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EEC-11
Fundamentals of
Economics

Block

1

Introduction to Economics

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BLOCK 1 INTRODUCTION TO ECONOMICS

This block introduces you to the subject matter of economics and underlying need for studying the economic problems. It has three units:

Unit1 deals with the nature, significance and definition of economics. **Unit 2** discusses the basic concepts used in economic analysis while **Unit 3** introduces the learners to methods available for analysing the economic problems. Employment of the techniques of partial and general equilibrium framework for quantification of the impact of independent variable(s) on a (or, set of) dependent variable(s) is the core methodology you will be introduced to.

INTRODUCTION TO ELECTIVE COURSE IN ECONOMICS EEC-11

Economics is no longer the preserve of those who practiced statecraft and regarded it to be confined to the ways and means of raising finances to meet the "requirements" of the ruling elite. The discipline has moved from such confines to the domain of the common man. It is now concerned with our day-to-day decisions such as: Which commodities to produce? How to produce? Which techniques to use? Which factors or resources to use in which combinations to produce what quantity of a commodity? Not only this, it shows which consumer may gain access to what specific amounts of different goods ? How to increase/decrease production of which good(s) in future? In other words, economics has moved away from financing the activities of state to helping the common man in the street to make many a crucial decisions impinging on their day-to-day life.

It must be remembered, however, that we have not moved from one extreme to another— from the state to the street. We, today incorporate a rather wide spectrum of activities in the domain of economics. These activities are: (a) consumers' behaviour or choice process; (b) producers' behaviour or how is the production organised and carried on, what is the special role of cost functions therein and also the different forms of market organisations; (c) different individuals co-operate in the process of production to contribute factors owned by them. How do we determine their 'rewards'? Or, how do we distribute aggregate output among the members of society? (d) estimation of national (social) product and various aggregates, determination of level of income, employment and interest and also the relationship between money supply and prices; (e) some aspects of international trade; (f) public finance which not only incorporates all the aspects of meeting financial requirements of the state but also focuses on 'newer' aspects of collective decision making.

The present course, Fundamentals of Economics (EEC-11), aims at exposing the learner to each of the above aspects. The course is divided into 9 blocks, spanning over 21 units. Block 1 is concerned with introducing the subject matter of economics along with nature of basic economic concepts and the methodology of this discipline. Block 2 analyses the behaviour of the consumer while Block 3 is concerned with technical specifications of production and cost functions. Block 4 uses information and knowledge gained in previous two blocks and analyses behaviour of the producers under different forms of market organisation. The theories of factor pricing, that is, determination of wages, rent, interest and profits in the society is our concern in Block 5. These five blocks constitute core of micro economic analysis.

Next three Blocks deal with what is popularly known as macro-economic analysis. Block 6 explains the idea of circular flows of money (and goods and services) in the society, and measurement of national income. In Block 7, we present various aspects of determination of income, employment and interest in the society. This block is essentially based on J.M. Keynes' contributions- though, at relevant points, we have also compared Keynesian ideas with 'classical' thinking about aggregative functioning of the society. In Block 8 , we are introducing relationship between quantity of money and price level on the one hand and those between rate of change of prices and levels of unemployment on the other. In this context we discuss Classical, Keynesian and Modern versions of quantity theory of money and Philips curve.

Finally, Block 9 introduces you to the basic aspects of public finance, public goods, externalities and market failure, public revenue and expenditure and various concepts of deficit in the government budget. The other unit in this block examines comparative cost theory of international trade, gains from trade, terms of trade and the structure of balance of payments accounts.

UNIT 1 CENTRAL PROBLEMS

Structure

1.0 OBJECTIVES

This unit would enable you to understand

l   what does constitute an economic problem to an individual and to the society

l   what does constitute wants and the means to satisfy them

l   what is Production Possibilities Curve (PPC)

l   how PPC can be used to illustrate the problem of choice in Economics

l   the distinction between Positive Economics and Normative Economics with illustrations.

1.1 INTRODUCTION

The purpose of this unit is to define the subject matter of economics, highlighting what constitute the central (essential) problems of an economy. The normal tendency is to start with a definition. However, in introducing the subject called economics, starting with a definition is an extremely difficult task, if not impossible, since there exists no single accepted definition. You will be surprised if we tell you that there are as many definitions of economics as there are number of economists in this world. Each will claim that his or her definition is superior and more relevant and appropriate than that of others. Hence there is a dilemma as well as an ego problem. However, to do justice to the beginner students who will be reading our unit in economics, we have to start with an analysis of what the subject of economics is all about. It is in this context that we choose Lionel Robbin's definition of economics in preference to Adam Smith's, Alfred Marshall's or J.M. Keynes'.

