the problems in the measurement of national income ; and
- trace the relationship between national income and economic welfare.

19.1 INTRODUCTION

It is a common practice to classify some countries as rich and others as poor. Similarly, some countries are classified as fast growing while others are classified as slow growing countries. In order to make such statements, it is necessary to understand the level of aggregate economic activity. But an economy is very complex involving the production of a variety of goods and service. In order to understand the behaviour of such an economy, we need some indicators or measures of performance. The national income is an important yardstick of the performance of the whole economy.

The national income is commonly understood to be the total income of a nation like the income of an individual. However, the concept is not so simple because all the income of an individual cannot be considered national income. Similarly, some part of the national income will not accrue to individuals. Hence, the concept of national income deserves special attention. Further, there are many concepts which are closely related to national income. A knowledge of these concepts is essential for understanding the effects of various policies on the aggregate economic activity.

19.2 DEFINITION OF NATIONAL INCOME

Let us now, study some of the important definitions of national income. Simon Kuznets, a modern economist, has defined National Income as "the net output of commodities and services flowing during the year from the country's productive system in the hands of ultimate consumers". The United Nations, in one of its reports, has defined the national income on the basis of the systems of estimating national income as "the net national product, as addition to the shares of different factors and as net national expenditure in a year's time". According to the committee on Distribution of Income and Levels of Living (Government of India) an estimate of national income is a measure of the total output of commodities and services during a given period, reckoned without duplication.

From the above definitions, it is clear that national income is the money value of the annual flow of final goods and services in the national economy. Some aspects of this definition deserve to be examined. First, it should be noted that it is a concept relating to value. Since a variety of goods and services which are heterogeneous in nature are produced in an economy, their physical quantities cannot be aggregated. Hence, the measuring rod of money should be used for aggregating these diverse outputs. Secondly, the national income is a flow concept. It represents production during a given period. It is common to take the year as the unit of time in measuring the national income. Thus the national income is the money value of the goods and services produced in a particular year. Finally, the national income represents the value of **final goods and services** produced during the year. The word, 'final', should be kept in mind. While estimating the national income, all the goods and services produced during the year should not be considered. Only the final goods and services can be considered.

There are some goods which are used in the production of some other goods. These are called **intermediate goods**. For instance, wheat used in the production of bread is an intermediate good whereas bread is a final good. In other words, final goods are not used in further production. It may be noted that it is difficult to classify each good as intermediate or final because some part may be used as intermediate good and some other as final good. For instance, wheat when used in the manufacture of bread is an intermediate good while the same good when consumed is a final good. The value of bread includes the value of

some control over price. Secondly it must be possible to group different markets in terms of the price elasticity of demand in each. And thirdly, the firm's markets must be separable; meaning those products cannot be purchased in one market and then resold in another.

A.C. Pigou, a renowned economist identified the following types of price discrimination::

1. **First degree discrimination** : It involves charging the maximum price possible for each unit of output. It is the most extreme form of price discrimination and the most profitable pricing scheme for the firm. Because, buyers are charged the maximum price for each unit of output. However, it is not common, as it requires the seller to have complete knowledge of the market and interests of consumers. This type of price discrimination is not in practice in the present day market scenario.

2. **Second degree discrimination** : It is an imperfect form of first degree discrimination. Instead of setting different prices for each unit, it involves pricing based on the quantities of output purchased by individual consumers. It is often used by electricity department, high price for heavy consumer and vice-versa. Similarly, to encourage high consumption of soft drinks, soft drink manufacturers charge more for small quantities and less for larger quantities.

3. **Third degree discrimination** : It is most common and widely used price discrimination. It usually requires setting a higher price in markets with less elastic demand. Markets may be segmented on the basis of :

- (i) **Income** : A doctor may charge different fee to different patients according to the variations in their income
- (ii) **Nature** : Off-season pricing for refrigerators, air/water coolers, fans, etc.
- (iii) **Age and Sex** : Concessional Railway tickets to Senior citizens and school/college going girls.
- (iv) **Time** : Parks and Zoos charge less on working days and more on holidays.
- (v) **User** : Andhra Pradesh Road Transport Corporation charges differently for different bus services (high-tech, deluxe, semi-luxury, super-express, ordinary).

Check Your Progress - 4

What is the main objective of penetration pricing policy ?

.....

.....

.....

.....

18.8 SUMMING UP

Pricing decision is a major factor in determining a firm's long term success or failure. The economists focus on price for two reasons. Firstly price is readily measurable, and provides an objective, quantifiable means for comparing competing products. Secondly, the

price of its product is something over which the firm has direct control; the firm can quickly and easily change price, whereas to change other aspects of the product requires considerable time and effort. However, pricing is continuous process with multi-task orientation. The first task of pricing is to determine the basic price of the product, the second task is to plan and provide for discount structure, and the third and final task is to offer the product on a product-line.

The price level set by a firm for its product is not simply a technical matter, but will be influenced by the firm's environment, both external and internal. The external environment of the firm includes market structure, potential new entry, and likely government intervention. The internal environment of the firm includes the objectives of the firm. The setting of prices involves there major areas of information-costs, competition and consumer demand. The first of these is derived from internal sources whereas the second and third involve the external environment.

The pricing policy of a firm should be such that profits are maximised for the entire product line. Pricing should take care of the long-run welfare of the firm and at the same time, should discourage the competition in the market to the extent possible. Prices should be flexible and adoptive to the needs of different competitive situations. Various pricing methods generally adopted by firms are-

Full-cost pricing means the level of price which covers total costs plus a predetermined mark-up. The *marginal cost pricing* implies that the price of the product is based on the incremental cost of production. *Transfer pricing* refers to the determination of the price of the intermediate products sold by one semi-autonomous division of the same firm. *Target pricing* aims to provide a target rate of return on total costs at a specified volume. *Loss leader pricing* is also called traffic builder pricing. A firm to build the traffic for the firm adopts such a pricing. *Bundling* is the practice of selling two or more products together for a single price. In *peak-load pricing*, peak-period consumers will pay most of the capacity costs, while off-peak users will be charged a price based on variable costs. Modern firms produce more than a single product; as a result its pricing policy shall aim at maximising profit on the entire line rather than on an individual product. Price for each item will then be set with consideration for the prices of the other items within the product line.

Price is likely to be most important at the early stages of introduction in cases where the product has no more than a small degree of novelty. If there are no close substitutes, price may well be a secondary factor at the early stages of introduction to the market. The product pioneer, as Joel Dean pointed out, has a choice between two basic strategies. The first is Skimming pricing-initially charging a high price to attract quality sensitive customers. The second is Penetration pricing-initially charging a low price to attract the price sensitive customers to have a taste of the commodity.

Price discrimination is charging different prices for the same product in different markets, or market segments. Different buyers may be charged different prices or the same buyer may be charged different prices for the same commodity on the basis of income, nature, age and sex, use, etc.

18.9 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Price is the utility of a commodity expressed in terms of money. It is the amount of money demanded by a seller in exchange for a product. Pricing is nothing but determining the price of the product. It also includes planning and providing for discount.

wheat, sugar, etc., used in the process of production. Hence, if the value of bread as well as the value of wheat are added, it leads to double counting. To avoid double counting only the value of the final goods and services should be aggregated.

Check Your Progress-1

Define the concept of "National Income".

.....

.....

.....

.....

19.3 CIRCULAR FLOW OF INCOME

Any modern economy will consist of a vast network of interlocking relationships. One of the important aspects of these relationships involves the relations among total production, income and spending. These relationships in a simplified form reveal the circular flow of income.

To understand the concept, let us consider a simple hypothetical economy in which there are two sectors-the business sector and the household sector. The business sector employs the factors of production and produces goods for sale. The household sector, which is assumed to own the factors of production, supplies factor services and consumes the output produced by the business sector. Hence, the economic agents in the household sector are called 'consumers' whereas those in the business sector are called 'producers'. Two types of transactions take place between these two sectors. First, the household sector provides factor services to the business sector and in return receives goods and services from the business sector. These flows are in real terms and one flow exactly balances the other. They take place in terms of income and expenditure. The household sector receives income for the factor services rendered to the business sector and gives it back to the business sector by way of consumption expenditure. These flows are shown in Fig. 19.1. It can be noticed that money flows are in reverse direction to real flows. This is so because when the business sector is supplying goods and services to the household sector, it in return receives money from the household sector.

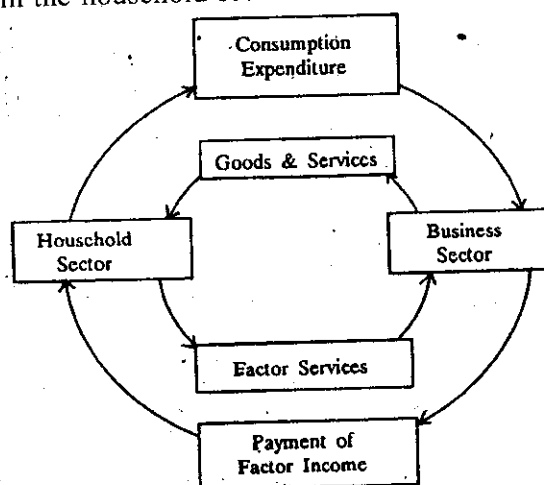


Fig. 19.1 : Circular Flow of Income

The analysis given above represents a very simplified case and hence it is only hypothetical. The real world situation is more complex than it is for the following reasons. Firstly, it is assumed that the economy has no economic relations with the outside area. Such an economy is called a **closed economy**. In reality all the economies are more or less open. Secondly, it is assumed that there are no Government operations such as government expenditure and taxes. Thirdly, it is assumed that production occurs only in the business sector. But Government may also participate in the production activity. Fourthly, consumers are assumed to spend their entire income in the form of consumption expenditures. It means that there is no household saving. Finally, it is assumed that the producers will sell all they produce and there is no inventory accumulation in the business sector. Given these assumptions, production equals sales and income equals expenditure. Hence the circle is complete and it will have a tendency to continue as long as it is not disturbed by external factors. Even if we drop some of these assumptions, the basic mechanism of the circular flow remains unchanged.

If we introduce the Government sector without its undertaking any productive activity and if we assume that some part of the household income is saved, the relations becomes more complex. They are shown in Fig. 19.2.

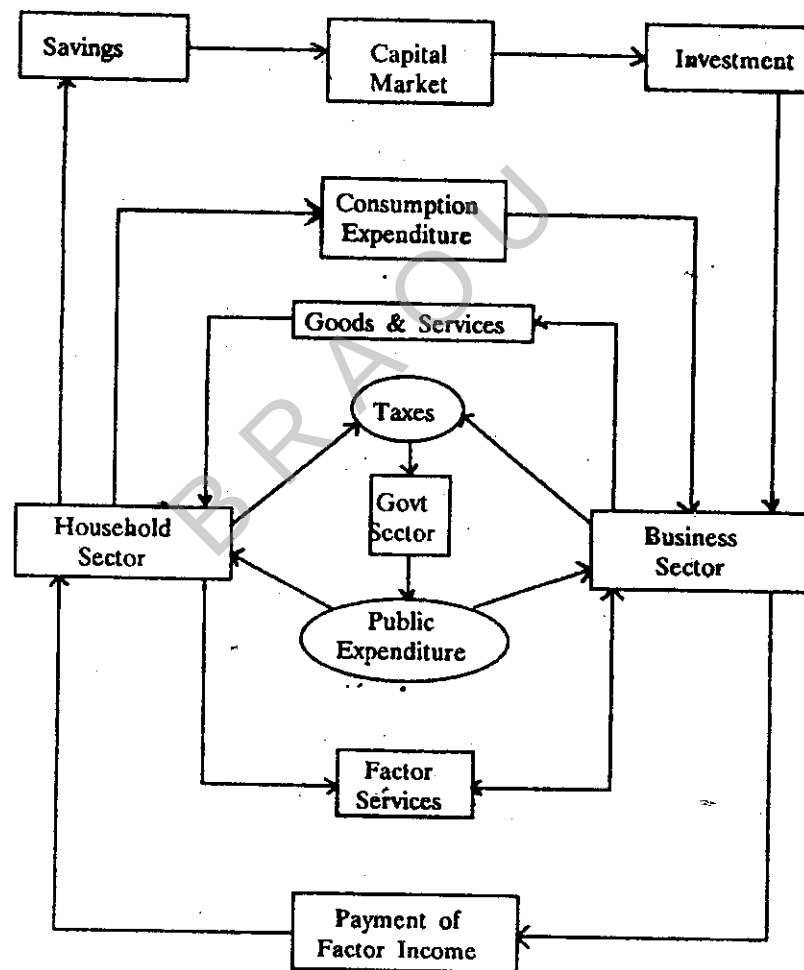


Fig 19.2 : Circular Flow of Income

In this new situation, the household savings will go to the business sector as investment. Further, the Government is receiving taxes and the amount does go partly to the household sector and partly to business sector.

19.4 METHODS OF MEASURING NATIONAL INCOME

Basically, there are three ways of considering the circular flow of income. Production generates income and it in turn, generates spending. We can measure the national income either at the production stage, the income stage or expenditure stage. National income estimated by all these methods would be the same amount. These alternative ways of looking at the flow of income are known as the **Product Approach, the Income Approach and the Expenditure Approach** respectively.

Before we take up the methods of measuring national income, it is necessary to know the different concepts pertaining to national income. They are : Gross National Product, Net National Product, Net National Income at Factor cost, Net Domestic Product at Factor Cost, Personal Income, Disposable Income and Real Income.

Let us first explain the concept of Gross National Product (GNP). It is the total measure of the flow of goods and services at market value resulting from production during a year in a country. It also includes net income from abroad. It includes four types of final goods and services, viz.,

- (i) Consumers goods and services;
- (ii) Capital goods ;
- (iii) Goods and services produced by the Government ; and
- (iv) Net exports of goods and services i.e., net income from abroad (The difference between value of exports and imports of goods and services).

The GNP shows a rise or decline due to an increase or decrease in the prices. In order to have comparable national income estimates, a particular year (when prices are normal) is taken as the base year and the GNP is adjusted with the index number for that year. Presently, in our country the national income is estimated with 1993-94 as the base year. This will be known as GNP at constant prices.

We now discuss in detail how national income, which is referred to GNP, is measured by using each of the three methods (approaches) mentioned above.

19.4.1 PRODUCT METHOD

The final output in a modern economy consists of a large number of goods like apples, bread, shirts, chairs, computers, etc., and services like medical, legal, educational, domestic, etc. Let us denote the quantities of these final outputs produced in a given year by $Q_1, Q_2, \dots, Q_n$ and the respective market prices by $P_1, P_2, \dots, P_n$. Then according to product approach the size of the national income will be equal to the sum of the annual flow of final goods and services valued at their market prices.

$$\text{National Income} = P_1Q_1 + P_2Q_2 + \dots + P_nQ_n$$

$$= \sum_{i=1}^n P_iQ_i$$

While measuring the value of total goods and services, we face the problem of double counting. As we know, the output of one industry becomes the input of another industry. The problem of double counting is avoided by using the value added concept, i.e., by defining the production of each firm as its value added. The value added is the difference between the output of a firm and the costs of raw materials and other inputs it purchased from other firms. It means the amount added to the value of the output by the firm's own activities. When we add the sum of values added by all the firms in the economy, we get national output of a country. This method is also known as Value Added Method which avoids the problem of double counting.

19.4.2 INCOME APPROACH

According to this approach, the national income is the aggregate value of the factor earnings generated by the production of final output. The value of final output of commodity is reflected in the factor incomes, namely, rent, wages, interest and profits. Thus, if these incomes earned by the factors of production are aggregated in respect of all the goods and services, the result will again be the national income.

$$\begin{aligned} & P_1Q_1 + P_2Q_2 + \dots + P_nQ_n \\ &= (R_1 + R_2 + \dots + R_n) + (W_1 + W_2 + \dots + W_n) + (I_1 + I_2 + \dots + I_n) \\ &= + (Pr_1 + Pr_2 + \dots + Pr_n) \end{aligned}$$

Where R_1 , W_1 , I_1 and Pr_1 denote respectively the flow of rent, wages, interest and profits generated by the production of good 1.

19.4.3 EXPENDITURE APPROACH

The National Income can also be measured by aggregating the expenditures on the final goods and services. It can be measured by aggregating the flows of expenditure on final goods and services incurred by each of the three main sectors involved, viz., the household sector, the business sector and the Government sector.

For obvious reasons, these three approaches yield identical results. This is evident from the circular flow diagram. If we are adopting the product approach or the expenditure approach, we are measuring the upper half of the circular flow. If we are following the income approach, we are measuring the lower half of the circular flow.

Estimation of National in India

The task of National Income Estimation in India is entrusted to the Central Statistical Organisation (CSO). The CSO publishes the Annual National Accounts Statistics which contains the information on various aspects of the country's national income. It broadly classifies the economy into different industrial sectors viz., Primary, Secondary; Transport, Communication and Trade; Finance and Real Estate; Community and Personal Services; and Foreign Sector. The GNP (at factor cost) is arrived at by adding the gross output in all the sectors including the net factor income from abroad in case of the last one i.e., Foreign Sector.

As regards the methods of estimation of national income India, it is not possible to use a single method. The product method is used in case of measuring national income generated in the primary sector. As far as the secondary activities are concerned, the production method is applied for manufacturing activities. While in construction activities the value

added is estimated by the expenditure method using data from sample survey, budget documents, etc. And income method is used for estimating the added in the remaining sectors.

19.5 CONCEPTS PERTAINING TO NATIONAL INCOME

We have already discussed the concept of Gross National Product. If net exports of goods and services is not included then it becomes **Gross Domestic Product**. The national income is always expressed in money terms. In other words, one has to use prices to estimate income. In this context we can distinguish between two types of prices. One set of prices relates to prices prevailing in the market. These are known as **market prices**. These prices include cost of intermediate products, payments made to primary factors, viz., land, labour, capital and organisation, and also the indirect taxes and subsidies. The income estimated by using these market prices is known as *national income at market prices*.

If the component of net indirect taxes, i.e., indirect taxes less subsidies, is subtracted from the market price, we arrive at another set of prices known as '*factor cost*'. Using the factor cost data, we arrive at the national income at factor cost. Thus the national income at market prices and that at factor cost differ by net indirect taxes :

National income at market prices = National income at factor cost + net indirect taxes.

Another distinction made in the national income analysis is between gross income and net income. As has been already pointed out, the total of incomes received by the factors of production yields the national income. One of these factors of production is capital. In the process of production some part of the capital will be used up and this is known as 'depreciation'. In order to maintain the level of the capital, investment should take place to recoup the used up capital. Hence it is customary to subtract the depreciation from the aggregate income. In such a case, what is arrived at is the net national income. If no deduction is made for depreciation, the income is called gross national income. Thus, the **gross national income** and net national income differ by depreciation :

Gross National Income = Net National Income + Depreciation

Two more concepts of income are important. One concept relates to domestic income and the other to national income. Domestic income is the income which originates in the country. It is the income generated within the geographic boundaries of the country. But some part of this income may go to other countries, if the factors of production are owned by them. Similarly, the country under consideration may get some income if its residents own factors of production in other countries. If the income going out of the country is subtracted and the income coming into the country is added to the domestic income, we arrive at the national income. In other words, in respect of the national income we consider the income accrued to the nationals of the country whereas in the case of domestic income we consider the income which has originated in the country. From the distinction set forth we derive eight concepts of national income. They are shown below :

	Category A	Category B
Type I	1. Gross national product at market prices	1. Gross domestic product at market prices
	2. Net national	2. Net domestic

	product at market prices	product at market prices
Type II	1. Gross national product at factor cost	1. Gross domestic product at factor cost
	2. Net national pro- duct at factor cost	2. Net domestic product at factor cost

The difference between Category A and Category B is the net factor income from abroad. The difference between Type I and Type II is the net indirect taxes (indirect taxes less subsidies). The difference between the two concepts in each type is depreciation.

All the eight concepts of national income discussed above do not tell us anything about the income accruing to the household sector. This is so because a part of the total income which accrues to the factors of production is not paid out to the individuals who own these factors of production. For instance, corporate taxes and undistributed profits do not form a part of the income of the factor owners. On the other hand, individuals actually receive some income which cannot be considered to be payment for factor services rendered in the current year. The standard examples of this type of payments are gifts, pensions, relief payments and other welfare payments. These payments are called transfer payments. *Personal income* is derived by subtracting some part of factor income which is not accruing to the households and adding the transfer payments :

Personal income = net national product at factor cost
 - undistributed profits
 - corporate taxes
 + transfer payments

Another concept of income arises because the entire personal income cannot be used by the individuals. This is so because individuals have to pay personal taxes out of personal income. The balance after deducting personal taxes from personal income is called *disposable income*. The disposable income may be used either for consumption or saving :

$\text{Disposable Income} = \text{Personal Income} - \text{Personal Taxes} = \text{Consumption} + \text{Saving}.$

Per Capita Income : It is another important concept. It is the average income of the people in a particular year. We get the per capita income by dividing the national Income by the population of the country. This concept enables us to know about the standard of living of the people.

Check Your Progress -2

What is Gross National Product?

.....

.....

.....

Check Your Progress -3

What is NNP at Market Prices?

.....

.....

.....

19.6 PROBLEMS IN MEASUREMENT OF NATIONAL INCOME

Many conceptual difficulties arise while measuring the national income. These difficulties arise while demarcating the productive activity, evaluating the non-marketed output and distinguishing the intermediate good from the final good. Let us consider the three problems.:

(i) Demarcation of Productive Activity

In order to compute the national income, first of all, the activities to be included in the measurement should be delineated. It appears very simple if we say that only productive activities should be included. A productive activity can be defined as the one which uses scarce resources in the production of goods and services to satisfy human wants. However, not all activities that result in human satisfaction can be included because it will not lead to a meaningful measure. Hence, a demarcation has to be made between activities which can be treated as productive for measuring national income and those which are too general in nature to be included in the national income measurement.

As a general rule, all the activities resulting in the production of marketable goods and services are included in the calculation of the national income. However, the institution of market for distinguishing productive from unproductive activities is not helpful when we move from developed countries to developing countries in which household enterprise dominates the productive activity and in which goods are produced for self-consumption.

The demarcation between productive and unproductive activities is based more on convention than on logic. For instance, take the case of a boy who is given pocket money by his father and he in turn renders some personal service like cleaning his bicycle. In this case, the service rendered by the boy is not included in national income on the ground that it constitutes personal service rendered within the household. On the other hand, if the boy is delivering newspapers, his services are included in the national income.

This method of exclusion of services rendered at home leads to complications. By convention, the services of housewives are not included in the national income. But the services of a cook will be treated as a part of the national income. Because of this convention, if a cook later become a housewife there would be a decline in the national income. Similarly, if a group of housewives makes a formal arrangement under which they cook meals for one another there would be an increase in the national income. In both the cases, there is no change in the annual flow of output in the economy but there are changes in the national income.

The general practice of excluding all types of household activities is more conventional than logical. Moreover, given the socio-cultural structure of the country, so long as the services of housewives do not undergo substantial changes, it does not matter, whether this particular item is included or excluded. But difficulties arise while making international comparisons of national income or comparison of the incomes a country over a fairly long period of time.

(ii) Treatment of Non-Marketed Output

As a rule national income includes only market activity. But there are exceptions. Some non-marketed output is also included. For instance, farmers, especially small and marginal farmers, use a large part of the output produced for self-consumption. This is included in the national income. Similarly, rental value of owner occupied dwellings is also included in the national income. On the other hand, capital gains or losses are not included in the national income. The controversy about non-marketed output is not about its inclusion or exclusion but about the statistical methods of valuation to be followed.

(iii) Distinction between final and intermediate goods

Productive activity involves the production of a large number of goods and services. If all these products are valued and aggregated, it leads to double counting. It is necessary, therefore, to make a distinction between final goods and intermediate goods. The value of the final goods includes the value of the intermediate goods also and hence the counting of both final and intermediate goods results in double counting. So the value of final goods only should be used for estimating national income. The practical difficulty here is the classification of goods into final and intermediate goods. For instance, coal is a final good to the extent used for domestic purposes, but it is an intermediate good when used in the production of steel. Hence instead of classifying commodities as intermediate and final, a method known as value-added method is used to estimate the national income. Value added is obtained by deducting the value of material inputs used from the corresponding value of output. Value-added at a particular stage of production represents the contribution made by the factors of production employed at that stage to the value of final output. It is, therefore, the sum of rent, wages, interest and profits earned by the factors of production at that stage of production. A numerical example may clarify it. Suppose bread is the product in the production of which flour is used as the intermediate good. Obviously, flour comes out of wheat. According to value added method, we consider all the three stages of production, namely, wheat, flour and bread and find the value of the final output.

The following table illustrates the concept :

Stage of production	Value of output (Rs.)	Cost of Intermediate products (Rs.)	Value added (Rs.)
Wheat	80	0	80
Flour	90	80	10
Bread	200	90	110
Total	370	170	200

The table shows that the value of the final good, namely bread is 200 and it can be derived by summing up the value-added at different stages of its production. Thus the value-added in the production of wheat is Rs. 80, that of flour is Rs. 10 and that of bread is Rs. 110, the sum of which is again Rs. 200

19.7 COMPARISON OF NATIONAL INCOME ESTIMATES OVER TIME

Since the national income is always expressed in value terms and prices change from time to time, it is very difficult to compare the national income of one year with that of another. When prices are rising, a rise in the national income may be due to an increase in

either the productive activity or prices or due to both the factors. In order to overcome this difficulty, the national income is computed in two ways. It is computed using the prices of that particular year, in which case the aggregate is known as the national income at current prices. It is also computed using the prices of some past year selected as the base year, in which case it is known as the national income at constant prices. The national income estimated at constant base year prices is also known as 'real national income'.

In order to make comparisons of the national incomes over a number of years, it is necessary to compute real national income. Real national income can be obtained by deflating the national income at current prices by the price index. The price index is the weighted average of prices, the weights being assigned according to the importance of the product. Suppose there are only two items, namely, food and cloth produced in an economy and food accounts for 60 per cent of expenditure and clothing for 40 per cent of expenditure. Also assume that the food price rose from Rs. 5 to Rs. 10 and cloth price from Rs. 15 to Rs. 20. Then the price in the base year would be $0.6 \times 5 + 0.4 \times 15 = \text{Rs. } 9$. In the next period, the aggregate price rose to $0.6 \times 10 + 0.4 \times 20 = \text{Rs. } 14$. Now if we take base year price as 100 the current year price becomes 155.5. This is called 'price index'. If we have national income at current prices and the price index, we can derive the real national income in the following manner :

$$\text{Real National Income} = \frac{\text{Money National Income}}{\text{Price Index}} \times 100$$

The following example illustrates the method of deriving the real national income :

Year	NDP at current prices (Rs. in crores)	Price index	NNP at constant (1990-91) prices
1990-91	34,235	100.0	34,235
2000-01	1,04,201	220.71	47,211

Check Your Progress-4

What is Real National Income ?

.....

.....

.....

.....

19.8 COMPARISON OF NATIONAL INCOME ESTIMATES ACROSS COUNTRIES

The main purposes of comparing national income estimates across countries is to know the extent to which the living standards of one country differ from those of another. But there are practical difficulties in making these comparisons. First, the content and scope of economic activity may differ from country to country. For instance, the scope and coverage of non-marketed activity may differ from country to country. In a developed country many services like motor driving, house painting, furniture repairing, tailoring, etc., are rendered

by the members of the household while in an under-developed country with a semi-feudal social structure they are rendered by others. Secondly, different countries have different currencies and hence they have to be converted to a common monetary basis. It is common to use the official exchange rates for this purpose. However, the official exchange rate does not reflect the true exchange value between the two currencies involved.

An alternative to the use of exchange rates is the use of a single set of prices for both the countries under comparison. But this is operationally difficult because the commodities may differ in quality and because some of the commodities produced in one country may not at all be produced in another country.

19.9 NATIONAL INCOME AND ECONOMIC WELFARE

Through the main function of the national income aggregates is to provide a satisfactory measure of aggregate economic activity, it is quite often used as a measure of welfare. More specifically, it is often assumed that the higher the GNP per capita, the higher is the economic welfare. But this is not true. In fact, the GNP includes some items that ought to be excluded from a measure of welfare while it excludes certain items that are to be included. Hence a number of additions and subtractions have to be made to arrive at a measure of welfare. For instance, the value of leisure is not included in the GNP. Individuals may derive satisfaction out of leisure enjoyed by them. If there is a slight increase in the GNP after a substantial decline in leisure, it is difficult to say that welfare has increased. This difficulty will not arise if the value of leisure is added to the national income.

Another addition to be made is the value of non-marketed personal services like gardening, repairing of furniture, etc., which are not included while measuring the national income.

Similarly, there are several deductions to be made from the national income for measuring welfare. These deductions arise because certain adverse effects resulting from the output generation are ignored while estimating the national income. For instance, air pollution and water pollution may accompany the increase in industrial production but these costs will not be deducted while estimating the national income. If we need a measure of economic welfare, it is necessary to make adjustments for these costs.

Another adjustment that is to be made is in respect of costs like expenditure on the construction of elaborate subway systems in crowded cities, etc. The huge expenditure incurred in building complex and elaborate transportation systems in big cities do not reflect any increase in the welfare of the citizens. Hence such expenditures should be excluded while measuring the economic welfare.

19.10 SUMMING UP

The concept of national income is very useful in the measurement of aggregate economic activity. It is a flow concept and hence refers to a period of time. Usually, one year will be considered for measuring the national income. The concept of value-added helps us to measure the value of final goods and services and to avoid double counting. There are three approaches to the measuring of the national income. They are the product approach, the income approach and the expenditure approach. All the three approaches should give the same estimate of national income.

There are various concepts of income. Distinctions arise because of the difference in domestic and national concepts, gross and net concepts. These differences have given

rise to eight different concepts of national income. Two more concepts are those of personal income and disposable income. Disposable income consists of consumption and saving.

Three difficulties arise in the measurement of national income which are demarcation of economic activity, treatment of non-marketed output and double counting. One must be very careful while using the national income estimates for making comparisons over a period of time and across countries. Comparisons over a period of time can be made if the concept of real income or income at constant prices is used rather than of money income or income at current prices. Comparisons across countries can be made only after examining the methods adopted in measurement and the validity of the exchange rates as an indicator of the true purchasing power of the currencies.

19.11 CHECK YOUR PROGRESS : MODEL ANSWERS

1. National Income may be defined as the money value of the annual flow of final goods and services in the economy.
2. Gross National Product = Gross Domestic Product $\pm$ net income from exports.
3. Net National Product at Market Prices = Gross National Product at market prices - Depreciation.
4. Real National income can be obtained by deflating the national income at current prices by the price index. We can derive the real national income in the following manner :

$$RNI = \frac{\text{Money National Income}}{\text{Price Index}} \times 100$$

19.12 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Explain the different approaches of measuring national income.
2. Examine the various concepts of income used in the national income analysis and show their inter-relations.
3. Define national income ? How is it estimated in India ?

II. Answer the following questions in about 15 lines each.

1. What is circular flow of income in an economy.
2. How far national income can be used as a measure of economic welfare ?
3. What adjustments are needed while comparing national income over time and across countries?
4. Explain the following concepts :
i) GNP; (ii) NNP
5. Distinguish between national income at current prices and constant prices.
6. Distinguish between personal income and disposable income.

income to change in investment. The multiplier concept explains the cumulative effect of changes in investment on income via their effect on consumption expenditure.

$$\text{Multiplier} = \frac{\text{Change in } Y}{\text{Change in } I}$$

Suppose, an auto company decides to spend Rs. 10 crores to modernise its factory to manufacture pollution-free automobiles.

Its expenditure of Rs. 10 crores goes to workers and firms engaged in modernisation as wages and profits. The income of Rs. 10 crores will be spent at least partly by the workers and the firms. Suppose they spend eighty per cent (80%) of their income i.e., they spend 8 crores on goods and services (and suppose the MPC is 0.8 which means that the MPS is 0.2), and save Rs. 2 crores. This Rs. 8 crores expenditure is a net addition to the nation's demand for goods and services exactly as the Auto Company's expenditure of rupees ten crores. So at this stage, Rs. 10 crores investment by the Auto Company has already pushed GNP up by sum of Rs. 8 crores spent by workers and owners of the firms and they in turn spend eighty per cent (80%) of their new income which accounts for Rs. 6.4 crores.. The persons who receive the Rs. 6.4 crores in turn spend 80% of the new income and this process continues, at each stage in the spending chain, people spending 80% of the additional income they receive. And ultimately, the GNP will increase by Rs. 50 crores, the multiplier being $1/1-\text{MPC}$ or $1/\text{MPS}$ and the multiplier is 5.

($1/\text{MPS} = 1/0.2 = 5$). Thus, when the investment increases by Rs. 10 crores, the National Income increases by multiplier times the investment. It is to be noted that the higher the MPC, the higher will be the multiplier.

Paradox of Thrift

The classical economists considered 'Saving' as a virtue and preached 'thrift' in the society.

They believed that both individuals and society prosper by saving. But according to Keynes Saving may be virtue for individuals but it is a vice to the society. Saving reduces effective demand which will ultimately reduce the incomes of the people in the society. In a society, one man's expenditure is another man's income of that section which receives money will be getting less and hence that section in turn spends less and saves less. The reduced expenditure of one section will further lead to reduced income of another section of the society and the process continues and ultimately the National Income gets reduced.

Understanding the concepts of aggregate demand (Consumption Demand + Investment Demand), aggregate saving and investment, the multiplier effect and the paradox of thrift will enable us to understand the determination of Income and 'equilibrium output and income'.

20.11 SAVING AND INVESTMENT IN INDIA SINCE INDEPENDENCE

Now we place before you data regarding India's Savings and Investment during the plan periods so that you can understand whether savings will be equal to investment in the real world and whether the rate of saving has been increasing or decreasing over a period of time.

UNIT-20 : SAVINGS AND INVESTMENT

Contents

- 20.1 Aims and Objectives
- 20.2 Introduction
- 20.3 Meaning and Definition of 'Saving'
- 20.4 Consumption Function
- 20.5 Relationship Between Consumption, Saving and Investment
- 20.6 Why People Save Money
- 20.7 Investment
- 20.8 Kinds of Investment
- 20.9 Saving and Investment at Equality
- 20.10 The multiplier
- 20.11 Saving and Investment in India Since Independence
- 20.12 Summing Up
- 20.13 Check Your Progress : Model Answers
- 20.14 Model Examination Questions
- 20.15 Recommended Books
- 20.16 Glossary

20.1 AIMS AND OBJECTIVES

The purpose of this unit is to acquaint you with the concepts of 'saving and investment'. An attempt is made to see that you understand the significance of 'saving and investment'. Certain important terms such as propensity to consume and propensity to save are explained in this unit. This unit also discusses the factors that generally determine the size of savings.

We then explain 'saving and investment at equality' and the concept of 'multiplier'. We discuss how the 'multiplier' works and explain the 'paradox of thrift'. Lastly, we place before you data pertaining to India's saving and investment during the plan periods so that you can understand and evaluate whether the rate of savings has gone up satisfactorily to induce growth and development.

After studying this unit, you should be able to:

- grasp the meaning of the terms 'saving and investment' and their relationship;
- explain the determinants of the size of savings;

- discuss how saving and investment are at equality;
- explain the concept of multiplier and its working; and
- explain the paradox of thrift.

20.2 INTRODUCTION

The modern theory of Income Determination was largely developed by Lord John Maynard Keynes in his classic work "General Theory of Employment, Interest and Money". Keynes 'Saving and Investment' function in 'Income Analysis' discussed in his 'General Theory' has earned a reputation like Marshall's supply and demand curves in 'Price Theory'. Keynes explained the equality between savings and investment to bring out how equilibrium is brought about in the economy. In Keynesian analysis, savings and investment are not only mutually dependent but play a crucial role in determining income and employment in the economy.

20.3 MEANING AND DEFINITION OF SAVING

Let us discuss more about savings first. For an individual, saving is that part of income which is not spent on consumption. Whereas for an economy, aggregate saving is that part of National Income which is not spent on consumption.

Keynes defined 'Savings' as the excess of income over consumption expenditure. Here, income means National Income and Consumption Expenditure means the total amount spent by consumers on newly produced goods and services (excluding purchases of new homes, which are considered investment goods). Thus, Savings means aggregate savings i.e., total savings of households in the economy. In Keynesian theory, current savings depend upon current income. Prof. Robertson, a Swedish economist, defined savings in the ex-ante and ex-post sense.

Ex-ante savings are planned, expected or anticipated savings of the economy while ex-post savings are actual, realised or observed savings.

20.4 CONSUMPTION FUNCTION

We can understand the relation between savings and Income better by studying the Consumption Function. The relationship between consumption and income is termed as Consumption Function or Propensity to Consume.

The consumption function is expressed as : $C = f(Y)$, where C is the consumption and Y is income. This relation implies that consumption depends on income or is a function of income. If there is a change in any other variable affecting consumption expenditure, there will be a shift of consumption function.

Symbols used to indicate National Income, Consumption, Saving, etc.

Y : National Income	C : Consumption Expenditure
S : Aggregate Savings	I : Investment Expenditure

20.5 RELATIONSHIP BETWEEN CONSUMPTION, SAVING AND INVESTMENT

The relationship between consumption, savings, income, Average Propensity to Consume (APC), Average Propensity to Save (APS), Marginal Propensity to Consume (MPC) and Marginal Propensity to Save (MPS) can be understood from the following schedule :

(1) Y (Income)	(2) C (Consumption)	(3) S (Saving)	(4) APC (C/Y)	(5) APS (S/Y)	(6) MPC ($\Delta C / \Delta Y$)	(7) MPS ($\Delta S / \Delta Y$)
0	1,200	-1,200	-	-	-	-
2,000	3,000	-1,000	1.5	-0.5	0.90	0.10
4,000	4,400	-400	1.1	-0.1	0.70	0.30
5,000	5,000	0	1.0	0	0.60	0.40
8,000	6,000	2,000	0.75	0.25	0.33	0.67
12,000	8,000	4,000	0.67	0.33	0.50	0.50

Average Propensity to Consume (APC) is the ratio of total or aggregate consumption to total or aggregate income. Symbolically, $APC = C/Y$

Average Propensity to Save (APS) is the ratio of total or aggregate savings to total income. Symbolically, $APS = S/Y$

As the Income increases, APC declines and APS increases.

Income = Consumption + Savings

Symbolically, $Y = C + S$

Since, $C + S = Y$, $APC + APS = 1$ and $APS = 1 - APC$

The Marginal Propensity to Consume measures the change in Consumption due to change in Income. Symbolically $MPC = \Delta C / \Delta Y$

The Marginal Propensity to Save measures the change in Savings due to change in Income.

Symbolically, $MPS = \Delta S / \Delta Y$

$MPC + MPS = 1$; and $MPS = 1 - MPC$

As MPC is positive but is always less than one, and as income increases, consumption increases but by less than the increase in income. This is an important proposition in the Keynesian Model of Income Determination.

Human beings have working life which is shorter than their total life. Hence, they have to provide for their non-earning period while they are working. Their savings serve as a hedge against contingencies. If MPC is always less than one, then MPS is always positive.

Check Your Progress-1

Define the following terms :

- a) Saving
 - b) Consumption Function
 - c) Average Propensity to Consume
 - d) Average Propensity to Save
 - e) Marginal Propensity to Consume
 - f) Marginal Propensity to Save
-
-
-
-

20.6 WHY PEOPLE SAVE MONEY

There are many reasons for people to save money. People save money as a hedge against unforeseen contingencies. They save money to face problems in life in future boldly. During times of ill-health, loss of job, savings will come to their rescue. **Keynes calls it precautionary motive.** The proportion of income saved varies from person to person. The income levels of the people, their attitude and outlook towards future (some may be optimistic and some others may be too pessimistic), the credit facilities available in the money market in times of need. All these factors influence savings.

People save money for providing decent education to their children, for performing the marriage of their daughters, (especially in Indian Society), for constructing house and maintain uniform standard of living during declining years of life. Conservative people think that saving is a virtue and hence save money. People may save money to feel big in society - to achieve prestige in society and to exert influence in society.

People save money for speculative activities also. They try to make profits through speculative activities such as buying and selling of shares.

Determinants of the size of Savings

The size of savings generally depends upon the size of income. The higher the income, the higher may be the savings. It depends upon the spending habits of the people and the Government's fiscal and monetary policies. High rates of taxation will reduce the size of disposable income and it will lead to reduction in the size of savings. High rates of interest may induce people to save more. Changes in the general level of prices will also influence the savings. When there is abnormal increase in the general price level, the value of money will fall drastically and their interest and enthusiasm to save money will die and they may think of converting money into fixed assets such as real estate and housing.

Saving also depends upon the peoples' anticipation of changes in the economy and their attitude towards life and towards future. Some may live for today not bothering about tomorrow, spend more and more today as if there is no tomorrow. In such cases, even though the size of income is at a high level, the size of saving will be considerably low.

Some others may be so worried about future that they may sacrifice present to have a better future tomorrow. They may save as much as they can, sacrificing comforts and living with bare necessities of life.

Thus, many factors influence savings. Economists opine that people save basically for three purposes : Transactions Motive, Precautionary Motive and Speculative Motive.

Check Your Progress - 2

What are the factors determining savings?

.....

.....

.....

.....

20.7 INVESTMENT

In the ordinary sense, purchase of stocks and shares, debentures, Government securities would be considered as investment. But this is only financial investment and not real investment. When economists discuss 'Investment', they do not mean financial investment such as investment in shares. They mean 'real investment' that is creation of new assets in the economy. Investment spending, symbolized by the letter 'I', is the sum of the expenditures of business firms on new plant and equipment, plus the expenditures on households, on new homes. Financial investments and resale of existing physical assets are not included in investment spending. In other words, investment consists of firms' desired or planned additions both to their physical capital (factories and machines) and to their inventories. Inventories are goods being held for future production or sale.

Before discussing further, let us try to understand clearly the following terms (some of the which we have already discussed elsewhere) :

Gross Domestic Product (GDP) : It measures the output produced by factors of production located in the domestic economy regardless of who owns these factors. GDP measures the value of output produced within the economy.

Investment (I) : It is the purchase of new capital goods by firms. Capital goods are those goods which are used for further production.

Saving (S) : It is that part of income which is not spent on buying goods and services.

$$S = Y - C \text{ and } Y = C + S$$

Where, Y denotes the value of GDP and C denotes consumption expenditure by households and S denotes Saving.

Inventories (or stocks) : There are the goods currently held by firms for future production or sale.

Gross National Product (GNP) : It measures total income earned by domestic citizens that is citizens of the country regardless of the country in which their factor services were supplied. GNP equals GDP plus net property income from abroad.

National Income (Net National Product or National Income) : It is the economy's net national product which is calculated by subtracting depreciation from GNP at factor cost.

Potential Output : It is the level of output the economy would produce if all factors of production were fully employed.

Aggregate Demand : It is the total amount that all consumers, business firms, and Government agencies are willing to spend on final goods and services.

Aggregate demand = $C + I + G + X - M$

Government purchases (G) : It refers to all the goods and services purchased by all levels of Government. It does not include government transfer payments such as social security.

Net Exports (X-M) : It is the difference between India's exports and its imports. It indicates the difference between what we sell to foreign countries and what we buy from them.

National Income : It is the sum of the incomes of all the individuals in the economy earned in the forms of wages, interest, rent and profits. It excludes transfer payments and is calculated before any deductions are allowed for income taxes. This is another method of measuring National Income.

Disposable Income : It is the sum of the incomes of all the individuals in the economy after all taxes have been deducted and all transfer payments have been added.

Transfer Payments : These are the sums of money that certain individuals receive as outright grants rather than as payments for services rendered to employers.

20.8 KINDS OF INVESTMENT

Investment may be (i) Gross Investment or (ii) Net Investment. Gross Investment refers to the total real investment. Net Investment is that part of gross investment which represents the net addition to the total existing capital stock in the economy.

Investment may be (a) Induced Investment or (b) Autonomous Investment. Given the Marginal Propensity to Consume (MPC), an increase in income will lead to expansion in aggregate demand and hence it will lead to increase in investment. Such increase in investment due to increase in income is called **induced investment**.