1.2 DEFINING ECONOMICS.

According to Lionel Robbins, "Economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses" [An Essay On The Nature And Significance Of Economic Science 1933]. What does Robbins stress in his definition of economics? Firstly, that economics as a subject deals with human behaviour. A critic can say that a study of human behaviour is not a prerogative of economics only. There are other social sciences, like sociology, psychology, political science etc., which also deal with human behaviour. Like economics these subjects also deal with the behaviour of people in their individual

as well as. Economics, however, deals with the behaviour of people in the pursuit of economic activities. As one author puts it, "What distinguishes economics from the other social sciences, however, is the manner in which it studies people, and Robbins' statement makes this clear. Economics interprets human behaviour as the conscious attainment of objectives, of ends".

1.3 UNLIMITED WANTS AND LIMITED MEANS

The starting point of economics is human wants, needs and desires. Human beings living in any society at any stage of historical development of that society have wants and needs. Some of these needs like the need for food, clothing, shelter are biological in character, needed to sustain life in this universe. The origin of needs is, therefore, biological. However, the majority of human needs arise from the fact that people live together in a society. It is the existence of human society, which accounts for a large chunk of our needs. Such needs are determined by a complex set of factors called the culture of a given society. Even biological needs (like food) are also influenced by the culture of the society at any particular stage of historical development of that society. Hence, we find that the origin of needs is the biological necessity of sustaining life, while the existence of human society would determine its form, nature, and structure. One important characteristic of human wants is that they keep on occurring again and again. For instance, eating some thing may satisfy one's hunger for the moment but after some time, one has to eat again. Now people would like to see their needs, wants, desires, aspirations to be realised and it is towards this realisation that human activities are directed. Economics is concerned with human (individual, collective) goals, objectives, ends to be achieved and realised through the use of certain means or resources at their disposal. For instance if you want to have a cold drink, you have to have purchasing power to buy it. To produce wheat you must have a piece of land, seeds, fertiliser and irrigation water. To build a house you need bricks, cement and steel, glasses, woods etc. In these examples can you identify the objectives (ends) and the means (resources)? Consider another example: you might drive your car with the objective of getting to work; you might go to work with the objective of earning money (purchasing power); and you might earn money because you have the objective of buying a new car. From these it is clear that to realise goals, objectives, ends, one requires means or resources.

Check Your Progress 1

(1) If you have Rs. 1000 income per month, name some biological needs that you will satisfy first. (In other, words name some commodities which you regard essential for survival)

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(2) If you want to grow sugarcane on a piece of agricultural land that you own, what are the resources that you will employ as means to achieve a certain level of output of sugarcane?

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1.4 SCARCITIES AND CHOICE

Recall that Robbins' definition stresses the fact that means which human beings use to satisfy their wants or fulfil their needs are scarce. But then one can ask what is so important about scarcity? In economics scarcity has to be understood in the relative sense, the scarcity of means in relation to ends. It is the imbalance between ends and means (whether to an individual or to a society) that gives rise to scarcity and hence an economic problem. Here we must point out another aspect of Robbins' definition. The means that one uses to satisfy needs are not specific to any particular end. The means have alternative uses. They may be employed (at least potentially) to attain any one of a number of ends. For instance, while writing this piece, I have so far used up about one hour of my precious time. Time represents a general means and each one of us is allocated only a fixed amount (24 hours a day or 60 years of life on an average). If I was not writing this unit, I might have used my time in some other ways - I might have gone to the library (Ratan Tata at Delhi School of Economics) to read a new book on Micro-Economics, or I might have gone to a book shop to scan the latest arrivals, or I might have just watched television in the hope of being entertained and educated on the latest trend in the movie world. Well, the alternative use of time (means) is endless. One can go on expanding the list. However, the point is clear, any scarce means have more than one-way of using them. Hence, a meaningful choice exists. Once you have committed your resources to one use (towards achieving a particular end) you deny yourself the benefits, which you could have got, if you had used the same resources to achieve some other end. Economics not only deals with scarcity but also helps us to exercise meaningful choices, since scarce means can be put to alternative uses. For instance, if you spend your income on bread and butter, you forfeit the opportunity to spend your income on fruits and ice creams; if the economy uses oil to energise power plants, the same oil cannot be used to run locomotives; if you use your time to study economics, you cannot at the same time doing a job and earning an income.