Investment which is not an induced investment and which is independent of the level of income is called **autonomous investment**. Normally, autonomous investment is made by the Government in public utilities such as the construction of railway lines, construction of roads and bridges. **Autonomous investment is income-inelastic whereas induced investment is income elastic.**

Check Your Progress - 3

Define Investment and explain the kinds of investment ?

.....

.....

.....

.....

20.9 SAVING AND INVESTMENT AT EQUALITY

Keynes in his famous treatise 'The General Theory of Employment, Interest and Money' pointed out that savings and investment are always equal. The National Income can be regarded as the total income of the economy derived from various activities. Out of this income, part of it will be spent on consumer goods and the rest will be saved. Hence,

$$Y = C + S \text{ or } S = Y - C \text{ ----- 1}$$

Alternatively, the National Income can be regarded as the money value of the volume of production which consists partly of consumer goods and partly of capital goods i.e., investment.

$$\text{Hence } Y = C + I \text{ or } I = Y - C \text{ ----- 2}$$

Therefore, $S = I$

According to Keynes, the equality between S and I is brought about by National Income. It is the National Income which brings about equilibrium between savings and investment. When investment exceeds saving, the aggregate income of the society increases through multiplier effect and the increased income increases savings which becomes equal to increased investment. When saving exceeds investment, the income gets reduced and this results in reduction of saving equal to reduced investment.

Check Your Progress - 4

Explain Saving and Investment Equality.

.....

.....

.....

.....

20.10 THE MULTIPLIER

The 'multiplier' is a significant concept introduced by Keynes in his 'General Theory of Income, Employment and Money'. The multiplier can be defined as the ratio of change in

income to change in investment. The multiplier concept explains the cumulative effect of changes in investment on income via their effect on consumption expenditure.

$$\text{Multiplier} = \frac{\text{Change in } Y}{\text{Change in } I}$$

Suppose, an auto company decides to spend Rs. 10 crores to modernise its factory to manufacture pollution-free automobiles.

Its expenditure of Rs. 10 crores goes to workers and firms engaged in modernisation as wages and profits. The income of Rs. 10 crores will be spent at least partly by the workers and the firms. Suppose they spend eighty per cent (80%) of their income i.e., they spend 8 crores on goods and services (and suppose the MPC is 0.8 which means that the MPS is 0.2), and save Rs. 2 crores. This Rs. 8 crores expenditure is a net addition to the nation's demand for goods and services exactly as the Auto Company's expenditure of rupees ten crores. So at this stage, Rs. 10 crores investment by the Auto Company has already pushed GNP up by sum of Rs. 8 crores spent by workers and owners of the firms and they in turn spend eighty per cent (80%) of their new income which accounts for Rs. 6.4 crores.. The persons who receive the Rs. 6.4 crores in turn spend 80% of the new income and this process continues, at each stage in the spending chain, people spending 80% of the additional income they receive. And ultimately, the GNP will increase by Rs. 50 crores, the multiplier being $1/1-\text{MPC}$ or $1/\text{MPS}$ and the multiplier is 5.

($1/\text{MPS} = 1/0.2 = 5$). Thus, when the investment increases by Rs. 10 crores, the National Income increases by multiplier times the investment. It is to be noted that the higher the MPC, the higher will be the multiplier.

Paradox of Thrift

The classical economists considered 'Saving' as a virtue and preached 'thrift' in the society.

They believed that both individuals and society prosper by saving. But according to Keynes Saving may be virtue for individuals but it is a vice to the society. Saving reduces effective demand which will ultimately reduce the incomes of the people in the society. In a society, one man's expenditure is another man's income of that section which receives money will be getting less and hence that section in turn spends less and saves less. The reduced expenditure of one section will further lead to reduced income of another section of the society and the process continues and ultimately the National Income gets reduced.

Understanding the concepts of aggregate demand (Consumption Demand + Investment Demand), aggregate saving and investment, the multiplier effect and the paradox of thrift will enable us to understand the determination of Income and 'equilibrium output and income'.

20.11 SAVING AND INVESTMENT IN INDIA SINCE INDEPENDENCE

Now we place before you data regarding India's Savings and Investment during the plan periods so that you can understand whether savings will be equal to investment in the real world and whether the rate of saving has been increasing or decreasing over a period of time.

During the plan period, estimates of saving have been prepared by the Central Statistical Organisation (CSO). The CSO defines saving as "the excess of current income over current expenditure and is the balancing item on the income and outlay accounts of producing enterprises, and households, government administration and other final consumers".

For the purpose of estimating the domestic saving, the economy has been divided into three broad institutional sectors : (i) Household (ii) Private Corporate (iii) Public Sector.

Saving of the household sector is measured as (i) the total financial saving, and (ii) saving in the form of physical assets. Private corporate sector comprises non-government, non-financial companies, financial institutions and cooperative institutions. Public sector comprises government administrative departments and enterprises, both departmental and non-departmental.

Domestic Capital formation in India

Domestic capital formation refers to investment. Gross capital formation consists of gross domestic savings and net capital inflow from abroad. The rate of domestic capital formation in India is now estimated as a percentage of gross domestic product. The size of investment depends on saving and capital inflow.

We now try to understand the estimated saving and investment (as a percentage of GDP) during the plan period.

Gross Domestic Savings and Domestic Capital Formation (As a percentage of GDP at current market prices)

Year	Gross Domestic Savings (As a % of GDP)	Gross Domestic Capital Formation (As a % of GDP)
(1)	(2)	(3)
1950-51	10.4	10.2
1955-56	13.9	14.3
1960-61	12.7	15.7
1965-66	14.5	16.8
1968-69	12.8	13.9
1973-74	18.4	19.1
1978-79	23.2	23.3
1984-85	18.2	19.7
1989-90	22.4	25.1
1990-91	24.3	27.7
1991-92	22.9	23.4
1992-93	22.0	23.9
New Series (Base : 1993-94)		
1995-96	25.5	27.2
1996-97	23.3	24.6
1997-98 P	24.7	26.2
1998-99 Q	22.3	23.4

Source : CSO and Government of India Economic Survey 1999-2000

P : Provisional Q : Quick Estimates

From the table, we understand that during the last fifty years of planning, the rate of gross domestic savings has more than doubled i.e., from 10.4% in 1950-51 to 23.4% in 1998-99, which may be considered as the result of our sustained efforts of planning for growth and development.

Apart from domestic savings, net capital inflow from abroad has been contributing towards Gross Domestic Capital Formation i.e., investment. The net capital inflow from abroad has been determined by the policy of the Government towards foreign direct investment, import of technology and also by the flow of external assistance for economic growth from developed countries such as the US, UK, West Germany and France.

20.12 SUMMING UP

Saving and investment are mutually dependent and play a key role in determining income and employment in the economy. Saving means aggregate savings i.e., total savings of households in the economy.

There are many reasons for people to save money. They save money as a hedge against unforeseen contingencies. They save money for providing decent education to their children, for constructing a house, for performing the marriage of their daughters and to maintain uniform standard of living during declining years of life. People save money for speculative activities also. The size of savings generally depends upon the size of income, the rates of taxation and the rate of inflation. In other words many factors influence savings. Economists opine that people save basically for three purposes : transactions motive, precautionary motive and speculative motive.

Investment means "real investment". Real investment is creation of new assets in the economy. Investment spending is the sum of the expenditures on new plant and equipment, plus the expenditures on households on new homes. Financial investments such as investment in shares and debentures and resale of existing physical assets are not included in investment spending.

Keynes pointed out that Savings and Investment are always equal. According to him, the equality between Saving and Investment is brought about by National Income. It is the National Income which brings about equilibrium between Saving and Investment.

The 'multiplier' introduced by Keynes can be defined as the ratio of change in income to investment. The multiplier concept explains the cumulative effect of changes in investment on income via their effect on consumption expenditures. The multiplier is equal to $1/1-MPC$ or $1/MPS$.

Keynes, observed that saving may be virtue for individuals but it is a vice to society.

Savings reduce effective demand which will ultimately reduce the incomes of the people in the society.

The Central Statistical Organization (CSO) has been preparing estimates of saving and investment in India. During the last 50 years of planning, the rate of saving has more than doubled i.e., from 10.4% in 1950-51 to 23.4% in 1998-99. Apart from domestic savings,

net capital inflow from abroad also has been contributing towards the economic development of the country.

20.13 CHECK YOUR PROGRESS : MODEL ANSWERS

1. a) **Saving :** Saving or aggregate saving is the excess of National Income over Aggregate Consumption. It is the total savings of households in the economy.
- b) The relationship between consumption and income is termed as consumption function or propensity to income.
- c) **Average Propensity to Consume (APC) :** APC is the ratio of total or aggregate consumption to total or aggregate income. Symbolically, $APC = C/Y$
Where C = Aggregate Consumption and Y = Aggregate Income
- d) **Average Propensity to Save (APS) :** It is the ratio of total or aggregate savings to total income. Symbolically, $APS = S/Y$
Where S = Aggregate Savings, and Y = Aggregate Income.
- e) **Marginal Propensity to Consume (MPC) :** The MPC measures the change in consumption due to change in income. Symbolically, $MPC = \frac{\Delta C}{\Delta Y}$.
 ΔC = Change in consumption, and ΔY = Change in Income
- f) **Marginal Propensity to Save (MPS) :**

It measures the change in Savings due to change in Income Symbolically, $MPS =$

Since $MPC + MPS = 1$, therefore $MPS = 1 - MPC$

2. The size of savings generally depends upon the size of income. The higher the income, the higher may be the savings. It depends upon the spending habits of the people. It also depends upon the Government's fiscal and monetary policies. High rates of taxation will reduce the size of disposable income and it will lead to reduction in the size of savings. High rates of interest may induce people to save more.

When there is abnormal increase in the general price level, the value of money will fall drastically and if people expect further increase in the general price level, their interest and enthusiasm to save money will die and they may think of converting money into fixed assets such as real estate and housing. Saving also depends upon the peoples' anticipation of changes in the economy and their attitude towards life and towards future. Some may live for today and spend more and more today as if there is no tomorrow. In such cases, even at high income level, savings will be low. Some may save as much as they can sacrificing comforts and living with bare necessities of life. People generally save for three purposes - transactions motive, precautionary motive and speculative motive.

3. Investment or "real investment" is the creation of new assets in the economy. It is the sum of the expenditures of business firms on new plant and equipment, plus the expenditure on households in new homes.

Financial Investments such as purchase of shares and debentures and purchase of Government securities and resale of physical assets are not included in investment spending.

Kinds of investment : Investments may be (i) Gross Investment, or (ii) Net Investment.

Gross Investments refers to the total real investment. Net investment is that part of gross investment which represents the net addition to the total existing capital stock in the economy.

Again investment may be : (i) induced investment, or (ii) autonomous investment. Given the Marginal Propensity to Consume (MPC), an increase in income will lead to expansion in aggregate demand and hence it will lead to increase in investment. Such increase in investment due to increase in income is called induced investment.

Investment which is not an induced investment and which is independent of the level of income is called autonomous investment.

4. The National Income can be regarded as the total income of the economy derived from various activities. Out of this income, part of it will be spent on consumer goods and the rest will be saved.

$$\text{Hence, } Y = C + S \text{ or } S = Y - C \text{-----(1)}$$

Alternatively, the National Income can be regarded as the money value of the volume of production which consists partly of consumer goods and partly of capital goods i.e., investment.

$$\text{Hence } Y = C + I \text{ or } I = Y - C \text{-----(2)}$$

$$\text{Since } S = Y - C \quad (1) \quad \text{and} \quad I = Y - C \text{-----(2)}$$

Therefore, $S = I$.

According to Keynes, the equality between S and I is brought about by National Income. It is the National Income which brings about equilibrium between Savings and Investment. When Investment exceeds Saving, the aggregate income of the society increases through multiplier effect and the increased income increases savings which becomes equal to increased investment.

When saving exceeds investment, the Income gets reduced and this results in reduction of saving equal to reduced investment.

Thus, savings always will be equal to investment, according to Keynes.

20.14 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Define the term 'saving'. What are the determinants of the size of saving? Discuss.
2. What do you understand by 'investment'? What are the kinds of investment? Explain how saving and investment are at equality.

II. Answer the following questions in about 15 lines each.

1. Explain the relationship between saving, investment, MPC and MPS.
2. Explain the concept of 'multiplier' and its working.
3. Explain the 'paradox of thrift' with suitable examples.

20.15 RECOMMENDED BOOKS

- | | | | |
|----|--------------------------------|---|---|
| 1. | Paul A. Samuelson and Nardhaus | : | Economics - An Introductory Analysis |
| 2. | H.S. Agarwal | : | Macro Economics |
| 3. | K.K. Dewett and Varma | : | Economics |
| 4. | D.N. Dwivedi | : | Macro Economics |
| 5. | M.L. Seth | : | Economics (Micro and Macro) |
-

20.16 GLOSSARY

Aggregate Saving	:	Total savings of households in the economy.
Average Propensity to Consume	:	The ratio of total aggregate consumption to total aggregate income.
Average Propensity to Save	:	Ratio of total or aggregate saving to total income.
Inventories	:	Goods being held for future production or sale.
Investment Expenditure	:	Desired or planned addition to of business firms to their physical capital and to their inventories.
Marginal Propensity to Save	:	The change in saving due to change in income
Marginal Propensity to Consume	:	Change in consumption due to change in Income
Multiplier	:	The ratio of change in income to change in investment.
Propensity to Consume	:	The relation between consumption and income.

UNIT-21 : BUSINESS CYCLES

Contents

- 21.0 Aims and Objectives
- 21.1 Introduction
- 21.2 Meaning of Business Cycles
- 21.3 Causes of Business Cycles
- 21.4 Features of Business Cycles
- 21.5 Factors Influencing Business Cycles
- 21.6 Phases of Business Cycles
- 21.7 Consequences of Business Cycles
- 21.8 Measures to Minimise the Effect of Business Cycles
- 21.9 Summing Up
- 21.10 Check Your Progress : Model Answers
- 21.11 Model Examination Questions
- 21.12 Recommended Books
- 21.13 Glossary

21.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain the concept of business cycle, its consequences and the measures that minimise the effect of business cycles.

After studying the unit, you should be in a position to :

- define business cycles;
- explain features and phases of business cycles;
- recognize the consequences of business cycles; and
- suggest measures to minimise the effect of business cycles.

21.1 INTRODUCTION

In the previous unit we have learnt about savings and investment. We have also learnt about the influence of savings and investment on the economy. In this unit we will study about the business (trade) cycles and their effect on the business houses and economy. We will also study about the measures to minimise the effect of business cycles.

21.2 MEANING OF BUSINESS CYCLES

Business operates under conditions of uncertainty. As a result there are changes in the level of activity attained. Besides, the uncertainty, there are fluctuations in the economy which are cyclical in nature.

Business cycles are recurring changes in the level of business activity. The sequence of events that constitute a cycle-expansion, downturn, contraction, and upturn is not periodic. They differ with respect to duration, intensity and scope, and they recur at irregular intervals.

According to John M. Keynes "A trade cycle is composed of periods of good trade characterised by rising prices and low unemployment percentages, alternating with periods of bad trade characterised by falling prices and high unemployment percentages."

Mitchell defines Business cycle "as a type of fluctuations found in the aggregate economic activity of nations that organise their work mainly in business enterprises. A cycle consists of expansions occurring at about the same time in many economic activities followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; this consequence of change is recurrent but not periodic."

The term business cycle is not applied to the changes in fortune of a particular segment of the economy. Instead, the term is used for describing fluctuations that are widely diffused throughout the economy. Further more, business cycle movements must be distinguished from other types of economic fluctuations. When we refer to the business cycle, we do not mean the underlying growth trends of the economy, nor do we refer to the seasonal fluctuations that runs their course each year.

The distinguishing feature of business cycle is that they are a self-propagating force generated by the economy itself. A number of phenomena contribute to business cycle fluctuations, including the role of expectations, the existence of capacity, constraints, and the absence of financial flexibility. No single issue is responsible for a cyclical episode.

21.3 CAUSES OF BUSINESS CYCLES

Economic fluctuations play a major part in the life of a firm. That is why businessmen often indulge in predictions about the future in arriving at production, marketing and investment decisions. Business houses also take the help of marketing research bureaus to analyse the causes and effect of business cycles on their products in the market. Economic cycles are characterised by alternating periods of prosperity and depression. Business cycles vary in length of time and each cycle has its own characteristics and history. Due to this, economists differ in their explanation of economic fluctuations.

Some economists are of the opinion that business cycles are caused by external factors like war, revolution, technological change, population growth, discovery of gold, etc. Other argue that business cycle are caused purely by internal factors like expansion and contraction of bank credit, investment fluctuations or the interaction of the multiplier with the accelerator. There is no consensus theory on the causes of business cycles.

21.4 FEATURES OF BUSINESS CYCLES

Each business cycle is unique, but there are enough similarities to make general statements. They are :

- a) The prices of various industrial products increase or decrease at the same time.
- b) Unemployment tends to decrease when prices rise and to increase when prices fall.
- c) Prices and consumer demand vary in the same direction.
- d) In general, the retail prices, to a certain extent, lag behind the wholesale prices in both the prosperity and depression.

- e) The phases and their sequence are same in all cycles.
- f) Generally, prosperity takes as much time to develop as depression.
- g) The duration between two major cycles is 6 to 12 years.
- h) In every business cycle there are cyclical changes in the general price level.
- i) Amongst the commodities, the prices of raw materials fall or rise earlier than those of final goods.

Check Your Progress-1

What do you mean by business cycles ?

.....

.....

.....

.....

21.5 FACTORS INFLUENCING BUSINESS CYCLES

The following are the some of the factors that influence business cycles :

- i) Extent to which excess capacity existed in the beginning
- ii) Extent to which financial distress emerges.
- iii) Stance of policy makers, which will determine whether policy actions are taken quickly to stem the decline.
- iv) Change in business and consumer psychology.

The expansion to utilise the full capacity of the firm's production capabilities will eliminate the slack in the economy. The expansion impulse to make use of the excess capacity may lead to increase in employment, which may be localised in certain areas of the economy. However, the capacity constraints loom in the not too distant future, and delivery lags begin to lengthen. The change in business and consumer psychology spreads optimism in the market, which may positively result in increased sales and income for the firm. The expansion is a cumulative and self-reinforcing activity. New enterprises abound, and existing enterprises engage in expansion and modernisation in anticipation of further expansion. Economic agents do not lose sight of the underlying growth trend of the economy; thus come new ventures are attractive even in the face of a recession. Consumption plans in the aggregate are based on the long-term expected level of income. Tougher business conditions intensify the degree of competition, and so more progressive firms are able to take advantage of competitive opportunities to improve efficiency and extend their market share. The likely response of policy makers creates an expectation in the contemporary economy that the contraction will be short, and in fact, policy responses often occur to offset the forces of decline. These factors together bring recession to an end and boom to start and continue for a longer period.

21.6 PHASES OF BUSINESS CYCLE

A typical business cycle, in the terminology of Wesley C. Mitchell, consists of four distinct phases : (i) Expansion, (ii) Recession (iii) Contraction and (iv) Revival. Alternatively, these phases are also called as Prosperity, Crisis, Depression and Recovery.

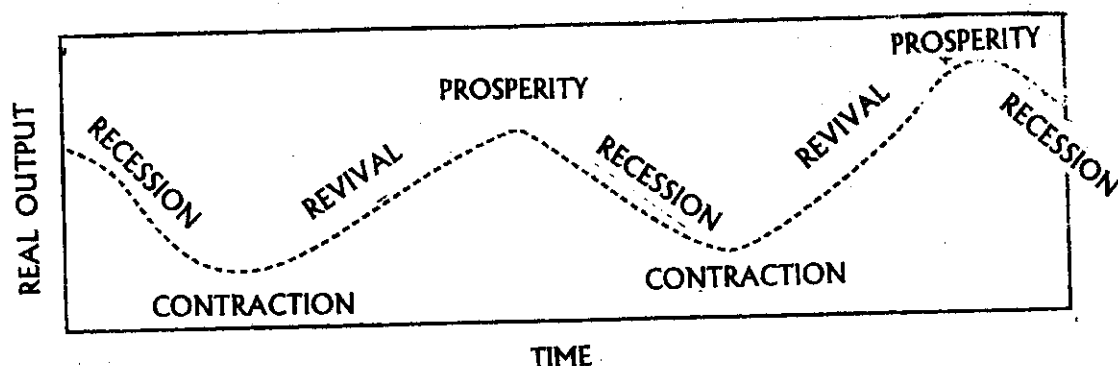


Fig. 21.1 : Different phases of Business Cycles

Among these phases, 'expansion' and 'contraction' are the most important ones. Then, in between, there are transitional periods during which the changes in direction occur : downturn called 'recession' and upturn called 'revival/recovery'. The expansion phase comes to an end and goes into the recession and contraction phases at the upper turning point (peak). The national income, employment and output fall, prices and profits also decline and the people are thrown out of employment. Eventually, the bottom is reached and the contraction phase gives way to the recovery and expansion phases at the lower turning point called contraction (trough). Thus, the four phases keep repeating themselves as shown above. However, the revival may be slow or fast. It may be weak or strong. It may represent a quick inflationary flare-up of prices to be followed by another severe slump or may represent a long sustained span of brisk demand, plentiful of job opportunities, buoyant prices and better living standards. Similarly, the recession may be slow or sharp; peak or strong and of short or long duration.

Before World War II, many analysts used four stages to describe the typical business cycle. Modern writers, however, speak of just two phases of business cycles and not four. Accordingly, they distinguish between phases of expansion and contraction with upper and lower turning points to divide the two. The 'expansion' is a period in which the majority of the significant economic indicators are rising or expanding; the 'contraction' is a period in which the same is contracting or falling. The expansion and contraction phases are also popularly referred to as 'prosperity' and 'recession' or 'boom' and 'slump'. Besides, some economists are content to talk merely in terms of the upswing and downswing of the business cycle.

Check Your Progress-2

Name the phases of Business Cycle.

.....

.....

21.7 CONSEQUENCES OF BUSINESS CYCLES

Certain effects of business cycles on individual concerns are favourable. During revival and expansion, demand increases, selling prices rise more rapidly than costs, profits increase and individual manufacturers and merchants generally feel happy.

Business cycles, however, land individual business firms into a number of disabilities and difficulties. Even during revival and the beginning of expansion phase, certain ill effects start appearing. The increase in raw material prices, in labour costs and rents, and the higher rates charged for credit accommodation increase the costs of carrying on business. Later, when the situation becomes more difficult, the evil of cancellation develops. The businessman finds that his customers are refusing to take goods, which they have ordered, and there is a decline in the volume of orders. During the later stages of expansion, business enterprises are confronted by much more severe competition. Prices are maintained with difficulty. Collections are slow, while at the same time banks and trade creditors press for the settlement of their claims.

The decline in prices, which is characteristic of the period of recession, usually finds merchants and manufacturers with large inventories which depreciate materially in value at this time. These excessive inventories are usually made up of finished goods rather than raw material. During this period characterised by liquidation, the individual businessman usually suffers through being compelled to sell his goods at a loss in order to meet his obligation. This may result in either at least a sacrifice of profits or possibly necessitating the carrying on of business at an actual loss.

During contraction, these difficulties are likely to continue. One of the most important reasons for financial loss during such a period is found in the continuation of fixed charges of all sorts. It is possible during contraction for an individual concern to reduce its direct costs by the discharge of labour and reduction of purchase of raw materials, but most of the elements of overhead cost cannot be so reduced. In this fact, coupled with the necessity of opening below capacity, is found one of the most important contributory factors to the financial loss suffered during contraction.

The above discussion make it clear how an average business unit is made to suffer from the ill effects of the business cycle. Since the cycle in its major movements lies quite beyond the control of the individual businessman, the latter in seeking to avoid these evil effects is forced to do so primarily by adapting his operating programme to changes in external conditions. With an increasing knowledge of the business cycle on the part of businessmen in general, this process of adaptation is being followed more widely.

Impact of recession on small units is invariably more severe for a variety of reasons that are structurally inherent in them. Most small scale units make only custom designed components or assemblies needed by their customers. Order flow to such small units is not only reduced, but worse, even component assemblies earlier ordered on them are not lifted. They might be asked to hold over supplies, making their inventory position expensive beyond their capacity to bear. While it is possible for their customers to offer discounts and liquidate stock of products manufactured by them. Such flexibility does not obtain for these small units. They are not able to sell a custom designed component meant for customer "A" to customer "B". The implication for small units is therefore very simple that either

they sell these components to the customer for whom they were manufactured as and when the customer is able to "accept deliveries" or they sell as scrap. There is seldom any third option.

Apart from the usually unhappy cash flow situation, payments due to them for supplies made take longer than even the already exploitative delays small units are victims of. Batch production quantities, on which basis they agree to price their supplies shrink in size pushing up the unit of cost of their production higher than the price at which they are forced to sell. It is quite common for some customers to exploit the situation further by dictating even lower prices while ordering lesser quantities.

Small and medium industries suffer the most in depression. The resources and liquidity base of most small units is meager. They have hardly any resources to fall back on. They are forced to borrow more and more from their bankers or from private money lenders, and invite growing burdens of interest even when they are groaning under the weight of the existing interest burden. Though firms can make necessary adjustments to overcome the ill-effects of a business cycle, this is not always easy and without cost. Since business cycles cannot be eradicated in a capitalist economy, all that is possible to reduce the ill-effects of cyclical situations.

21.8 MEASURES TO MINIMISE THE EFFECT OF BUSINESS CYCLE

The methods employed by businessmen to avoid or minimise the ill-effects of the business cycles fall into two general categories, viz., Preventive and Curative measures.

A) PREVENTIVE MEASURES

Methods based on foresight, which are designed to prevent the individual concern from suffering during recession and contraction. The various preventive measures are :

- i) Conserving assets during expansion, avoiding undue increase in plant and equipment, and in dividends.
- ii) Managing plant in such a way as to -
 - a) avoid decrease in unit of production
 - b) avoid increase in unit of overheads, and
 - c) maintain satisfactory labour conditions and steady employment throughout the year.
- iii) Avoiding excessive inventories of raw materials, materials in progress, and finished products.
- iv) Avoiding purchase commitments in excess of financial resources.
- v) Avoiding excessive sales, which result in cancellation.
- vi) Employing a flexible credit standard, which may be tightened during expansion and relaxed during contraction.

B) CURATIVE MEASURES

The curative measures are designed to assist in the recovery following a period of contraction. These measures might be adopted during contraction in order to stimulate sales

and to stabilise the production. Of the various measures employed to mitigate the effect of contraction, the following are worth mentioning :

- i) Quick liquidation of inventories.
- ii) Reduction of costs of manufacture, both direct and indirect.
- iii) Improvement of quality to enhance demand.
- iv) Adoption of selling methods based on accurate analysis of the new situation.
- v) Development of plant and organisation for future business.
- vi) Part-time operation.
- vii) Utilisation of profits gained in good times for payments to out-of-work employees.
- viii) Launching new and innovative merchandise lines during slack periods.
- ix) Transfer of employees from one department to another during contraction.
- x) Extension of credit with a fair degree of freedom during depression.
- xi) Careful planning of expansion of plant and building.

Check Your Progress-3

- i) What are the factors that influence the business cycles ?

.....

.....

.....

.....

- ii) What are the broad categories of measures used to minimise the effects of business cycle ?

.....

.....

.....

.....

21.9 SUMMING UP

Business cycles are recurring changes in the level of business activity. The sequence of events that constitute a cycle-expansion, downturn, contraction, and upturn is not periodic. They differ with respect to duration, intensity, and scope, and they recur at irregular intervals. The distinguishing feature of business cycle is that they are a self-propagating force generated by the economy itself. A number of phenomena contribute to business cycle fluctuations. They include the role of expectations, the existence of capacity, constraints, and the absence of financial flexibility. No single issue is responsible for a cyclical episode. Economic cycles are characterised by alternating periods of prosperity and depression. Business cycles vary

in length of time and each cycle has its own characteristics and history. Due to this, economists differ in their explanation of economic fluctuations.

Some economists are of the opinion that business cycle are caused by external factors like war, revolution, technological change, population growth, discovery of gold, etc. Others argue that business cycles are caused purely by internal factors like expansion and contraction of bank credit, investment fluctuations or the interaction of the multiplier with the accelerator. There is no consensus theory on the causes of business cycles. Each business cycle is unique; however, we can generalise that the prices of the products fluctuate along with consumer demand in the same direction. The prosperity phase takes longer time than the depression phase. The duration between two major cycles is 6 to 12 years.

Business cycles are influenced by the extent to which excess capacity existed at the onset, the extent to which financial distress emerges, the stance of policy makers, and the change in business and consumer psychology. A typical business cycle, in the terminology of Wesley C. Mitchell, consists of four distinct phases : (i) Expansion (ii) Recession (iii) Contraction and (iv) Revival. Alternatively, these phases are also called as Prosperity, Crisis, Depression and Recovery. Business cycles influence business decisions of the firm. The effect is more severe on small and medium firms. Since the cycle in its major movements lies quite beyond the control of the individual businessman, the latter in seeking to avoid these evil effects is forced to do so primarily by adapting his operating programme to changes in external conditions. With an increasing knowledge of the business cycle on the part of businesses in general, this process of adaptation is being followed more widely. The methods employed by businessmen to avoid or minimise the ill-effects of the business cycle fall into two general categories, viz., Preventive and Curative measures.

21.10 CHECK YOUR PROGRESS : MODEL ANSWERS

1. Business cycles are recurring changes in the level of business activity. They differ with respect to duration, intensity and scope.
2. A typical business cycle consists of four distinct phases. They are (a) Expansion (b) Recession (c) Contraction, and d) Revival.
3.
 - (i) External factors like war, revolution, technological change, population growth, discovery of gold, etc., and/or internal factors like expansion and contraction of bank credit, investment fluctuations or the interaction of the multiplier with accelerator may cause the business cycles.
 - (ii) The methods employed by businessmen to avoid or minimise the ill-effects of the business cycle fall into two general categories, viz., Preventive and Curative measures. Preventive measures are based on foresight, which are designed to prevent the individual concern from suffering during recession and contraction. Curative measures are designed to assist in the recovery following a period of contraction. These measures might be adopted during contraction in order to stimulate sales and to stabilise the production.

21.11 MODEL EXAMINATION QUESTIONS

- I) Answer the following questions in about 30 lines each.**
1. What is meant by business cycles ? Explain the phases of business cycles.
 2. Describe the various measures to minimise the effect of business cycles.
 3. Explain the features and consequences of business cycles.

II) Answer the following questions in about 15 lines each.

1. Define business cycle.
2. What are the causes of business cycles?
3. List out the factors influencing business cycles.
4. Suggest the preventive measures to minimise the effect of business cycles.

21.12 RECOMMENDED BOOKS

1. Paul Wachtel : **Macro Economics (From Theory to Practice)**
2. P.L. Mehta : **Managerial Economics (Analysis, Problems and Cases)**
3. R.L. Varshney & : **Managerial Economics**
K.L. Maheshwari

21.13 GLOSSARY

Business Cycles	:	In a free enterprise economy, demand imbalances periodically give rise to aggregate changes in the level of economy-wide activity. These recurring, self-propagating fluctuations are called business cycles.
Depression	:	Depression is characterised by low prices, idle funds with banks, mass unemployment and slack trade.
Recession	:	When the business cycle takes a downward turn from the state of prosperity, the state of recession is said to have set in.
Recovery/Revival	:	When the business cycle take an upturn from the state of depression, the state of revival is said to have set in.

UNIT - 22 : ECONOMIC DEVELOPMENT

Contents

- 22.0 Aims and Objectives
- 22.1 Introduction
- 22.2 Economic Growth
 - 22.2.1 Concept of Economic Growth
 - 22.2.2 Measurement of Economic Growth
- 22.3 Economic Development
- 22.4 Growth Versus Development
- 22.5 Underdevelopment
- 22.6 Common Characteristics of Underdeveloped Countries
- 22.7 Factors which Hinder Economic Development
- 22.8 Factors which Determine Economic development
- 22.9 Human Development
 - 22.9.1 The Concept of Human Development
 - 22.9.2 Human Development Index
- 22.10 Summing Up
- 22.11 Check Your Progress : Model Answers
- 22.12 Model Examination Questions
- 22.13 Recommended Books
- 22.14 Glossary

22.0 AIMS AND OBJECTIVES

This unit explains the concepts of economic growth, economic development and underdevelopment, and examines the main factors that determine the economic development.

After studying this unit, you should be able to:

- explain the concept of economic growth;
- describe the methods of measuring economic growth;
- explain the term 'economic development';
- differentiate between economic growth and economic development;
- explain the factors which determine the economic development;

- define the concept of Human Development; and
- explain the index of Human Development;

22.1 INTRODUCTION

Looking at the economic state of the world, we see the countries of the world divided into two broadly distinguishable groups. In the one group we find the people enjoying a very high standard of living (Japan, United States of America, Germany, France, United Kingdom) and in the other, majority of them living in great poverty and suffering from illiteracy, unemployment and malnutrition (Nigeria, Bangladesh, India, Pakistan, Indonesia). The former, we know, are the "developed or advanced countries" while the latter are the "underdeveloped countries". When the countries of latter group show development, they are described as "developing countries". This unit explains the concepts of economic growth, economic development and underdevelopment. It examines the causes of underdevelopment. It examines the causes of underdevelopment and factors influencing the economic development. At the end it concentrates on an important aspect of economic development namely, Human Development.

22.2 ECONOMIC GROWTH

We often hear policy makers in the Government talking about economic growth. One of the central questions faced by every economy is whether its capacity to produce is increasing or remaining the same over time. Some countries grow rapidly in terms of production and others slowly. If the economy's capacity to produce goods and services is growing, we can say that the economy is growing. Economic growth leads to high standard of living of the people. Now let us see what is meant by the term "economic growth".

22.2.1 The Concept of Economic Growth

In simple economic growth means an increase in the national income. It implies more output and greater efficiency in production, i.e., an increase in output per unit of input. It usually refers to the percentage rate at which the level of production of goods and services in an economy is changing. Thus, it refers to rise in gross national product of a country over some time. An alternative common measure of growth is in terms of per capita income or product, which takes into account the ability of a nation to expand its income or output at faster rate than its population growth. John Friedmann defines growth as "an expansion of the system in one or more dimensions without a change in its structure". If a country produces more of the same type of goods and services to keep up with a growing population, while the basic structure of the economy remains intact, it is referred to economic growth. In a popular book on Liberia, Robert Clower had pointed out the various concessions to foreign firms induced its exports resulting in a considerable increase in the gross national product, this however did not result in complementary developments in other sectors of the economy. The institutional set-up of the country essentially remained unaltered and its benefits went almost exclusively to a privileged few. **This is called phase of growth.**

Economic growth may be defined as a rate of expansion that can move an underdeveloped country from a near subsistence mode of living to substantially higher levels in a comparatively short period of time say in years and decades. In the case of economically advanced countries, it refers to continuation of existing rates of growth. Generally, rapid economic growth is accompanied by greater industrialization.

Thus, it is clear that the economic growth refers to a quantitative sustained increase in a country's per capita output or income accompanied by expansion of economic activities like production, consumption and volume of trade.

22.2.2 MEASUREMENT OF ECONOMIC GROWTH

Economic growth is measured in the following ways:

i) **Gross Domestic Product (GDP):** The necessary requirement of economic growth is an increased output of goods and services in the country. From this point of view some economists defined economic growth in terms of national income aggregates. They regarded economic growth as a process whereby an economy's Gross National Product (GNP) increases over a long period of time. As well all know, there is no difference between the GDP and GNP in a closed economy as there are no foreign trade transactions. In an open economy GNP may be more or less than the GDP depending upon the net inflow or outflow of income on account of foreign trade. Mere increase in GNP does not mean that the economy has grown. It is the GDP, which will give a more accurate picture of economic growth of a country. The increase in GDP must be steady and prolonged.

When the population of the country grows at a faster rate than that of GDP, the per capita product will decline. Do you think that we should accept this trend as economic growth? No. Then we have to take into consideration the product per capita rather than the GDP. In this connection, Kuznets rightly defined economic growth "as a sustained increase in population and product per capita". And, the GDP as a measure of economic growth does not reveal anything about the distribution of income in the country.

ii) **Per capita product:** It is believed that the essence of economic growth is an increase in the product per head of population. Generally, a rise in product per capita leads to increase in the standard of living of the people. However, in an expanding economy, improvement in per capita consumption will be less than the increase in the per capita product for the simple reason of saving for the purpose of capital formation. For the purpose of measuring economic growth, the per capita product is the most widely used index. We can estimate the capacity of the economy to provide income to the people with the help of product per capita.

iii) **Distribution of Income and Wealth:** According to this approach, economic growth is regarded as sustained increase in per capital output accompanied a reduction in the existing economic inequalities and an economic betterment of the people. The reduction of mass poverty is a crucial test of economic growth. In the opinion of Jacob Viner, an increase in per capita product is undoubtedly an important index of economic progress, but it cannot be wholly depended upon to gauge economic growth unless it is fallowed by a reduction in the existing inequalities in the distribution of national wealth. Though this approach to economic growth sounds good, it is not wholly correct. It is possible that with the increase in real national income or per capita income, the rich might have become the richer and the poor might have become poorer. Thus, mere increase in per capita income does not lead to economic progress till the distribution of national wealth is equitable or justifiable.

Of the three ways of measuring economic growth, the per capita product approach is regarded as the most appropriate one. Some modern economists like Charles Bettelheim argued that in planning for economic growth the aim should be not only quantitative change in terms of production but qualitative changes also in terms of productivity of labour. On the basis of such qualitative change an economy as a whole can rise to a higher level. Simon Kuznets also defined economic growth in terms of structural transformation as "a

long term rise in capacity to supply increasingly diverse economic goods to its population, this growing capacity based on advanced technology and the institutional and ideological adjustments that it demands". Thus qualitative dimensions are added to the growth process, failing which growth potential that is created productive forces will not be realized.

Check Your Progress -1

(i) What do you mean by the term 'economic growth'?

.....

.....

.....

(ii) Which is the better index to measure the economic growth?

.....

.....

.....

22.3 ECONOMIC DEVELOPMENT

The term 'economic growth' was often used as a synonym of economic growth till 1960s. Now economic development is not considered identical with economic growth. Economic development is a wider and comprehensive concept. Economic development means growth plus progressive changes in certain crucial variables, which determine the well-being of the people. It implies much more than the growth. It includes progressive and fundamental changes in the socio - economic structure of an economy. It implies both more output and changes in the technical and institutional arrangements by which it is produced.

Economic development refers to the problems of underdeveloped countries. It is the process by which an economy changes from a low productive labour intensive, and some times, primitive forms of production, with illiteracy, poverty and unemployment, to an economy with capital intensive, high productive, full employment and high standards of living. This is to be accompanied by a complete change in the structure of production and distribution of income, outlook and attitudes of the people in the country. Thus, the entire social and economic environment has to change. Economic development is, therefore, not only growth, but also growth with structural changes in the economy, a complete transformation in structure.

22.4 GROWTH VERSUS DEVELOPMENT

Though the terms of economic growth and economic development are interchangeably used, there are certain fundamental differences between them. The distinction between these two relates to the nature and courses of change. The differences are as follows:

(i) Economic growth means more output, while economic development implies both more output and changes in the technical and institutional arrangements by which it is produced and distributed.

(ii) Economic growth implies an expansion of the system in one or more dimensions without a change in its structure, while development is an innovative process leading to the structural transformation of social systems.

- (iii) Economic growth is related to a quantitative sustained increase in a country's per capita output, while the economic development is wider term, which relates to qualitative changes such as technological and structural.
- (iv) Economic growth is easy to realise. But the process of development is far extensive involving the changes in the composition of output and shift in the allocation of productive resources so as to ensure social justice.
- (v) An economy can grow but it may not develop because of persisting problems of unemployment, inequalities and poverty. But it is difficult to imagine development without economic growth. Thus, there may be growth without development but development without growth is inconceivable.
- (vi) A country can grow with the production of a single product. Fore example, Libya grew as a result of discovery of petroleum and its production for the consumption of western capitalist countries. And, if we take South Korea, it experienced structural changes along with growth. Economic development involves a steady decline in the share of primary sector (agriculture and allied activities) and a rise in the share of secondary sector (industry, mining, electricity, etc.) activities and tertiary sector (banking, insurance, etc.) activities and resultant changes in occupational pattern, productivity, consumption patterns, etc. Thus, economic development involves new dimensions such as distributive justice, human welfare in terms of reduction in the incidence of poverty, spread of literacy, etc.

Check Your Progress - 2

List out certain important differences between economic growth and economic development.

22.5 UNDERDEVELOPMENT

Generally speaking, economic development refers to the problems of the economic development of underdeveloped countries. After the Second World War the economists in both Western countries and the Third World Countries (developing countries) have taken particular interest in the problems of relatively backward countries. Their interest in the economics of development has been further stimulated by the wave of political resurgence that swept the Asian and African nations after the war. The developed nations also have realised that 'poverty anywhere is a threat to prosperity everywhere' and started showing interest in the development of underdeveloped countries.

Now, let us explain the meaning of the term 'underdevelopment'. There is no definition of underdevelopment which will be universally acceptable. Some economists view underdevelopment as just lack of development. Thus, most of the Latin American, African and Asian countries are classified as underdeveloped. They are also called as less developed or developing countries. A low level of per capita product is an indicator of economic underdevelopment.

Modern economists define development as a process of eliminating poverty, income inequalities and unemployment. In this framework, underdevelopment is a situation characterised by inequalities and unemployment. Stanley defines an underdeveloped country, in terms of poverty, as one "characterised by mass poverty which is chronic and not the result of some

country, where superstition and orthodoxy prevail, understanding of natural phenomena was not put to production use.

Certain inhibiting social customs were also responsible for the low-level development. The joint family system killed all initiative and enterprise, tying down all members of the family in one house. People give much importance to the religious feeling and even, they fight for the places of worship. It has given rise to religion based terrorism in such countries. Nowadays, cross border terrorism has become a severe problem hindering the developmental activities in these countries.

iii) Political Obstacles

Political stability works as an important prerequisite for steady economic development. Frequent changes of the Governments lead to diversion from developmental activities. The decision to pursue economic development involves hard choices like withering subsidies, popular welfare schemes, etc. thus, the governments will be unwilling or incapable to take necessary steps to promote economic development.

Check your Progress-3

List out the economic factors, which hinder the economic development.

.....

.....

.....

.....

22.8 FACTORS WHICH DETERMINE ECONOMIC DEVELOPMENT

Many of the hindering factors, could, if properly managed, be made to generate economic development. For this purpose, efforts must be made to overcome these obstacles. A variety of factors influence the economic development. These factors can be classified as economic factors and non-economic factors.

I. ECONOMIC FACTORS

- (i) **Natural Resources:** The availability of fertile land and water are important for the development of agriculture sector. Industrial development also depends on the availability of minerals like iron ore, copper, tin, bauxite, coal, etc. The abundant supply of natural resources is just necessary for economic development. These resources are to be properly exploited through improved techniques.
- (ii) **Capital Formation:** It plays a major role in the development of a country. For the purpose of accelerating economic progress high ratio of income is to be saved. It raises the level of investment in the country. Capital formation leads to technological progress. It helps in exploitation of natural resources, industrialization and expansion of markets, which are essential for economic development.
- iii) **Surplus of Agriculture:** The marketable surplus of agriculture plays a crucial role in the development of the country. The agricultural sector must support the industrial

of underdevelopment. These are the 'obstacles' or 'bottle-necks', which hinder the development. These bottlenecks can be classified into two groups, viz., economic factors and non-economic factors.

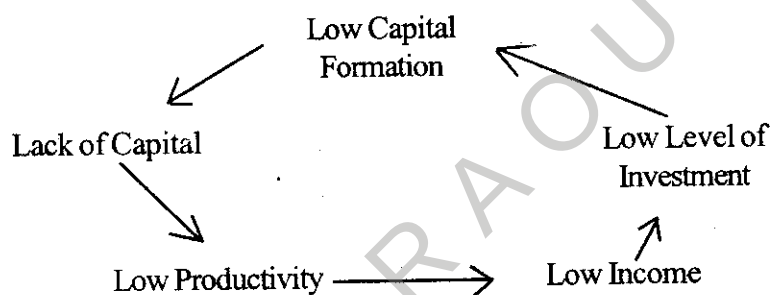
I. ECONOMIC FACTORS

The importance economic factors which hinder economic development are (i) capital deficiency; (ii) population pressures; (iii) lack of technological knowledge; (iv) dualistic economies; (v) lack of preparation for industrial revolution. Now let us discuss them one by one.