"Herein lies the essence of economics. Economics exists when the resources of an individual or group are insufficient to meet all the demands, objectives of that individual or group at the same time. Economics is concerned with the choices that people make about how best to employ a scarce resource - if scarcity does not exist than neither does economics. Note too, that it is not necessary, as sometimes thought, to assume that human wants are `unlimited' or `infinite'. Possibly they are; the question of whether this is true could make an interesting research topic. All that is required for an economic problem to exist is for scarcity to exist - that is for ends to exceed means". (David Whynes: Invitation to Economics, page 15).

Check Your Progress 2

(i) If you can achieve whatever you wanted to achieve, does a meaningful choice exist?

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(ii) If you are traveling from home to your place of work, what kind of choice exists so far as the mode of transport to be used is concerned?

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1.5 THE PROBLEM OF CHOICE: AN ILLUSTRATION

It is the conflict between means and ends (including conflict between individual's goals) which gives rise to an economic problem. In such a situation the problem arises as to how best to use the resources to achieve the ends. The central problem of an individual as well as for a society is the allocation of scarce means among competing ends. Economic problems for a society do not exist when either human goals are not in conflict or economic resources (means) are so abundant that there is no need to conserve them. However, the real world is not blessed with superabundant resources or harmonious goals. This is true of the most developed countries of the world like U.S.A., Germany, Japan etc., to the most backward countries like Somalia, Ethiopia, Bolivia, Bangladesh, Albania etc. In other words, scarcity is global as well as local, though some societies could be relatively better off than some others giving the impression that for such societies scarcity does not exist. Hence, every society has to develop a set of institutions to direct the way in which scarce resources are to be allocated. These institutions, which form the society's economic system, would determine *what goods are to be produced? how are they to be produced? and who should obtain them?*

A production possibilities curve (PPC) shows the various combinations of two goods (X1 X2) which the firm can produce using technically most efficient methods of production and allocating resources in an economically efficient manner, with its resources being always fully utilised. It shows, given scarcity of resources and given technology, the maximum output produced of one good, given the output of the other good. It shows how one good can be transformed into another good not physically but via the transfer or shifting of resources from one line of use to another. It shows how food is transformed into clothing or from clothing to food by diverting resources from one use to another. Hence PPC is also called *the transformation curve (see Fig.1.1).*
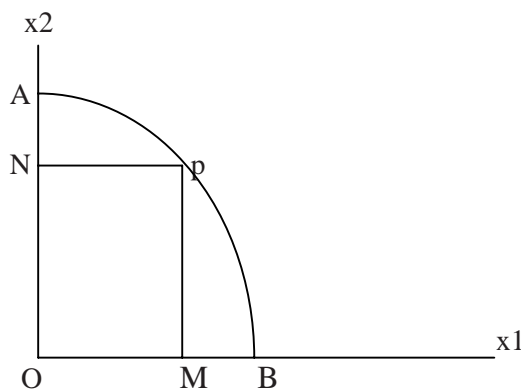

Fig. 1.1: **If society devoted all its productive resources in most efficient manner to produce only X_1 commodity it could produce the same in OB amount. If on the other hand, all the resources were devoted to production of X_2 at the most OA amount of the same could be produced. The curve AB shows all the combination of X_1 and X_2, which can be produced by the society. For example, if society decides to produce at point P then, OM quality of X and ON quantity of X_2 is produced. Alternatively, we may say that if society decides to produce OM of X_2 than, maximum amount of X_1 it can produce will be ON (and vice verse).**

The technique of PPC can be used to illustrate the various central problems of an economy. The first central problem is the problem of what goods are to be produced by the economy. Let us suppose the two goods are X_1 (consumer good) and X_2

(capital good). Following Paul Samuelson we can say that the economy's PPC describes the society's "MENU of choice". Since the resources needed to produce X_1 and X_2 are scarce and limited, hence every society has to make a choice (take a hard decision) whether to use current resources to make more consumer goods (X_1) or more capital goods (X_2) or seek a proper balance between the two. It is quite possible that if the economy is a developing economy like India, to build up the capital base of the economy it gives more importance to the production of capital goods (X_2), where an economy like Japan with a strong capital base, might give more weightage to the production of consumer goods (X_1). (see Fig. 1.2)
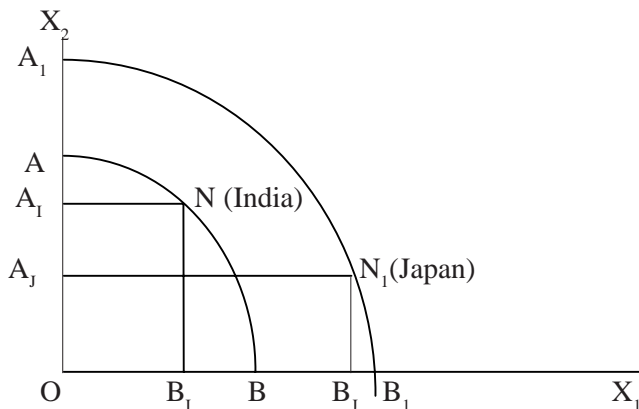
Fig. 1.2: India may produce A_I B_I combination of capital and consumer goods while prosperous Japan may produce A_J B_J Bundles which has a very large amount of consumer good X_1 and small amount of capital good X_2.