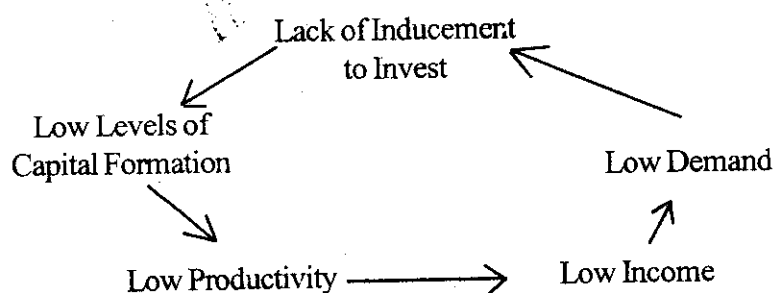
(i) Capital Deficiency

According to Nurkes, "a country is poor because it is poor". Thus the very cause of poverty and underdevelopment is poverty itself. This is because the underdeveloped countries are trapped in the "vicious circles of poverty" i.e., a set of forces which act on and react to each other in such a way as to keep a country always in a state of poverty. These forces are so strong that the underdeveloped countries are caught in a trap with no possibility of breaking themselves free.

Underdevelopment is the result of lack of supply and demand for capital. Thus there are vicious circles on both the demand and supply side of capital formation. On the supply side, capital formation can be generated through investment of the surplus or savings. But the savings are low due to the low level of income received. The low incomes are due to the low level of production. Low productivity is caused by lack of capital. Lack of capital is due to the low level of saving and investment. Hence the vicious circle of the supply side is complete. This can be shown in the form of a diagram.



On the demand side, Nurkes says that the incentive to invest is lacking. An expansion in the production is caused due increasing demand for goods and services. But in an underdeveloped country demand is low because of low incomes. Lack of capital is due to lack of inducement to invest. This forms the demand side of the vicious circle. Thus:



It can be seen that low productivity leading to low income is a factor common to both circles. These circles trap the underdevelopment countries in a low income, low productivity trap at a stagnant level and only if it can be broken at some point can development take place.

ii) Population pressures

In most of the Asian Countries, the high rate of population growth has had an adverse effect on economic development. With improvements in medical and health facilities and the eradication of many fatal diseases and epidemics, and death rate has been reduced in underdeveloped countries. With only a marginal fall in birth rate, most of the underdeveloped countries are experiencing "population explosion". With the result that there is over-population in agriculture and other primary sectors. Population can act as an obstacle in the sense that every increase in production is swallowed up by the increasing numbers. This leaves very little surplus for investment and the development effort has to be much more than what the underdeveloped countries are capable of bearing. Increase in demand for consumption would mean a large part of investment being diverted to the production of goods meant for current consumption, and hence a reduced investment in long term projects which are required for reaching higher growth rates.

Increasing population leads to increasing unemployment, because employment opportunities do not keep pace with population growth. This means that the burden on the employed increases. The unemployed, the children and the aged have to be looked after by the few employed persons. This results in lowering the per capita income and consumption, leading to poverty, malnutrition and frustration.

ii) Lack of Technical Knowledge

For each country there are appropriate techniques depending on its resource endowments. Failure to identify these prolongs the state of underdevelopment. Further, skill formation should be directed towards the understanding of the technologies relevant to these countries. Scientific improvements, etc., should be primarily aimed at improving these techniques. Failure to do so hinders economic development. The failure could be of two kinds. (a) In some underdeveloped countries, the educational facilities required to understand these are absent due to a very low incidence of literacy, thus, the population is not even equipped to understand these techniques and there is a large scale dominance of inferior and inefficient techniques. (b) In some other countries a large majority of people is illiterate and only a small minority is literate and highly trained. The latter are too highly educated to be able to handle techniques appropriate to these countries. For instance, they might have been trained to perform highly sophisticated surgery but they may be incapable of planning for the provision of improved health facilities in the rural areas. In such countries we have highly trained manpower coexisting with underdevelopment. India, for example, has the third largest scientific manpower in the world, and yet it is an underdeveloped country. What is required here is a plan to reorient the education to suit our needs. Thus in the underdeveloped countries ignorance of appropriate techniques of production and the method to improve output are the hindering factors.

iv) Dualistic Economies

The underdeveloped countries are characterised by a dualistic economic structure. With great inequalities of incomes, the high-income groups are affected by the consumption patterns of the advanced countries. A small section of the rich are able to enjoy a very high standard of living, while others live in a great poverty. The demand for luxury goods leads to misuse of scarce capital goods, foreign exchange and trained manpower. The diversion

of these resources leads to a reduction in the resources available for legitimate economic development. Thus a dualistic economy only causes inequalities of income and consumption but it also sets up a formidable obstacle to economic development.

v) **Lack of Preparation for Industrial Revolution**

The industrial development depends on the social and cultural groundwork. The developing countries are making efforts to accomplish industrial development and the preparation for such development simultaneously. Moreover, in such countries agricultural and commercial sectors have not been sufficiently developed for sustaining the rapid industrial growth. In most of these countries the basic prerequisite of economic growth such as strong desire for material benefit, willingness to work hard with seriousness and punctuality, etc., are absent.

II) **NON ECONOMIC FACTORS**

While there are certain economic reasons for the prevalence of poverty and underdevelopment in these countries, they alone cannot explain why such countries have not developed. There are also some social factors that also work as bottlenecks for economic development. Let us now discuss them.

i) **Historical Factors**

The basic reason for the backwardness of the underdeveloped countries is that they were late starters in the race. This is due to the fact that most of them had been colonies of western powers for quite a long period. This resulted in their exploitation by the colonial powers. The colonies provided the raw materials as well as an assured market for the finished products of the advanced countries. As such the latter were not interested in developing the colonies to help them to achieve economic self-sufficiency, as that would retard their development. It was, therefore, in their interest kept these colonies perpetually underdeveloped. The Western countries thus developed only those sectors in which they were built to open up the rich hinterland for export purposes. Thus, railways, ports, and other infrastructure were built in a haphazard manner, with most of their traditional industries destroyed due to cheap foreign goods. The Indian cotton textile industry is a striking example of this policy followed by the Britain. After attaining independence, the former colonies were left with practically ruined economies, some sectors well developed and others backward and they had to shoulder the onerous task of building up their economies from scratch, and to correct the many imbalances caused by the unfair economic policy of the colonists.

ii) **Cultural Obstacles**

The attitude of the masses in the underdeveloped countries is strikingly different from their western counterparts. In many underdeveloped countries, the dogmas of religion are strictly followed, and the majority of the population believes in fate, karma, and destiny. They have a philosophical attitude towards life. Greater stress is placed on spiritual development than on material welfare. This has resulted in a social acceptance of hard-life, death and disease, with little effort being made to improve living conditions. The Western countries breaking away from the Orthodox Church and the narrow religious dogmas were in a better position to improve their material condition. With a rational and scientific outlook, they recognised the great potentiality of science and technology and worked to harness them for economic development. But in the underdeveloped

country, where superstition and orthodoxy prevail, understanding of natural phenomena was not put to production use.

Certain inhibiting social customs were also responsible for the low-level development. The joint family system killed all initiative and enterprise, tying down all members of the family in one house. People give much importance to the religious feeling and even, they fight for the places of worship. It has given rise to religion based terrorism in such countries. Nowadays, cross border terrorism has become a severe problem hindering the developmental activities in these countries.

iii) Political Obstacles

Political stability works as an important prerequisite for steady economic development. Frequent changes of the Governments lead to diversion from developmental activities. The decision to pursue economic development involves hard choices like withering subsidies, popular welfare schemes, etc. thus, the governments will be unwilling or incapable to take necessary steps to promote economic development.

Check your Progress-3

List out the economic factors, which hinder the economic development.

22.8 FACTORS WHICH DETERMINE ECONOMIC DEVELOPMENT

Many of the hindering factors, could, if properly managed, be made to overcome the economic development. For this purpose, efforts must be made to overcome the variety of factors influence the economic development. These factors can be divided into economic factors and non-economic factors.

I. ECONOMIC FACTORS

- (i) **Natural Resources:** The availability of fertile land and development of agriculture sector. Industrial development of minerals like iron ore, copper, tin, bauxite, coal, etc. resources is just necessary for economic development properly exploited through improved techniques.
- (ii) **Capital Formation:** It plays a major role in the purpose of accelerating economic progress high raises the level of investment in the country. Capital progress. It helps in exploitation of natural resources of markets, which are essential for economic development.
- (iii) **Surplus of Agriculture:** The marketable surplus in the development of the country. The agricultural

Social and Cultural Factors

The social and cultural factors are different from that of economic factors. The suppression of religion and laid on spiritual conditions of all reverse confines of more rational nature, and

sector by supplying the adequate food grains. The scarcity of food grains in the urban areas will arrest the industrial growth. If sufficient marketable surplus is not available, the country may have to import the food grains, which will cause a balance of payments problem. It involves large scale spending of foreign exchange that can be used for the import of technology and other capital goods.

- (iv) **Economic Planning:** Developing countries can develop properly with the help of economic planning. Necessary resources required for the development can be easily raised. If they follow capitalist path of development it may lead to many economic problems like economic inequalities, regional imbalance, etc.
- (v) **Technological Progress :** Technological changes are regarded as an important factor of development. It will lead to increase in the productivity of labour, capital and other factors of production. The low-cost capital saving labour intensive technology will certainly help the developing countries to have sustained economic development.

II. NON - ECONOMIC FACTORS

Non - economic factors will also influence economic development along with economic factors. According to Nurkse "economic development has much to do with human endowments, social attitudes, political conditions and historical accidents." Thus, social, cultural, political and other factors are as much important as economic factors in economic development. Let us explain certain important non-economic factors, which determine the economic development.

- i) **Human Resources:** Human resource is an important factor in economic development. May economists have shown that the population need not be a bottleneck, but has a great potential for generating developmental activities. A large supply of labour can be taken advantage of in two ways:
 - (a) With large surplus labour, workers will be willing to work at low wage rates. Since wages are also a cost of production, the cheap supply of labour reduces costs. This leads to higher profits than can be used for investment, leading to more production and an increase in the rate of growth. In the case of labour shortage, higher wages have to be paid and the cost of production would increase, thereby lowering profits and investments. Hence a surplus unemployed labour force would actually be helpful factor in economic development.
 - (b) Secondly, labour surplus encourages the use of labour-intensive techniques of production. These techniques tend to use more of labour than capital. In many of the industries, labour-intensive techniques of production would mean quicker and cheaper output. For instance, in the laying of the railway lines, roads, irrigation canals or even building the dams, the labour-intensive techniques of production help, in increasing output even without the help of complicated machinery like cranes, earth movers, etc. This not only leads to increase in production but also ensures the availability of scarce capital goods, which can be used more efficiently, elsewhere, to build up other sectors.
- ii) **Desire to develop:** The economic development to a great extent depends on the people desire to develop. It depends largely on the people's participation. The development is not a mechanical process. It involves active and fruitful participation of the people. The outcome of any development activity will depend on the skills, quality and attitudes of the people of the country.

- iii) **Political and Administrative Factors:** Political and administrative factors also help the economic development. Economic development in the countries like Britain, Germany, Japan has been due to their political stability and strong administration. A strong, efficient and incorrupt administration is essential for economic development.
- iv) **Social Organisation:** Mass participation in the developmental activities is a precondition for rapid economic development. When the fruits of growth are fairly distributed, the people will show interest in the development activity of the country. The social attitudes, values and institutions in the underdeveloped countries should be changed for economic development to take place. People are to be properly educated in this regard. The people must allow the Government and entrepreneurs to take up development activities by maintaining peace and communal harmony in the society.

Thus, many factors, both economic and non-economic, are important for promoting economic development in the economy. The two major hindrances to development namely, population and inadequate supply of capital, can be used to plan for rapid economic development. The first of the two helps us to obtain as much labour as is needed at low wage rates and the latter enables us to use labour intensive techniques.

Check Your progress-4

How can certain hindrances be used in planning for economic development?

.....

.....

.....

.....

22.9 HUMAN DEVELOPMENT

In recent years Prof. Amartya Sen emphasised on the concept of human capabilities for the purpose of measuring economic development in a country. According to him the core of human well-being is to enhance people's capabilities for attaining higher standards of health, knowledge, self-respect and the ability to participate actively in community life. The standard of living in a society should not be judged by GNP per capita but by people's capabilities. The relevant capabilities include being away from starvation, from hunger, from under nourishment, participation in communal life, being adequately sheltered and so on. The United Nations Development Programme has incorporated Prof. Sen's view in its first Human Development Report in 1990.

22.9.1 THE CONCEPT OF HUMAN DEVELOPMENT

Human Development is a broad and comprehensive concept. The Human Development Report defined it as "a process of enlarging people's choices". The most critical choices are to lead a long and healthy life, to be educated and to have a decent standard of living. Choices include political freedom, guaranteed human rights and various ingredients of self-respect. These are some of the essential choices of people, which are important for getting other opportunities.

The concepts of economic growth and Human Development (HD) are not the same. The economic growth focuses exclusively on the expansion of only one choice, i.e., income.

Whereas the HD embraces the enlargement of all human choices, whether economic, social, cultural or political. Thus, HD is a wider concept than economic growth. It is very much concerned with economic growth and with its distribution, basic human needs, human aspirations, etc. Mere expansion of income may not enlarge all other choices of the people for the simple reason that income may be unevenly distributed in the society and the society may not be allowed to enlarge human options in spite of income expansion. Sometimes accumulation of wealth may not be necessary for the fulfillment of several kinds of human choices like equality, democratic rights, knowledge. Economic growth is essential for human development. The human development is also important because it is the healthy and educated people who can contribute to economic growth by taking part in economic activities. Thus, economic growth and human development are closely related. It can be concluded that economic growth is a means to an end and human development is an end itself.

Human Development is better measure of economic development because of the following reasons:

- i) It results in improving the human condition and people's choices:
- ii) It is a means to higher productivity;
- iii) It helps in reducing the population growth;
- iv) It shows a good physical environment;
- v) It reduces civil disturbances in the society for providing political stability.

It is clear from the above discussion that the human development concept covers the entire society and not just the economy. It gives importance to political, cultural and social factors along with economic factors. The people are rightly regarded as the end of development and the means are not forgotten.

According to Mahbub UL Haq, there are four essential components in the human development aspect namely, equity, sustainability, productivity and empowerment. By the enlargement of people's choices, they must enjoy equitable access to all the opportunities. Sustainability is a matter of distribution equity i.e., sharing development opportunities by the present and future generations and ensuring intragenerational and intergenerational equity in access to opportunities. The third component, i.e., productivity requires investments in people and an enabling macro economic environment for them to achieve their maximum potential. And, the empowerment means that people are in a position to exercise choices of their own with free will and it envisages full employment for them.

22.9.2 HUMAN DEVELOPMENT INDEX

In recent years the concern of development economists has shifted from economic growth to human development. As we have seen already, the human development is the 'end' of all the activities. But its measurement is not an easy task. The United Nations Development Programme in its Human Development Report (HDR) published in 1990 has formulated and used Human Development Index (HDI) as a composite measure of Human Development. Since then three supplementary indices have been developed namely, the Human Poverty Index, Gender-related Development Index and Gender Empowerment Measure. The concept of HD, however, is much broader than the HDI and these supplementary indices. It is because many vital dimensions of human development, such as participation in the life of community, are not readily quantified.

The HDI measures the overall achievements in a country in three basic dimensions of human development, namely longevity, knowledge and decent standard of living. It is measured by life expectancy, educational attainment (adult literacy and combined primary, secondary and tertiary enrolment) and adjusted income per capita in purchasing power parity US Dollars. The HDI is summary, not a comprehensive measure of HD.

In terms of HD, Norway with an HDI value of 0.939 in 1999 ranks first and Australia with a HDI value of 0.936 is 1999 ranks second. India with a HDI value of 0.571 ranks 115th and Sierra Leone ranks the lowest in terms of human development in 1999, out of the 162 countries for which HD Report 2001 calculated the index. It has classified these countries into high, medium and low human development countries. India is classified as a medium human development country.

Check Your Progress-5

- (i) What are the differences between economic growth and human development?

.....

.....

.....

.....

- (ii) What is Human Index?

.....

.....

.....

.....

22.10 SUMMING UP

Economic growth means an increase in the national income of country. It can be defined as a rate of expansion that can move an underdeveloped country from a near subsistence mode of living to substantially higher levels. It is measured in terms of Gross Domestic Product, Per Capital Product and distribution of income. Economic Development means growth plus progressive changes. It is the growth with structural changes in the economy. The concepts of economic growth and development are not the same. There exist certain differences between them. The term 'underdevelopment' means lack of development. It is a situation characterised by inequalities and unemployment. There are certain common characteristics of developing countries like, high rates of population growth, preponderance on agriculture, low GNP, etc.

There are some fundamental reasons for underdevelopment of certain countries. These are the factors, which hinder the development process. They are capital deficiency, lack of technical knowledge, lack of preparation for industrial revolution, social and cultural factors, etc. Many of the hindering factors, could, if properly managed be made to generate economic development. The most important one is Human Resource.

In recent years the concern of development economists has shifted from economic growth to human development. The human development is a process of enlarging people's choices. Economic growth is essential for human development. The economic growth and human development are closely related. The United Nations Development Programme has formulated Human Index for the purpose of measuring human development. It is based on three important factors namely life expectancy, educational attainment and adjusted income per capita.

22.11 CHECK YOUR PROGRESS : MODEL ANSWERS

1. (i) Economic growth means an increase in the national income. It implies more output and greater efficiency in production. It may be defined as a rate of expansion that can move an underdeveloped country from a near subsistence mode of living to substantially higher levels. It refers to quantitative sustained increase in a country's per capita income.
(ii) The economic growth can be measured by Gross Domestic Product, per Capita Product and distribution of income. Measuring economic growth in terms of per capita output is regarded as the most appropriate approach.
2. Economic development is wider in scope and includes economic growth. The differences relate to the nature and causes of change. Growth means more output, while economic development implies more output and changes like technical and institutional. Economic growth implies an expansion of the system but development includes structural transformation also. An economy may grow but it may not develop. Economic development involves many new dimensions.
3. There are certain factors which hinder the development. They are also known as bottlenecks or obstacles to development. They can be classified as economic and non-economic. Economic factors include capital deficiency, population pressures, lack of technical knowledge, dualistic economies and lack of preparation for industrial revolution.
4. The hindrances to economic development like population and inadequate supply of capital can be used to plan for rapid economic development. Human resource is an important factor in economic development. A surplus unemployed labour force would actually be a helpful factor in economic development. It encourages the use of labour intensive techniques of production. This also ensures the availability of scarce capital goods, which can be used more efficiently in the other sectors of the economy.
5. (i) There are some differences between the concepts of economic growth and human development, though they are closely related. The economic growth focuses exclusively on the expansion of only one choice i.e., income, while HD embraces the enlargement of all human choices. Economic growth is a means to an end, while the HD is an end itself. HD gives importance to various social factors in addition to economic factors.
(ii) HDI is a composite measure of Human Development. It measures the overall achievements in a country in the three basic dimensions of human development namely, longevity, knowledge and decent standard of living.

22.12 MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Differentiate between the economic growth and economic development.
2. What is economic growth? How is it measured?
3. Explain the factors, which hinder the economic development.
4. Suggest remedial measures to underdeveloped countries for their development.
5. What is human development? What are its components?
6. What is human development? How is it measured?
7. Explain the factors which influence the economic development.

II. Answer the following questions in about 15 lines each.

1. Explain the term "Economic Growth".
2. Distinguish economic development from growth.
3. What is underdevelopment?
4. List out the common features of developing countries.
5. Describe the Human Index.
6. Explain the concept of Human Development.
7. What is vicious circle of poverty ?
8. What do you mean by dualistic economies?
9. Explain the concept of economic development.
10. How can certain obstacles to economic development be used in favour of economic development?

22.13 RECOMMENDED BOOKS

- | | | | |
|----|------------------|---|---------------------------------|
| 1. | Sampat Mukherjee | : | Modern Economic Theory |
| 2. | Misra & Puri | : | Indian Economy |
| 3. | Dutt & Sundaram | : | Indian Economy |
| 4. | Gosh P.K. | : | Economics of Development |
| 5. | Benjamin Higgins | : | Economic Development |
-

22.14 GLOSSARY

- | | | |
|-----------------------------|---|---|
| Economic Development | : | The progress of growth in the structural changes in the economy. |
| Economic Growth | : | The steady progress of increasing productive capacity of the economy. |
-

Human Development	:	Enlarging the people's choices.
Human Development Index	:	A composite measure of human development.
Investment	:	The expenditure in real capital goods.
Underdevelopment	:	A situation characterised by inequalities and unemployment.
Vicious Circle of Poverty	:	A set of forces that act and react on each other in such a way that they keep the country always in a state of poverty.

BRAOU

UNIT-23 : INFLATION AND UNEMPLOYMENT

Contents

- 23.0 Aims and Objectives
- 23.1 Introduction
- 23.2 Meaning of Inflation
- 23.3 Types of Inflation
- 23.4 Causes and Effects of Inflation
- 23.5 Control of Inflation
- 23.6 Inflationary Gap, Reflation and Stagflation
- 23.7 Meaning of Unemployment
- 23.8 Categories of Unemployment
- 23.9 Causes of Unemployment
- 23.10 Measures for Removing Unemployment
- 23.11 Relationship between Inflation and Unemployment
- 23.12 Summing Up
- 23.13 Check Your Progress : Model Answers
- 23.14 Model Examination Questions
- 23.15 Recommended Books
- 23.16 Glossary

23.0 AIMS AND OBJECTIVES

The purpose of this unit is to explain various aspects of the two economic problems viz., inflation and unemployment.

After studying this unit, you should be able to :

- explain the meaning and types of inflation;
- identify the causes of inflation;
- describe the concepts of inflationary gap and stagflation;
- suggest the measures to control inflation;
- explain the meaning and categories of unemployment;
- describe the causes of unemployment;
- suggest measures to remove unemployment; and
- explain the relationship between inflation and unemployment.

23.1 INTRODUCTION

Inflation and unemployment are the two serious problems faced by many economies in the world, particularly Third World countries. Everyone, either in the Government or outside, either producers or consumers, either employees or unemployees talk about these problems. The worst sufferers of these problems are the common people in the society. This leads to frustration and restlessness among the people. As such the Governments aim at controlling inflation and removing the problem of unemployment in the economy. The inflation and unemployment are regarded as indicators by which it can be known how well an economy is functioning. In this unit the meaning and causes of these problems and the remedial measures to overcome them are discussed.

23.2 MEANING OF INFLATION

Inflation refers to a situation of general increase in the level of prices and consequent fall in the value of money over a period of time. Different economists defined the term 'inflation' in different ways. Let us consider some important definitions which would give us a comprehensive idea about this intricate problem.

Harry Johnson defines inflation as 'a rise in prices'. Crowther defines inflation as 'a state in which the value of money is falling, i.e., prices are rising. Prof. Samuelson puts it that "inflation occurs when the general level of prices and costs are rising".

Thus, the common feature of inflation is a price rise. The degree of price rise can be measured by price indices. Some economists view inflation as a pure monetary phenomenon, while others as a full employment phenomenon. Monetarists say that when money supply exceeds the normal absorbing capacity of the economy, it leads to persistently rising prices. Krenmer defines inflation "as too much currency in relation to the physical volume of business being done". Goldenweiser states that inflation occurs when the volume of money actively bidding for goods and services increases faster than the available supply of goods.

As understood by some of the leading Cambridge economists like A.C. Pigou, "inflation exists when money income is expanding more than in proportion to income earning capacity". Thus, it is clear that when the quantity of money in circulation is more than the total amount of goods and services, the result is an extraordinary increase in prices.

Modern economists like Keynes, regarded inflation as a phenomenon of full employment. Keynes relates inflation to a rise in price level which comes into existence after the stage of full employment. He distinguishes between two types of price rise, namely:

- (a) rise in prices accompanied by increase in production
- (b) rise in prices not accompanied by increase in production

For instance in an economy which is working at a low level with the availability of unutilised resources, an expansion of money and other factors leading to an increase in demand will result in a rise in prices and an increase in the volume of goods and services. Thus rise in prices will be accompanied by an increase in production and employment. This will continue until all unemployed persons are employed and capital and other resources are fully utilised; that is to say until a state of full employment is reached. Beyond this state, further increase in the volume of money or rise in demand will result in a rise in prices without a simultaneous rise in production and employment.

According to Keynes, rise of prices upto the state of full employment is good for the economy because it is accompanied by increased employment and output. This is called semi-inflation or partial inflation. After the state of full employment, and rise in prices is bad for the economy because there is no corresponding rise in production and employment. This is called real inflation or full inflation. This phenomenon can be very well represented with the help of the following diagram.

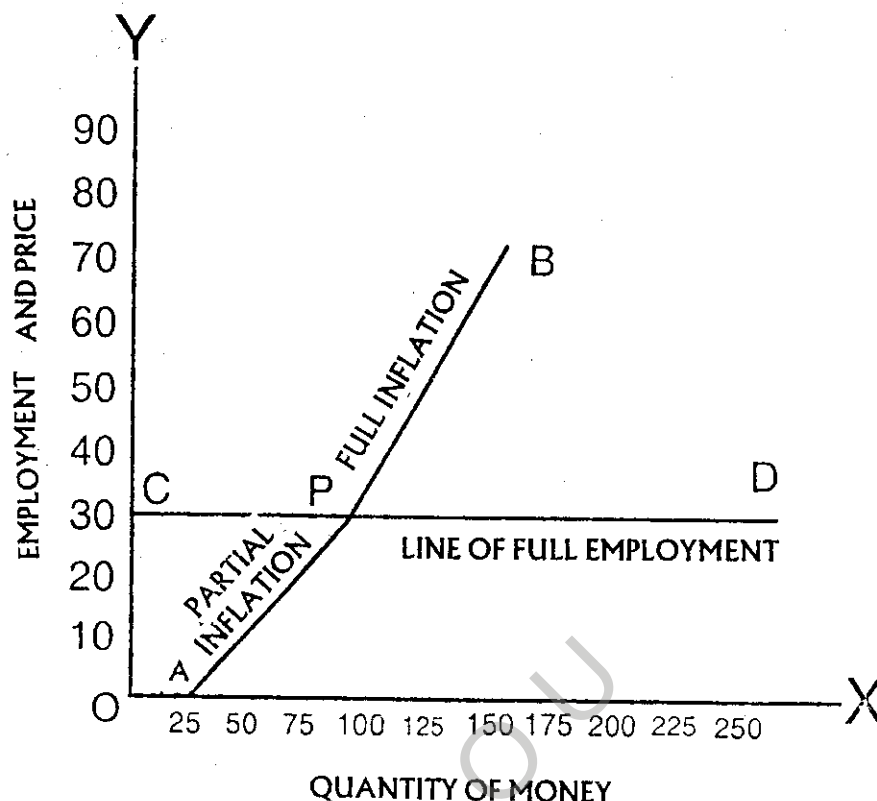


Fig. 23.1 Inflation

In the above diagram price and employment are measured along the Y axis and quantity of money on X axis. CD is the line of full employment on which P is the point of full employment. There is no doubt that inflation is accompanied by some rise in prices but every rise in prices does not indicate inflation. There is some inflation upto the point P and the line AP measures partial inflation. It is because upto P, increase in money supply was accompanied by increasing employment opportunities. It is beyond the point P, inflation sets in.

The term inflation, as understood by Keynes, can be applied to a developing economy like India where there is mounting unemployment and unutilised resources. Due to several constraints like limited capital, machinery, lack of transport, inadequate technical know-how, etc., rise in price level may not lead to increased output even though the country may not have reached a stage of full employment.

From the above definitions it is clear that inflation is the rise in the general price level or fall in the value of money. It does not refer to changes in relative prices of commodities. Here, an important point to be noted is that during inflation all prices are not necessarily rising. Even some prices may be falling. For example, during the periods of inflation, in India, the prices of certain goods like personal computers, digital diaries, digital watches have declined.

Deflation

Deflation is an exactly opposite situation of inflation. It refers to a phenomenon of constantly falling prices of goods and services. It is an economic situation during which period the prices are falling or the value of money is rising. In the words of Pigou "deflation is that state of falling prices, which occurs at the time when the output of goods and services increases more rapidly than the volume of money income of the economy". But modern economists do not completely link inflation with the decrease in money supply. Crowther is of the opinion that "deflation is that state of the economy where the value of money is rising i.e., prices are falling.

Measurement of Inflation

Inflation is conventionally measured in terms of movement of wholesale prices. However, from the point of view of the consumers, inflation is to be measured in terms of consumer price index. Presently, in India, apart from the Wholesale Price Index (WPI), three different indices of consumer prices are available. They are Consumer Price index for Industrial Workers (CPI-IW), Consumer Price Index for Urban Non-Manual Employees (CPI-UNME) and Consumer Price Index for Agricultural Labourers (CPI-AL). Of these consumer price indices, the CPI-IW is the most important and popular one. The Dearness Allowance to the Central Government employees in India is granted based on the CPI-IW. For the purpose of calculating these indices, at present the year 1993-94 is taken as the base year (1993-94=100)

Looking at the Wholesale Price Index, in India the inflationary pressure was concentrated in primary commodities such as foodgrains, sugar, oil prices, etc. Prices rose rapidly during 1990-91 and 1991-92 and the average annual rates of inflation were 10.3 per cent and 13.7 per cent (based on 1980-81=100) respectively. Since then the inflation rate was controlled because of better performance of agricultural sector and reduction in the fiscal deficit. The inflation rate was brought down to 10.1 per cent during 1992-93 and 8.4 per cent during 1993-94. However, the inflation rate rose again during 1994-95 (10.9 per cent) because of heavy fiscal deficit and rise in administered prices. Since then, the inflationary situation has come under control with single digit and the prices particularly of primary food articles have noticeably come down. During the year 1999-2000, the average annual rate of inflation was the lowest at 3.3 per cent.

Check Your Progress-1

- i) Differentiate between partial inflation and true inflation.

.....

.....

.....

.....

- ii) How is inflation measured in India ?

.....

.....

23.3 TYPES OF INFLATION

Economists classified inflation into various types based on different grounds.

- i) **Based on the role of increase in price level**
(i) creeping, (ii) walking; (iii) running, and (iv) galloping..
- ii) **Based on the factors which influence money supply and demand for goods and services**
(i) excessive; (ii) cost; and (iii) deficit
- iii) **From the scope point of view**
(i) comprehensive; and (ii) sporadic
- iv) **According to the reaction of the Government to the prevalence of inflation**
(i) open; and (ii) suppressed inflation

Let us discuss them one by one.

I. Creeping, Walking, Running and Galloping Inflation

The sustained rise in the general price level may of various magnitudes. According to the rates of rise in prices different names have been given to inflation i.e., creeping, walking, running and galloping

- i) **Creeping Inflation** : It refers to very slow rise in prices like a creeper. When the rise in price level is not more than 3 per cent a year, it is called creeping inflation. Such a inflation is regarded safe and essential for economic growth.
- ii) **Walking Inflation** : When the rise in prices is in the range of 3 to 7 per cent a year or less than 10 per cent, it is called walking inflation. This indicates a warning signal to the Government to take steps for controlling it.
- iii) **Running Inflation** : It refers to a double digit inflation of 10-20 per cent per annum. Such inflation affects the poor and common people adversely.
- (iv) **Galloping Inflation** : When the prices rise very rapidly at double or triple digit rates from more than 20 to 100 per cent or more per year it is called **galloping inflation**. It is also known as **hyperinflation**. During such situations prices rise every moment and many times a day. The rate of inflation becomes immeasurable and absolutely uncontrollable. It is a serious problem and causes economic distortions and disturbances in the economy.

II. Excessive, Cost and Deficit Inflation

Inflation is classified as excessive inflation, cost inflation and deficit inflation based on the factors that influence the supply of money and demand for goods and services in the economy.

- i) **Excessive Inflation** : It refers to the price rise due to excess of money supply in relation to the availability of real goods and services in the economy.

- ii) **Cost Inflation** : It refers to the situation when prices rise due to increase in the prices of factors of production. It takes place when the money incomes of factors particularly wages increase without increasing output. It is also known as wage-induced inflation.
- iii) **Deficit Inflation** : When the governments are unable to finance their current expenditure by taxation, they go for deficit financing i.e., printing of paper currency. This leads to increase in the purchasing power in the society and thereby prices rise in the economy. This situation is referred to as deficit - induced inflation.

III Comprehensive and Sporadic Inflation

From the scope point of view the inflation can be either comprehensive or sporadic.

- i) **Comprehensive Inflation** : When the prices of every commodity in the economy rises it is referred to as comprehensive inflation. It is also called economy-wide inflation. This is the phenomenon of general price level rise in the economy.
- ii) **Sporadic Inflation** : It refers to rise in prices of specific goods due to fall in the supply of those goods. For example, during drought conditions the prices of foodgrains may increase. Thus, it is a kind of sectional inflation.

IV Open and Suppressed Inflation

Based on the government action to control the inflationary situation in the economy, the inflation is divided into open inflation and suppressed inflation.

- i) **Open Inflation** : The inflation which occurs when the Government makes no attempt to control it, is called 'open inflation'. Free market mechanism is allowed to play its role in controlling the inflation.
- ii) **Suppressed Inflation** : Sometimes the Government controls the prices of some commodities by certain administrative measures such as price-ceilings, rationing, etc. Suppressed inflation refers to a situation where demand exceeds supply but the effect on prices is minimised by the use of price controls by the Government. These price controls do not deal with the causes of inflation but simply seek to suppress the symptoms of inflation. This type of inflation is also known as repressed inflation.

Check Your Progress 2

What do you mean by Creeping, Walking, Running and Galloping Inflation ?

.....

.....

.....

.....

23.4 CAUSES AND EFFECTS OF INFLATION

Economists differ over the causes that lead to inflationary situations in an economy. As we have already discussed, monetarists view that inflation is due to demand pull or excess demand. That means, inflation is the result of excessive increase in the money supply

in the face of an inelastic supply of goods and services. Other economists view that inflation is due to cost-push factors. Let us now explain these views.

i) Demand Pull Inflation

Inflation takes place due to the demand for goods and services exceed their total supply. Goods may be in short supply because either resources are fully utilised or production cannot be increased rapidly to meet the increasing demand. When there is a shortage of raw-material, equipment and machinery, technology etc., the output of goods and services may not increase corresponding to an increase in money income. Speculation too plays significant part in aggravating inflation. When prices are expected to increase, the traders will hoard the goods and consumers will also purchase more goods, this will lead to rise in prices. This situation is described as 'too much money chasing too few goods'. Excess increase in money supply leads to increase in money incomes and thereby leading to more demand for goods and services. Thus increase in the demand causes price rise in the economy. Such inflation is called demand pull inflation and it is the most common type of inflation

ii) Cost Push Inflation

In this case the prices rise due to increasing factor costs. It is mainly caused by an increase in wage rates and profit margins. It occurs when wages rise more rapidly than the productivity of labour. This leads to a rise in the total cost of production and a consequent rise in the price level. Further, an increase in the domestically produced or imported raw materials may lead to increase in the cost of production of finished goods. Increase in the profit margins also leads to cost push inflation. Under the conditions of imperfect competition, oligopolistic and monopolistic firms raise the prices of their products to offset the rise in the production costs so as to earn higher profits. This leads to profit push inflation.

iii) Mixed Demand Pull and Cost Push Inflation

Some economists do not accept this dichotomy that inflation is either demand-pull or cost-push. They view that actual inflationary process contains some elements of both. In fact, excess demand and increase in costs operate simultaneously and interdependently in an inflationary process. This inflation is called as 'mixed demand-pull and cost-push inflation. These demand-pull and cost-push inflations may not start simultaneously. In fact, an inflationary process may begin with either excess demand or wage push. In demand-pull inflation, increase in price may precede increase in factor costs, and may be vice-versa in the case of cost-push inflation. But the inflationary process cannot be sustained in the absence of other forces. If inflationary process begins with excess demand with no cost-push forces at work, excess demand will raise prices which will in due course pull up money wages. But rise in money wages, here is not the result of cost-push forces. Such a mixed inflation will lead to sustained rise in prices. On the other hand, if the inflationary process begins from the supply side due to increase in factor costs, it will lead to increase in prices. But the price rise will not sustain if there is no increase in demand.

iv) Structural Inflation

The demand-pull and cost-push inflations are generally attributed to developed countries where the full employment situation exists. In the case of developing economies the reason for price rise may be mostly structural deficiencies. According to Myrdal and Streeten, the underdeveloped countries like India, suffer with structural imbalances due to market imperfections and stagnancy as may be caused by a dual nature of the economy with high fragmentation. As such scarcity in some sectors may cause underutilisation of the productive

capacity of the economy and create the problem of sectoral inflation which is more serious than a general price rise. The generation of money income causes prices to rise without an appropriate rise in the real income because of prevalence of these bottlenecks in the economy.

The main bottlenecks are (i) market imperfections, (ii) capital bottleneck, (iii) food bottleneck, (iv) entrepreneurial bottleneck, (v) infrastructural bottle-neck, (vi) foreign exchange bottleneck, and (vii) resource gap.

In developing countries, like India a variety of factors contribute to the inflationary situation consisting of both demand-pull factors and cost-push factors. The main demand-pull factors are (i) mounting Government expenditure; (ii) deficit financing and increase in money supply, (iii) influence of black money, and (iv) uncontrolled growth of population. The cost-push factors include (i) fluctuations in output and supply, (ii) taxation, (iii) Administered Prices, and (iv) hike in oil prices.

Effects of Inflation

The effects of inflation are not uniform on all groups of people in the economy. For the purpose of analysis of the impact of inflation all people can be divided into the following major groups.

1. **Debtors and Creditors** : While debtors as a group are benefitted by inflation, the creditors sustain loss. When a person borrows money before the rise in price level and repays at a later date when prices have risen, the purchasing power of money repaid will be less. The creditor loses because the value of money is less than the value at the time of lending.
2. **Investors** : Persons who invest in equities are benefitted by inflation. During the period of inflation equity dividends increase due to increased corporate earnings. So equity investors are benefitted.

On the other hand, inflation affects adversely those who invest in fixed interest yielding bonds. They get the same increase but less purchasing power.

3. **Business Community** : Manufacturers, entrepreneurs, businessmen stand to gain during inflation. Businessmen sell the commodities at higher prices and earn windfall profits. The entrepreneurs earn huge profits as the rise in prices will be more than the rise in the cost of production.
4. **Wages and Salaries** : Workers and salaried sections are adversely affected by inflation since wages/salaries do not rise in proportion to rise in prices. Their purchasing power will be relatively less and workers tend to lose. So trade unions bargain with employers for rise in wages.
5. **The Rentier Class** : People of fixed income groups like pensioners, annuity holders, those living on past savings, etc., suffer the most on account of inflation. Erosion in their real incomes reduces their standard of living.
6. **Farmers** : Farmers are benefitted during inflation because of two reasons. Firstly, the prices of farm products increase and secondly, the increase in cost of production is less than the rise in prices. This is more so in the case of farmers who produce food grains. Further in the capacity of debtors they pay back less purchasing power to the creditors. Thus inflation gives double benefit to the farmers.

7. **Consumers** : Inflation affects consumers very badly. Rise in prices reduces private consumption through reduction in the purchasing power of the people. Thus consumers have to lead a low standard of living during inflation.

Kenneth K. Kuriharan, summarises the effects of inflation thus : inflation redistributes wealth and income in such a way as to hurt the consumers, creditors, small investors and low and fixed income groups and to benefit the businessmen, debtors and farmers.

Thus, the inflation has got adverse effects on production as well as the redistribution of income. It leads to economic recession in many sectors of the economy. As a result of inflation, prices of certain important items of consumption increase very high. It brings a mal-distribution of incomes. The producers, traders and speculators gain enormously through ever-rising profit margins. On the other hand, people living on past savings, fixed income groups are adversely affected due to continuous fall in the purchasing power of money. The working class suffer badly, particularly the unorganised workers, whose money wages do not rise despite persistent rise in the price level. Thus, the rich become richer and the poor become the poorer.

Let us now make a mention of effects of **deflation**. The effects of deflation are quite opposite to that of inflation. During the period of deflation the creditors will gain and debtors lose. The deflation is beneficial to those who have invested in the fixed income yielding assets. However, investors in equities are adversely affected.

Production and trade are adversely affected by deflation. Profits of traders are reduced because of falling prices. Entrepreneurs tend to reduce their investment and that results in unemployment. It benefits wage and salary earners. Pensioners, annuity holders and fixed income group are benefitted by deflation. Consumers are largely benefitted because they will be able to buy more and more goods and services with the same money income.

The choice between inflation and deflation is like a choice between two evils but the lesser evil is inflation. It has got a favourable effect on employment and output. In the case of the underdeveloped countries, mild inflation is advocated as one of the policy measures of development. But it has to be carefully noted that inflation does not cross its limits.

Check Your Progress-3

Differentiate between demand-pull inflation and cost-push inflation.

.....

.....

.....

.....

23.5 CONTROL OF INFLATION

At this stage, we all know that inflation is caused by the shortage of aggregate supply compared to the aggregate demand. The inflation affects different sections of the society adversely. The Governments should take appropriate measures to control the inflationary situation in the economy. The measures to control inflation consist of those controlling the excess demand and those promoting production to fill the gap in supply of goods and services. These measures are usually grouped under three heads namely, monetary measures, fiscal measures and other measures.

I. Monetary Measures

The monetary measures aim at reducing the money supply and consequently reducing the demand. The Central Bank of the country initiates the monetary measures to control the inflationary pressures in the economy. The weapons available under monetary measures are (i) Bank Rate; (ii) Open Market Operations ; and (iii) Cash Reserve Ratio. The other measures include demonetisation and issue of new currency.

- i) **Bank Rate** : It is the rate of interest charged by the Central Bank on the loans taken by the commercial banks. During the period of inflation, it raises the bank rate, which ultimately leads to rise in the interest rates charged by the commercial banks on their customers. As a result the loans already taken may be repaid and new loans are restricted. The money in circulation is cut down, the demand for goods falls and thereby prices also fall.
- ii) **Open Market Operations** : The buying and selling of securities by the Central Bank in the open market are known as open market operations. At the time of inflation, the Central Bank sells the securities, so that the excess money with the public goes to the bank and as a result money supply reduces, and in turn demand for goods and the prices of goods will come down.
- iii) **Cash Reserve Ratio** : This refers to the ratio that commercial banks have to keep out of their deposits with the central bank. During the inflation the central bank increases the cash reserve ratio thereby the capacity of commercial banks to grant loans and advances is restricted. This leads to decrease in the money supply, which in turn leads to fall in demand and prices.
- iv) **Demonetisation** : It refers to withdrawing of currency of higher denominations. Such a measure is usually adopted when there is abundance of black money in the country.
- v) **Issue of New Currency** : It is the extreme measure to issue new currency in the place of old currency. Under this system, one new note is exchanged for a number of notes of the old currency. Such a measure is adopted when there is an excessive issue of notes and there is hyper-inflation in the economy.

Besides these quantitative measures, the Central bank also uses a number of selective credit control measures, such as raising margin requirements and regulating consumer credit. The monetary measures may not be effective in controlling inflation, if inflation is due to cost-push factors.

II Fiscal Measures

For effective control of inflation, the monetary measures should be supplemented by fiscal measures. The fiscal measures relate to budgetary changes from time to time with regard to the public revenue or public expenditure. Keynes advocated Fiscal Policy as an instrument of checking inflation. According to him, if the inflation is due to excessive aggregate demand over the full employment level, it can be controlled by reducing aggregate demand. The aggregate demand can be reduced by way of increasing the rate of taxes, introducing new taxes and reducing the public expenditure. However, it is difficult for the Government to curtail certain types of expenditure like expenditure on construction of roads, education, medical and health, etc., which are essential for the development of the people. So it is not possible to reduce such expenditure altogether. However, some unproductive items of expenditure can be reduced to control inflation. The main fiscal measures are (i)

Taxes (ii) Reduction in Public Expenditure; (iii) Cutting down personal consumption expenditure; (iv) Promoting savings; and (v) Avoiding deficit financing.