Similarly, PPC can be used to illustrate the second central problems of an economy - the problem of how to produce. How resources are to be combined to produce the goods that is the choice of methods of production. However, this cannot be discerned directly from the PPC (we have to go back to the efficiency locus from which PPC is derived). If we assume that X_1 is labour intensive and X_2 is capital intensive, then at point N on India's PPC AB relatively more of capital goods are produced and since they require the use of capital intensive techniques, hence at the product mix N there is preponderance of capital intensive methods of production. However, it must be noted that for the Japanese PPC A_1B_1 the choice of N_1 represents the dominance of consumer goods, which need not imply the preponderance of labour intensive methods. Quite the contrary, in a developed economy like Japan consumer goods are normally produced with relatively capital intensive techniques. Hence PPC can be misleading in indicating the choice of methods of production.

The third central problems of an economy is the problem of for whom to produce - the problem of distribution. The PPC can be used to illustrate it but not directly. If we assume that the more unequal the distribution is, the greater will be the share of luxury consumption (like cars, colour TVs, refrigerators etc). Luxury consumer goods are more capital intensive than the basic consumer goods. Hence Indian economy would be operating at point N on its PPC. But remember, we tried to justify production at N is the name of India being a developing economy a short while ago. Thus, unless we also specify which capital intensive goods are shown on vertical axis, we will not be able to see developing or it is a symptom of very high degree of inequalities in distribution of income. But again we have to be cautious in interpreting the choice of N_1 by the Japanese economy.

Yet if one shows a commodity such as bread on horizontal axis and air conditioners on the vertical axis, the choice of production point will clearly indicate the distributional objectives of those who make the production decisions.

1.5.1 A Digression: Meaning Of Goods In Economy

The material objects (like bread, butter, shirts, trousers, skirts, pens, pencils, chairs, tables, bicycles, cars, watches, bathing and washing soaps etc.), which are used to satisfy human wants are called goods in economics. Goods are material means of satisfying human wants. These means are drawn from nature, by changing their physical, chemical and biological properties, and by conveying them in space and conserving them overtime. We will use the terms goods, products, commodities interchangeably and as synonymous.

Goods are characterised by three things, (i) their physical attributes, the way they satisfy human wants, (ii) the dates at which they are available (a car available this year is not the same commodity as a car available last year even of the same make); (iii) the location at which they are available (a shirt available in New Delhi is not the same as a shirt available in Paris.)

Check Your Progress 3

1. A PPC provides an economy's 'Menu of Choice'. If resources are scarce and fully employed, will the economy be operating on PPC or inside it?

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   (Hint: If you are unemployed you are not producing any output. If you are under-employed you can produce some output but not your potential output that is maximum output).

2. If your resources (means) are expanding (growing) what happens to the PPC? shifts outwardly or inwardly.

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1.5.2 Another Digression

Another aspects of Robins' definition:

He considers economics to be a science. The question is how is it a science? Is it science in the same way *as physics or chemistry*? Not really. Economics is not an exact science like physics or chemistry, since it deals with human behaviour and human behaviour cannot traverse a predetermined fixed pattern, unchanging over time and space. There is no unique human response to a given stimuli. Hence, prediction of human behaviour is much more difficult than prediction of some natural phenomenon. The regularities in natural phenomena are more exact, and more easily quantifiable, representable and measurable than regularities in economic phenomena.

Economics is a science as well as an art. Since it deals with real world phenomena of human activities in production, distribution and consumption, economics is a liberal art. However, the methodology used to derive economic propositions is the methods of science. Now what constitutes a scientific method of inquiry? A

scientific method consists of a set of hypotheses or assertions on objects and phenomena as they are found in reality, and a model which establishes a set of relations among variables or objects or phenomena using the method of logical reasoning (deductive logic). By applying the model to the hypothesis, a set of propositions is derived, which are simplifications or conclusions derived from the hypothesis. At the last step the propositions are put to test by confronting them with the observations on the objects as they are found in reality.

Check Your Progress 4

1. If you throw an apple from a tree top it will always fall on the ground. Your prediction will always be 100 percent correct. However, if you reduce the price of an apple, will people always consume more of it? Do you think that your prediction will always be correct in this case?