- (i) **Taxes** : Increase in the rate of personal income taxes, wealth tax which are direct in nature will reduce the disposable income of the public. Then the demand for goods and prices will fall. Increased taxes on the rich people will be much more effective in checking inflation.
- (ii) **Reduction in Public Expenditure** : The reduction in the public expenditure leads to reduced flow of incomes to the public. At low levels of income, the demand for goods will also be low.
- (iii) **Personal Consumption Expenditure** : This can be reduced by imposing heavy indirect taxes like excise duties, sales taxes. This will discourage monetary consumption and demand for goods.
- (iv) **Promoting Savings** : Another measure is to increase savings on the part of the public. This will reduce the disposable income with the people and hence public consumption expenditure. For this purpose, the Government should give incentives for savings in personal income tax, float loans carrying high rates of interest. It should also introduce compulsory provident fund contributions. These will restrict the money supply and demand for goods and services.
- (v) **Deficit Financing** : Now a days the Governments in developing countries adopt the policy of deficit financing to fill the gap between the proposed developmental expenditure and the public revenue. Even the developmental expenditure on long-term gestation projects and on building the infrastructure facilities, leads to inflation. Therefore, it would be proper to avoid deficit financing at the time of inflation.

Fiscal measures are considered to be more effective than monetary measures to control inflation. However, it should not adversely affect the productive investment and result in greater unemployment.

III Other Measures

The other measures are those, which aim at increasing aggregate supply of the goods and services and thereby controlling inflation.

If the inflation is due to speculative activities, the government may try to restrict such activities. For example, in India the Government has curbed the evils of speculation in essential commodities by taking over the distribution through consumer co-operatives.

Various measures can be adopted for the purpose of increasing production of goods and services in the country to meet the requirements of demand. The raw-materials if necessary may be imported on preferential basis to increase the production of essential commodities. The export and import duties may be suitably changed to improve the supply of scarce goods in the country and to avoid exporting of raw materials and essential goods for other countries so that equilibrium can be achieved between the demand and supply within the country. The policy of rationalisation of industries helps in reducing the cost of production and increasing the productivity. Fixation of maximum prices, public distribution system, control over the private trade in food grains are the other measures, which will control the prices of essential commodities in the economy.

The control of inflation particularly in underdeveloped countries, largely depends upon the success of measure for containing fiscal deficit and for checking monetary expansion.

Besides these basic measures, it would be necessary to promote the recovery and expansion of industrial production and to supply the food grains and other essential commodities like oil and sugar at reasonable prices.

In the context of control of inflation, we talk about a term called **disinflation**. It is the process of curbing inflation. It can also be considered as a policy of deflation. As people did not like using the term deflation after 1930s a new term 'disinflation' was brought into vogue. It is a deliberate action taken by the Government during inflation to bring about the general fall in the price level. According to J.L. Hanson, disinflation is a mild form of deflation - a policy adopted to check inflation by restricting demand.

Deflationary situation in an economy is also to be controlled. For this the Government can take monetary and fiscal measures.

Check Your Progress - 4

What are the fiscal measures which can be taken for controlling the inflation ?

.....

.....

.....

.....

23.6 INFLATIONARY GAP, REFLECTION AND STAGFLATION

Inflationary gap, reflection and stagflation are the important concepts relating to the subject matter of inflation. They are described below :

i) Inflationary Gap

The concept of 'Inflationary gap' was originated by J.M. Keynes. According to him the inflationary gap in an economy refers to "An excess of anticipated expenditure over available output at the base prices". Keynes brought this concept to emphasise the strategic significance of flow of money influencing the general price level and to indicate the primary importance of fiscal measures in wiping out the inflationary gap.

The aggregate demand for goods and services i.e., total expenditure is derived from three sources : (i) Private consumption expenditure (C) (ii) Private investment (I) and (iii) Government expenditure (G). Thus the total anticipated expenditure is : $C+I+G$.

The available output to meet the demand for goods and services is a function of employment and the level of technology at a given time. Inflationary gap occurs when there is an excess of demand over available supply. The following illustration makes this concept clear.

First, let us take the demand side. During war period Government's expenditure on Armed Forces increases. This results in an increase in the volume of money. Increased income in the community will lead to increase consumption expenditure and investment. Thus there is an increase in the total expenditure (the total demand).

The net disposable income of the community which constitutes aggregate demand for goods and services may be estimated as under:

Such a narrow approach is inapplicable to a situation where the problem is widespread. This term is now extensively used to explain the existence of surplus labour in predominantly agricultural economies. Disguised unemployment is defined as a situation wherein even if some workers are removed from the processes of production, there will be no change in output. In other words, if the production remains unchanged, and not reduced in spite of withdrawal of some workers from the occupation, then there exists disguised unemployment. Ragnar Nurkse identifies the problem in technical terms when he states that marginal productivity of labour being zero over a wide range indicates the prevalence of disguised unemployment. It should be noted here that regarding the quantification of marginal productivity, there is no unanimity of opinion among economists belonging to different schools of thought and hence, the equality of marginal productivity is to be viewed as a way of conceptualising the problem rather than being a precise definition of it. In this context, Amartya Sen feels that there exists some confusion with regard to disguised unemployment. Sen feels that "the confusion arises because of not distinguishing between labour and labourer". It is not that too much labour is being spent in the production process, but that too many labourers are spending it.

Disguised unemployment normally takes the form of smaller number of working hours per head per year; for example, each of the three brothers shepherding the sheep every third day. It is thus the marginal productivity of labourer, so to say, that is nil over a wide range and the productivity of labour may be just equal to zero at marginal. It may also take the form of lower intensity of work with people 'taking it easy', for example peasant having time to watch the birds while working. If a number of labourers went away, the other would be able to produce the same output working for longer period and harder. In a family based peasant economy unemployment will naturally put on disguise. "A piece of land that can be cultivated fully by two may actually be looked after by four, if a family of four working men having no other employment opportunity happens to own it".

Let us explain the volume of disguised unemployment with the help of a diagram.

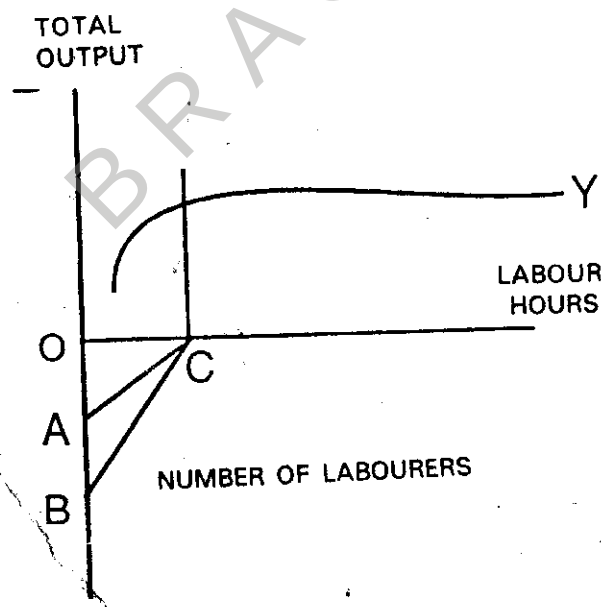


Fig. - 23.3 : Disguised Unemployment

Let OA be the number of labourers required to put in OC hours of work each working full time a day, OC/OA gives the hours of work put in by each labourer. Marginal productivity of labour becomes nil with OC labour hours. Labour is not applied beyond the point C .

The horizontal axis represents the volume of income and the vertical axis represents the volume of expenditure (C+I+G). The 45° line is the equilibrium line. At point E, the economy is in equilibrium because at that point the supply of goods and services (or real income OY) is equal to demand for them (reflected by total expenditure YE). Therefore, OY may be regarded as equilibrium income as well as full employment income at current prices.

OY = Volume of output (income)

YE = Full-employment demand

YA = New demand

AE = Inflationary gap

Suppose, the Government has to increase its expenditure for development purposes, by an additional amount equal to EA then the new total expenditure is shifted upwards. The dotted line represents C+I+G'. Then a new situation arises. The real output (or income) remains constant at OY but the monetary demand for this output is not YE but YA. Thus, there is excess of demand equal to EA. Therefore, EA represents inflationary gap which is responsible for pushing up the price level.

Wiping out the Inflationary Gap

As explained already, inflationary gap starts with additional expenditure by the Government. Through economy in Government expenditure, the excess of aggregate demand can be reduced. But this is not always possible because Government has to spend for economic development or, during war time, to sustain the war effort. The following are some of methods to eliminate the inflationary gap.

- (i) An increase in voluntary saving by the community will reduce effective demand.
- (ii) The government may use the tax system to move up the surplus purchasing power with the people.
- (iii) The output of goods and services may be increased so as to absorb the excess demand.

The inflationary gap is used statistically to measure the pressure of inflation. It enables monetary authorities to adopt proper anti-inflationary policies.

Deflationary Gap : Deflationary gap is the opposite of inflationary gap. If the volume of goods and services is larger than the aggregate demand of them, a deflationary gap will arise. Under such circumstances, the C+I+G curve is pushed downwards. The decline in demand may be because of reduction in Government expenditure, a decline in private investment, and a fall in private consumption.

Reflation

Reflation is a cure for deflation. A policy of reflation was used in Japan during the post Second World War period with a view to achieving economic recovery. Reflation refers to a situation of increasing money supply to the extent necessary to remedy the evils of a disproportionately small money supply.

When prices fall to a very large extent, it is desirable that there should be a gradual rise in the price level. The Government has to take steps to control deflation when it has reached the other extreme. Such action on the part of the Government is described as **reflation**. Cole defines reflation as "inflation deliberately undertaken to relieve depression". According to H.E. Evitt, "if, after a period of deliberate deflation, it becomes apparent

that a fall in prices and wages has been caused to an extent which is having serious effects on industry and trade...some resort to inflationary principles must be made. However, such a process does not result in inflation as such, but is merely retracing steps taken too far in the wrong direction, it is known as 'reflation' so as to absolve it of any inflationary taint."

Stagflation

Stagflation is a phenomenon where the economy experiences stagnation as well as inflation. It is a situation in which the economy experiences stagnation or unemployment with a high rate of inflation. It is also called inflationary recession. It implies inflation and slow growth. The term 'stagflation' is the combination of stag plus flation, taking 'stag' from stagnation and 'flation' from inflation.

The main cause for stagflation is restriction in the aggregate supply. When aggregate supply is reduced there is a fall in output and employment and the price level rises. A reduction in aggregate supply may be due to a restriction in labour supply. The restriction in labour supply, in turn, may be caused by a rise in money wages on account of strong unions or by a rise in the legal minimum wage rate. When the wages rise, the firms are forced to reduce employment. As a result there is a fall in the real income and consumer expenditure. The decline in the consumption will be less than that of real income. This will lead to excess demand in the commodity market which will push up the prices.

Another reason for fall in aggregate supply is the increase in indirect taxes by the Governments. When indirect taxes are increased, they raise costs and prices and reduce output and employment. Increase in taxes leads to the transfer of real purchasing power from the people to the Government. As a result aggregate demand falls and output and employment are adversely affected.

The following measures can be taken for the purpose of coming out of stagflation.

- (i) The minimum wages are to be kept constant;
- (ii) Tax-based income policies should be started;
- (iii) The rate of increase in money wages should be limited to the increase in the productivity; and
- (iv) Sales tax and exise duties may be reduced.

23.7 MEANING OF UNEMPLOYMENT

In simple words, unemployment is a measure of the amount of manpower that is going waste. In this sense, it is nothing but the number of idle days spent due to want of work. In other words, these are the man days available for productive work but lost due to shortage of work. Hence, it is a loss of potential output due to the lack of employment. Employment is a means of ensuring a given income distribution. It signifies a failure to provide an opportunity to earn income through work. The prevalence of unemployment among the educated youth is a loss to the nation as the country spends its scarce resources on educating them. A long spell of unemployment ruins a man's dignity and self-respect. It creates a sense of frustration and, eventually, of uselessness. Unemployment creates tensions within the family and within the community. This makes people indifferent to ordinary social activities and duties. Unemployment also makes people willing to resort to violent expedients for regaining status and a sense of purpose.

Unemployment is divided into two categories, viz., voluntary unemployment and involuntary unemployment.

Voluntary Unemployment

This is defined as the unemployment which results from the withdrawals of some persons from employment for diverse reasons such as (i) absence of need to earn when one has already made a fortune, or when one inherits a large amount of wealth or property so as to have means of livelihood for a considerable time, (ii) social custom of certain groups to discourage or forbid engagement of certain members in productive work, (iii) lethargy. Voluntary unemployment has a very limited significance. It is not our concern here.

Involuntary Unemployment

Involuntary unemployment is important. This is defined as the unemployment due to non-availability or insufficiency of work during periods of say a few weeks, a few months or even a few years when the persons want to work. It would be appropriate to use the term 'unemployment' only in the sense of involuntary unemployment. Thus, what is technically called involuntary unemployment may simply be called as unemployment. So, unemployment can be defined as a situation in which people are not gainfully employed in any productive activity even though they are willing to work.

Joan Robinson and other modern economists prefer to call the unemployment situation in developing countries as non-employment rather than unemployment. Non-employment means not employed in the modern sector. Under non-employment, the people either not working at all or working in traditional or unorganised sectors. Only those who are earning in the modern sector are called as employed.

Check Your Progress-5

What is meant by voluntary unemployment ?

.....

.....

.....

.....

23.8 CATEGORIES OF UNEMPLOYMENT

There are mainly six categories of unemployment. They are (i) Disguised unemployment; (ii) Seasonal unemployment; (iii) Technological Unemployment; (iv) Cyclical Unemployment; (v) Frictional Unemployment; and (vi) Chronic or Open Unemployment. Let us discuss them one by one.

i) Disguised Unemployment

The term disguised unemployment, was first coined by Mrs. Joan Robinson to describe cyclical unemployment in developed countries. The adoption of inferior jobs with a relatively lower productivity by the workers laid off from normal jobs due to lack of effective demand during depression was defined as a situation of disguised unemployment. In her treatment of this, she confines the phenomenon of disguised unemployment to industrial sector only.

Such a narrow approach is inapplicable to a situation where the problem is widespread. This term is now extensively used to explain the existence of surplus labour in predominantly agricultural economies. Disguised unemployment is defined as a situation wherein even if some workers are removed from the processes of production, there will be no change in output. In other words, if the production remains unchanged, and not reduced in spite of withdrawal of some workers from the occupation, then there exists disguised unemployment. Ragnar Nurkse identifies the problem in technical terms when he states that marginal productivity of labour being zero over a wide range indicates the prevalence of disguised unemployment. It should be noted here that regarding the quantification of marginal productivity, there is no unanimity of opinion among economists belonging to different schools of thought and hence, the equality of marginal productivity is to be viewed as a way of conceptualising the problem rather than being a precise definition of it. In this context, Amartya Sen feels that there exists some confusion with regard to disguised unemployment. Sen feels that "the confusion arises because of not distinguishing between labour and labourer". It is not that too much labour is being spent in the production process, but that too many labourers are spending it.

Disguised unemployment normally takes the form of smaller number of working hours per head per year; for example, each of the three brothers shepherding the sheep every third day. It is thus the marginal productivity of labourer, so to say, that is nil over a wide range and the productivity of labour may be just equal to zero at marginal. It may also take the form of lower intensity of work with people 'taking it easy', for example peasant having time to watch the birds while working. If a number of labourers went away, the other would be able to produce the same output working for longer period and harder. In a family based peasant economy unemployment will naturally put on disguise. "A piece of land that can be cultivated fully by two may actually be looked after by four, if a family of four working men having no other employment opportunity happens to own it".

Let us explain the volume of disguised unemployment with the help of a diagram.

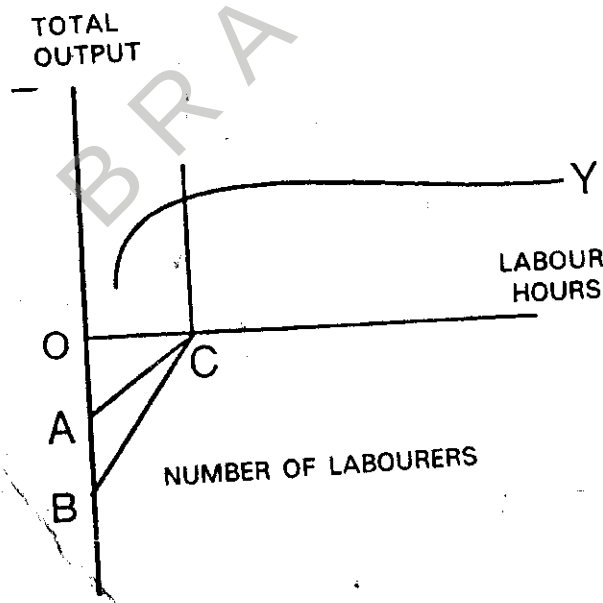


Fig. - 23.3 : Disguised Unemployment

Let OA be the number of labourers required to put in OC hours of work each working full time a day, OC/OA gives the hours of work put in by each labourer. Marginal productivity of labour becomes nil with OC labour hours. Labour is not applied beyond the point C.

Since the work can be done by OA labourers without changing the total hours of work, the surplus workers are AB. The marginal productivity of labour is nil at C. The marginal productivity of labourers is nil over the range AB. This represents the volume of disguised unemployment.

There is a confusion regarding the distinction between disguised unemployment and underemployment. Underemployment may be defined as the number of hours of work (labour time) on offer by work force at the existing wage rate compared with the actual number of hours taken up. In other words, the gap between the number of hours of work on offer at the existing wage rate and the actual number of hours taken up is treated as underemployment. Underemployment exists if workers are prepared to offer their services even at wage rates below bare subsistence level whereas disguised unemployment prevails in a situation when withdrawal of a certain quantity of labour does not diminish the total output of the sector.

Both disguised unemployment and underemployment can be shown in the same diagram. Diagrammatically, the situation is depicted in the following diagram. Given a subsistence wage level of OWs, the level of labour employment should be OA units. However, if supply of labour is OD, and if all are being employed, then there are AB units of underemployment and BD units of disguised unemployment.

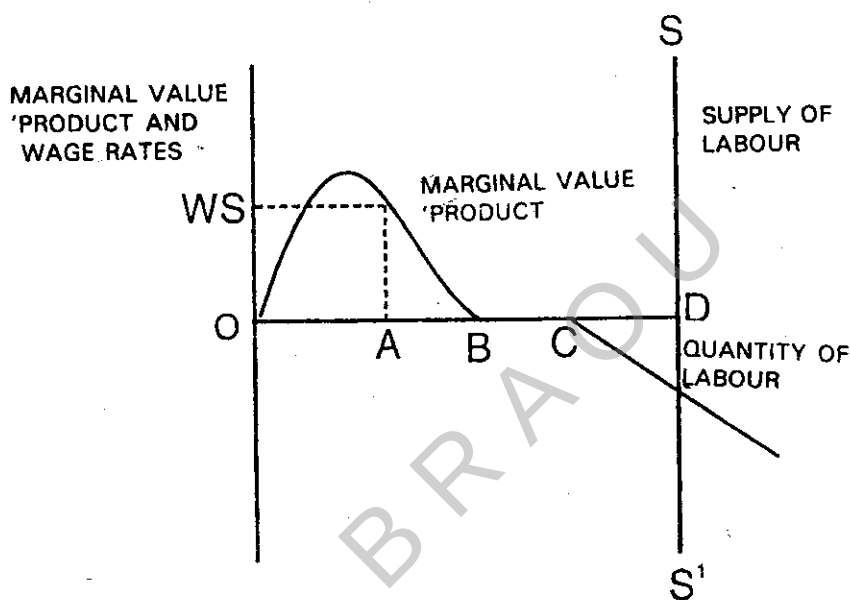


Fig. 23.4 : Underemployment and Disguised unemployment

OWs is the subsistence wage

AB - units of underemployment

BD - units of disguised unemployment

ii) Seasonal Unemployment

In agriculture, the seasonal rise and fall in farm activity is a common phenomenon. Seasonality in agriculture can be traced to the time interval between sowing of seeds and harvesting of crops. The rigid necessity of carrying out operations at the right time and the simultaneity of the harvest period for all cultivators in a particular region are

aspects. In agriculture, climatological factors play an important role. In the offseason, nothing need to be done on the farm. Hence, it leads to enforced unemployment. On the other hand, during the busy season the farm workers may put in more hours than the 'norm' in order to finish the work within a span of time determined by the climatological and other natural factors. This unemployment during the slack season is called 'seasonal unemployment'. Due to this, a part of the work force in agriculture becomes redundant during the slack season.

iii) Technological Unemployment

This type of unemployment occurs due to changes in techniques of production, i.e., the introduction of labour saving machinery and processes in industry or the rise of new products that make existing ones obsolete. A worker may be displaced from his particular job by the introduction of a labour saving device. When such a displacement occurs, workers who have become highly specialised in specific skills that are not needed any more in other types of employment, older workers, and those with poor educational backgrounds find it very difficult to get new jobs. This kind of unemployment is called **technological unemployment**.

iv) Cyclical Unemployment

Cycles of business prosperity (booms) and depression are a permanent characteristics of modern industrialisation. Periods of great industrial activity alternate with periods of general business depression. Recurrent periods of prosperity and depression are through a succession of periods of rapid expansion followed by actual or relative contraction. Deficiency of effective demand is considered to be the basic cause of cyclical fluctuation. Unemployment caused by trade cycles at regular intervals is known as cyclical unemployment. It is the investment goods which are mostly affected by trade cycles. As production and sales drop during a recession, businessmen find that their plants are operating at far below capacity. So they are less inclined to add further capacity through investment in new plants and equipment.

v) Frictional Unemployment

Frictional unemployment is the amount of unemployment that exists at all time because of imperfections in the working of the labour markets. When a worker leaves one job, he will immediately report to a new job provided there is perfect knowledge and mobility in the labour market. In reality, it takes time to find a job, even if a job exists. Frictional unemployment is defined as the temporary unemployment resulting from a dearth or lack of information, a lack of conformity between jobs available, and the costs of moving from one occupation or industry to another occupation or industry.

vi) Chronic or Open Unemployment

Chronic unemployment is a situation in which people are unemployed throughout or a considerable part of the year due to lack of employment opportunities.

Check Your Progress - 6

What is disguised unemployment ?

.....

.....

Differences of Unemployment Between Developed and Developing Countries

The difference in the nature of unemployment between the developing and the developed countries stems primarily from differences in the mode of organisation in these economies. Generally, the unit of production in a developed economy is a firm operating with the help of wage paid labour, whereas in a developing economy the basic unit is a household, drawing its labour mainly from the members of the family. Hence, unemployment in developing countries is hidden or disguised while that in developed economies is visible or chronic or open.

There are a few differences in the types of Keynesian version of unemployment between the developed and developing countries.

Firstly, the type of unemployment in developed countries is a cyclical phenomenon and hence temporary. As soon as the effective demand expands due to revival of investment the dismissed workers would be called back to their normal jobs.

Secondly, the marginal productivity of workers thrown into inferior jobs is low but not zero in developed countries, whereas the concept applied to developing countries relates to zero marginal productivity.

Thirdly, disguised unemployment does not refer to any movement of workers from one job to another which exists mostly in developed countries.

Fourthly, the workers who are thrown out of their original jobs can be easily identified in developed countries, whereas those subjected to disguised unemployment in developing countries cannot be identified.

And, fifthly, in developed countries, the problem arises due to lack of effective demand while in developing countries it arises primarily due to deficiency in effective supply.

23.9 CAUSES OF UNEMPLOYMENT

Like inflation, the issue of unemployment is multi-dimensional. A host of factors affect the employment opportunities in an economy. The nature of technical progress, capital stock, choice of techniques of production, rate and pattern of investment, government policies and institutions affect the level of employment. We attempt to study the causes of unemployment relating to underdeveloped countries with special reference to India.

Most of the unemployment problem in India is structural in nature. The population is growing rapidly and the number of people coming to the labour market in search of jobs is also increasing rapidly. Whereas employment opportunities do not increase, most of the time correspondingly, due to slow economic growth. As such there has been an increase in the volume of unemployment from one plan period to another. Some cyclical unemployment has emerged mainly in urban areas as a result of industrial recession.

The main causes for structural unemployment are (i) slow growth process; (ii) increase in labour force; (iii) inappropriate technology, and (iv) misappropriate educational system.

i) **Slow Growth Process :** The size of employment in any country to a greater extent depends on the level of economic growth. When a country makes progress and its production expands, the employment opportunities also will grow. In the recent period

there has been deceleration in the growth of unemployment inspite of the accelerated economic growth. This may be attributed to steady decline in employment elasticity in most of the major sectors of economic activity. This is because of the increasing reliance on imported technologies which are of a labour saving nature.

- ii) **Increase in Labour Force :** The mortality rate has declined rapidly without a corresponding fall in the birth rate and the country has thus registered an unprecedented population growth. As a per the latest census (2001), the population of India is 1,027 millions and the annual growth of population is 1.93 per cent. This is followed by an equally large expansion in labour force. Apart from demographic factors, social factors like woman education, changes in attitudes of women towards employment, have also caused unemployment problem.
- iii) **Inappropriate Technology :** As well all know, in India while captial is a scarce factor, labour is available in abundant quantity. In industries as well as in agriculture producers are increasingly substituting capital intensive techniques to that of labour. This has resulted in large unemployment problem in India.
- iv) **Misappropriate Educational System :** The education sysytem in India is defective. In the words of Gunnar Myrdal, India's educational policy does not aim at development of human resources. All those who receive ordinary education are considered not only as inadequately educated but also as wrongly educated. Any educational system which fails to develop human resources properly will not be able to provide employment to all those who have received it.

23.10 MEASURES FOR REMOVING UNEMPLOYMENT

Unemployment problem is a social evil. If it is not tackled, it may even affect stability of the Government and the cherished democracy may be endangered. Compared to the unuse of machines, if human beings are unemployed, the costs are heavy. If a machine is not put work, it does not consume raw-materials or power. But if a man is not working, he continues to eat at the cost of family or society. So, the problem of unemployment is to be addressed properly by taking appropriate measure. The important measures can be as follows :

- i). Population growth is to be controlled by educating the people in this aspect.
- ii) Activities allied to agriculture and crucial for employment generation like animal husbandry, fishery and horticulture are to be developed.
- iii) Programmes of afforestation, regeneration and restoration of degraded land should be taken up due to their large employment potential.
- iv) The programmes of rural industrialisation should be launched. Under these programmes, processing of agricultural produce, fruit and vegetable processing industries and industries to utilise agricultural by-products may be set up. Village handicrafts and cottage industries have to be developed.
- v) In the industrial sector, a number of industry groups have a reasonably high employment potential. The planning commission has identified certain industry groups like bakery, manufacture of sugar and khandasari, cotton ginning, khadi, handloom textiles, etc.

The pattern of investment should be so oriented that such high employment potential in organised and unorganised sectors are to be established.

- vi) A massive programme of housing for rural and urban poor should be taken up. The construction of roads and bridges are to be undertaken. These activities also have high employment potential. But the usage of heavy machinery like proclainers is to be discouraged. Both skilled and unskilled labour is to be used to the extent possible.
- vii) The governments have introduced many rural development and employment oriented schemes in India. For example, Swarnajayanti Gram Swarajgar Yojana (SGSY) a self employment programme and Jawahar Gram Samridhi Yojana (JGSY), a rural development scheme. In this regard the State Governments are also launching various schemes. The Chief Minister Empowerment of Youth (CMEY) scheme is an example of self employment scheme started in the State of Andhra Pradesh.
- viii) The surplus labour force in the agricultural sector is to be transferred to some other sectors where it makes a positive contribution to the output.

For the purpose of achieving the objective of more production with more employment, it is necessary to reduce the capital intensity of industrialisation. This will necessitate a deliberate shift towards a more labour intensive technology mix. Intermediate technologies which are not too labour intensive and too capital intensive, are to be adopted. They offer considerable scope for modernisation on the hand and maximising the impact of industrialisation on the other.

23.11 RELATIONSHIP BETWEEN INFLATION AND UNEMPLOYMENT

Inflation and unemployment are the two main factors, which influence the economic health of a country. The technique of Phillips Curve is used to explain the relationship between the rate of unemployment and the rate of money wages. Keynes regards inflation as a lesser social evil since employment tends to rise with inflation. On this ground Phillips, follower of Keynes argued that there tends to be a trade-off between the rate of inflation and rate of unemployment. A.W. Phillips explained this based on the empirical evidence in U.K. According to him, there is inverse relationship between these two. When the unemployment is high, the rate of increase in money wage is low. On the contrary, when unemployment is low, the rate of increase in money wage rate is high. The reasons put forth for this are :

- (i) When the demand for labour is high and there are very few unemployed the employer prefers to pay higher wage rates.
- (ii) In a period of rising business activity, when unemployment falls, the employees will demand more wages.
- (iii) The change in the cost of living is indicated by the rate of change in retail prices. If increase in demand for labour and employment is followed by proportionate increase in labour productivity the prices will not rise. If the rate of increase in money wages is higher than the rate of increase in the productivity of labour the prices will rise.

The Phillips, curve relates, percentage change in money wages on the vertical axis with percentage of labour force unemployed on the horizontal axis.

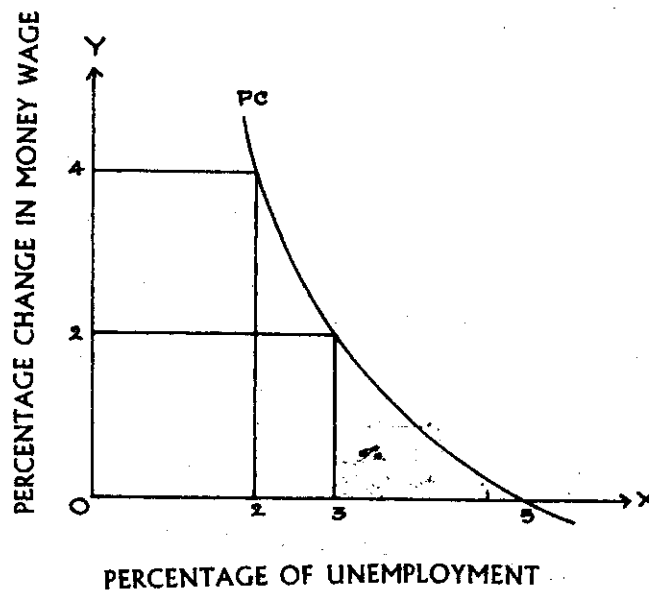


Fig. 23.5 : Phillips Curve

PC is the Phillips Curve. It is convex to the origin. It means that the percentage change in money wages rise with decrease in the unemployment rate.

For example when unemployment rate is 3% i.e., ON the percentage change in wage rate is 2. The growth rate of money wages is 'OM. If the rate of unemployment comes down to 2% from 3%, the rate of growth of money wages increases from 2% to 4%. If the rate of unemployment is 5% the rate of growth of money wages is zero. Thus Phillips curve explains the reverse relationship between the rate of unemployment and rate of growth of money wages.

The phillips curve is subjected to criticism on the grounds that it applies to short - run only. According to Friedman there is no trade-off between inflation and unemployment.

Check Your Progress - 7

What does phillips curve reveal ?

.....

.....

.....

.....

23.12 SUMMING UP

Inflation refers to a situation of general rise in the level of prices and consequent fall in the value of money. Some economists view inflation as a pure monetary phenomenon, while others as a full employment phenomenon. According to Keynes rising prices of all situations cannot be taken as inflation. He distinguishes between partial inflation and full inflation. Generally, inflation is measured in terms of wholesale price index. Inflation is classified into different types based on increase in the price level, factors influencing the money supply,

scope and the reaction on the part of the Government. Inflationary pressures in an economy arise from both demand side and the supply side. In the developing countries like India the inflation arises because of structural deficiencies in the economy. The inflationary situation can be controlled by initiating monetary measures, fiscal measures and other measures.

Unemployment is another problem faced by economies in the world particularly, developing countries. Unemployment means a situation in which people are not gainfully employed in a productive activity in spite of their willingness to work. There are different categories of unemployment namely, disguised unemployment, seasonal unemployment, technological unemployment, frictional unemployment and chronic unemployment. The disguised unemployment is prevalent in underdeveloped countries in the agricultural sector. The unemployment mainly exists because of structural defects. In the urban areas it is because of industrial recession. The problem of unemployment is to be reduced by taking various steps like controlling population, development of agriculture and allied industries, rural industrialisation, launching employment oriented schemes, etc. The unemployment and inflation are inversely related. Phillips has explained this with the help of a curve, known as Phillips Curve.

23.13 CHECK YOUR PROGRESS : MODEL ANSWERS

1. (i) Keynes distinguishes between partial inflation and true inflation. According to him, rising prices in all situations cannot be termed as inflation. In a condition of unemployment rise in the price level accompanied by increase in the volume of production of goods and services is known as partial inflation. It will not continue for long. Once full employment level is reached, the entire increase in money supply is reflected simply by rising prices. This situation is known as real inflation or true inflation.

(ii) In India inflation is measured by whole sale price index. However, from the point of view of consumers, inflation is measured in terms of consumer price index. Of the consumer price indices, the CPI-IW is the most popular one. In our country Dearness Allowance to the Central Government employees is granted based on this index only.
- 2) Creeping inflation refers to price rise of not more than 3 per cent per annum. Walking inflation refers to the price rise in the range of 3 to 10 per cent per year.

Running inflation is a double digit inflation. It refers to price rise of 10-20 per cent per annum. Galloping inflation refers to a price rise situation of even more than 100 per cent per year.
- 3) When the upward trend in prices comes from increasing income and higher effective demand, the inflation is called demand-pull inflation. Inflation may also occur due to rise in factor prices. Such inflation is known as cost-push inflation.
- 4) The measures to be initiated to control inflation may be monetary measures, fiscal measures and other measures. The fiscal measures include (i) increase in personal taxes, (ii) reduction in public expenditure, (iii) reduction in personal consumption expenditure, and (iv) reducing the deficit financing.
- 5) When some people remain idle willingly, it is called voluntary unemployment. Technically, it is not the situation of unemployment. It does not have any significance.
- 6) Disguised unemployment is explained as a situation wherein even if some workers are removed from the process of production, there will be no change in output. When

the people appear to be working but without adequate work, it is called disguised unemployment. When a work is performed by three people, but it needs only one, two people do not have work. It may be called hidden unemployment.

- 7) It examines the relationship between the rate of unemployment and rate of money wage changes. It reveals an inverse relationship between the rate of employment and the rate of increase in money wages. It shows that when employment is high, the rate of increase in money wage is low. And on the other hand, when employment is low, the rate of increase in money wages is high.

23.14 MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each

1. What do you mean by inflation ? Explain different kinds of inflation.
2. Explain the causes of inflation ?
3. What is inflation ? Explain different measures to be taken for controlling inflation.
4. Enumerate the consequences of inflation.
5. Define unemployment. List out the different kinds of unemployment ?
6. Explain the causes and remedies of inflation.
7. Describe the causes for unemployment in India.
8. Suggest measures for removing unemployment problem in a country like India.
9. Which is worse between inflation and deflation ? And why ?
9. Describe the inflationary gap with the help of a diagram. Suggest measures to eliminate it.

II Answer the following in about 15 lines each.

1. Differentiate between partial inflation and real inflation.
2. Distinguish between open and suppressed inflations.
3. Mention the main causes of inflation.
4. Discuss the concept of 'disguised unemployment'.
5. Explain the concept of 'inflationary gap'.
6. What is Stagflation ? What are the causes for stagflation ?
7. Distinguish between disinflation and reflation.
8. What are the different categories of unemployment.
9. What measures do you suggest for removing unemployment problem in India ?
10. Explain the relationship between inflation and unemployment.
11. What is Phillips Curve ? What does it reveal ?
12. What do you mean by structural and seasonal unemployment ?
13. How is inflation measured in India ?

23.15 RECOMMENDED BOOKS

1. Rudra Dutt & KPM Sundaram : **Indian Economy**
 2. S.K Misra & Puri : **Indian Economy**
 3. M.L. Jhingan : **Economics of Development and Planning**
 4. Dr. D.M. Mithani & V.S.R. Murthy : **Fundamentals of Business economics**
-

23.16 GLOSSARY

Deflation	:	A decline in the general price level of goods and services.
Disinflation	:	It is a process of curbing inflation.
Disguised Unemployment	:	A situation where marginal productivity of labour is zero.
Full Employment	:	A situation where unemployment is at a minimum and the number of unemployed is not greater than the number of vacancies.
Inflation	:	An increase in the general price level of goods and services.
Inflationary Gap	:	An excess of anticipated expenditure over the available output at base prices.
Involuntary Unemployment	:	The unemployment due to non-availability or insufficiency of work.
Money Wages	:	Wages paid in terms of cash or its equivalent.
Real Wages	:	Wages in terms of goods and services.
Stagflation	:	A phenomenon where the economy experiences both stagnation and inflation.
Technological Unemployment	:	Unemployment that occurs due to changes in the techniques of production.
Unemployment	:	A situation which exists when the labour force wish to work but can not get jobs.

BRAOU

**Dr. B.R. AMBEDKAR OPEN UNIVERSITY
HYDERABAD**

**B.Com. II YEAR PROGRAMME
(Group-III : Paper-1)**

COURSE : BUSINESS ECONOMICS

SYLLABUS

BLOCK-I : INTRODUCTION

Unit - 1 : Nature, Scope and Significance of Economics
Unit - 2 : Business Firm and Its Objectives
Unit - 3 : Decision Making in Business

BLOCK-II : DEMAND ANALYSIS AND FORECASTING

Unit - 4 : Theory of Demand
Unit - 5 : Elasticity of Demand
Unit - 6 : Demand Forecasting

BLOCK-III : UTILITY ANALYSIS

Unit - 7 : Utility Analysis - An Introduction
Unit - 8 : Indifference Curve Analysis

BLOCK-IV : PRODUCTION ANALYSIS

Unit - 9 : Production Function
Unit - 10 : Laws of Returns of Scale
Unit - 11 : Supply Function

BLOCK-V : COST, REVENUE AND PROFIT ANALYSIS

Unit - 12 : Cost Analysis
Unit - 13 : Revenue Analysis
Unit - 14 : Break Even Analysis
Unit - 15 : Profit Analysis

BLOCK-VI : MARKET STRUCTURE AND PRICING

Unit - 16 : Types of Markets
Unit - 17 : Price and Output Determination
Unit - 18 : Pricing Policies and Methods

BLOCK-VII : MACRO ECONOMICS

Unit - 19 : National Income : Concepts and Measurement
Unit - 20 : Savings and Investment
Unit - 21 : Business Cycles
Unit - 22 : Economic Development
Unit - 23 : Inflation and Unemployment

BRAOU

MODEL EXAMINATION QUESTION PAPER
FACULTY OF COMMERCE
B.COM. II YEAR (3 Y.D.C.) EXAMINATION
GROUP-III : PAPER-1
BUSINESS ECONOMICS

Time : 3 Hours

Max. Marks : 100

Min. Marks : 35

SECTION-A (Marks : 4 x 15 = 60)

Instructions to the candidates

- (i) *Answer any FOUR of the following questions in about 30 lines each.*
- (ii) *Each question carries 15 marks.*

★ ★ ★

1. Define economics and explain its nature and scope.
2. State and explain the law of demand. Are there any exceptions to it ?
3. What is demand forecasting ? Explain the Survey Method of Demand Forecasting.
4. Describe the properties of indifference curves.
5. Explain the laws of returns to scale with the help of a diagram.
6. How are price and output determined under monopoly? Illustrate diagrammatically.
7. Explain various approaches of measuring national income.
8. What is economic growth? How is it measured?

SECTION-B (Marks : 5 x 8 = 40)

Instructions to the candidates

- (i) Answer any FIVE of the following questions in about 15 lines each.
- (ii) Each question carries 8 marks.

★ ★ ★

- 9. Describe the subject matter of business economics.
- 10. List out different objectives of a Business Firm.
- 11. Explain the following :
 - i.) Opportunity Cost Concept;
 - ii.) Incremental Cost Concept.
- 12. What is cross elasticity of demand ?
- 13. What is supply function ?
- 14. A firm incurs fixed cost of Rs. 4,000 and variable cost of Rs. 10,000. Its total sales receipts are Rs. 15,000. Determine break-even point.
- 15. What is optimum firm ?
- 16. Explain the "paradox of thrift".
- 17. Suggest the preventive measures to minimise the effect of business cycles.
- 18. Distinguish between open and suppressed inflations.

DR. B.R. AMBEDKAR OPEN UNIVERSITY
UNDERGRADUATE COURSE-II YEAR

SUBJECT : COMMERCE
COURSE : BUSINESS ECONOMICS

ASSIGNMENT-I

N.B.

1. Do not copy the answer directly from any of the books.
 2. As far as possible try to answer the questions independently in your own words.
 3. If it is necessary to quote from any source, give the correct reference.
 4. Use your own foolscap pages for writing the assignment.
 5. Leave sufficient margin for the comments of the evaluator.
 6. Completion of this assignment normally should not take more than two hours time.
-

SECTION-A

- I. Answer the following questions in about 30 lines each.**
1. Explain the relationship between Micro and Macro Economics. How is Business Economics different from traditional economics ?
 2. Explain 'Profit Maximization' and 'Wealth Maximization' Theories of a firm. Which theory is being favoured by modern economists ?
 3. What is price elasticity of demand ? Explain the kinds of price elasticity of demand with the help of diagrams.

SECTION-B

- II. Answer the following questions in about 15 lines each.**
1. Define Business Economics.
 2. Explain the Giffen's paradox.
 3. Explain the objectives of demand forecasting.

BRAOU

DR. B.R. AMBEDKAR OPEN UNIVERSITY
UNDERGRADUATE COURSE-II YEAR

SUBJECT : COMMERCE
COURSE : BUSINESS ECONOMICS

ASSIGNMENT-II

N.B.

1. Do not copy the answer directly from any of the books.
 2. As far as possible try to answer the questions independently in your own words.
 3. If it is necessary to quote from any source, give the correct reference.
 4. Use your own foolscap pages for writing the assignment.
 5. Leave sufficient margin for the comments of the evaluator.
 6. Completion of this assignment normally should not take more than two hours time.
-

SECTION-A

I. Answer the following questions in about 30 lines each.

1. Explain the law of diminishing marginal utility with the help of a diagram.
2. Describe the law of variable proportions.
3. Write briefly about different theories of profit.

SECTION-B

II. Answer the following questions in about 15 lines each.

1. Explain the relationship between PCC and Demand Curve.
2. Distinguish between short run and long run production functions.
3. A Company manufactures toys. Its fixed cost is Rs. 12,000 including the advertising expenses of Rs. 2,000. The average variable cost per a toy is Rs. 2 and the selling price is Rs. 3.

Calculate the BEP in units.

BRAOU

DR. B.R. AMBEDKAR OPEN UNIVERSITY
UNDERGRADUATE COURSE-II YEAR

SUBJECT : COMMERCE
COURSE : BUSINESS ECONOMICS

ASSIGNMENT-III

N.B.

1. Do not copy the answer directly from any of the books
 2. As far as possible try to answer the questions independently in your own words.
 3. If it is necessary to quote from any source, give the correct reference.
 4. Use your own foolscap pages for writing the assignment.
 5. Leave sufficient margin for the comments of the evaluator.
 6. Completion of this assignment normally should not take more than two hours time.
-

SECTION-A

- I. Answer the following questions in about 30 lines each.**
1. Explain diagrammatically the determination of equilibrium price under perfect competition in the long-run.
 2. Describe the features and consequences of business cycles.
 3. Which is worse between inflation and deflation? Why?

SECTION-B

- II. Answer the following questions in about 15 lines each.**
1. What do you mean by monopolistic competition.
 2. Distinguish between cost-plus pricing and marginal cost pricing.
 3. How far national income can be used as a measure of economic welfare?

BRAOU