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2. In what sense is economics a science?

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1.6 POSITIVE VERSUS NORMATIVE ECONOMICS

In economics we often make a distinction between *positive* issues and *normative* issues.

In positive economics we deal with scientific issues and questions. For instance how is price of a commodity determined? What determines the level of employment in a firm, in an economy? How does a firm choose an optimal input combination? They are all value-free questions and issues, and no ethical issues are involved. In contrast in normative economics we deal only with ethical issues. For instance, what is the best way of allocating resources in an economy? How should National Income be distributed in a society? Is inflation good or bad? The economy ought to operate with full employment of labour! The answer to such questions involves value judgments, which would vary from analyst to analyst. On ethical issues, the stand one takes depends on one's ideology, including one's class affiliation. Since no scientific issues are involved, the axioms as well as the propositions derived from them are ethical in nature. One is free to accept or reject the conclusions of normative economics by just accepting or rejecting the axiom system.

In normative economics, disagreements among economists can never be resolved, since both the hypothesis (that is the axiom system) as well as the propositions derived from it are ethical in nature, involving value judgments. One can go on arguing without coming to an end when one is dealing with ethical questions. Ethical propositions cannot be empirically tested either.

On the other hand though positive economics deals with scientific questions, and hence one can use a scientific method of inquiry to develop a theory, disagreements can still arise among economists. Economists can disagree on the model or the theory to be used to analyse a particular problem. In positive economics since an

economist's perception of a phenomenon or process might differ from other economist's perception, hence disagreements can arise. However, in positive economics such disagreements can be resolved by an appeal to facts, that is, by empirically testing the theory.

Differences can also arise in the nature of the data, which would form the basis of empirical testing of any theory, be in economics or physics. In natural sciences one can make use of controlled experiments in laboratory conditions to generate the database. This is not possible in economics where the analyst will have to rely on using imperfect statistical tools to generate the data required. Hence, the final outcomes of two positive economics theorists handling the same problem may differ.

Check Your Progress 5

(i)   For the following statements, indicate which are positive and which are normative.

   (a) Unemployment ought to be reduced in the economy.
   (b) India's balance of payments is not in equilibrium.
   (c) Investment is determined by income.
   (d) Inflation ought to be controlled.
   (e) It is not desirable to have public sector in Indian economy.
   (f) Prices must not be controlled.
   (g) Rationing reduces efficiency.
   (h) India imports as well as exports petrol.
   (i) India is a poor country.
   (j) Inequality should be reduced.

1.7   LET US SUM UP

We have discussed in this unit what constitute the central problems of an economy. All of us living in any society at any stage of its historical development, society always face an economising problem. Our desires and wants are unlimited in the sense that even if certain desires are fulfilled some new desire keeps arising with the progress of our society through time. Creation of desires and wants are endless continuous process. However, even if some desires are fulfilled, because of limitations of means we cannot satisfy all our desires at the same time. This is true for any individual in isolation as well as for the society of individuals living in a (given) milieu. Hence Lord Robbins' definition of economics not only attains significance but also is also very appropriate. Economics deals with the act of economising. It is the conflict between limited means and unlimited wants that give rise to scarcity, and hence the economic problem of making a meaningful choice from among the alternative uses of means to satisfy a part of the unlimited human desires. Scarcity is a relative concept and is faced not only by poor country but even the most developed countries of the world. There is scarcity of means in relation to wants in India as well as in U.S.A. But the nature of wants as well as the means could be different. The exercise of a meaningful choice could be illustrated by using the technique of a production possibility curve. The conflict between means and ends (i.e., the wants) gives rise to the following central problems: -

(i) *What goods are to be produced with the limited means?*

   Should the economy produce more of food or more of luxury motorcars? Should the economy produce more for exports or more for domestic consumption?

(ii) *How the goods are to be produced?*

In other words how the scare resources are to be combined to produce goods required to satisfy human wants?

This is something to do with the choice of production methods. For instance between labour intensive methods and capital intensive methods.

(iii) *For whom the goods are to be produced*? In other words once the goods are produced for final consumption the problem remains as to how to distribute them to the consumers. Should the goods produced be distributed more to the poorer consumers or more to richer consumers?

We have concluded our discussion of Unit 1 with the distinction between positive economics and normative economics. Just to recollect, positive issues deals with scientific issues, like how price of a commodity is determined? While normative economics deals with ethical issues, like how should a fair wage be determined in the economy? In positive economics no value judgments are involved. In normative economics we essentially deal with the value judgments, which are subjective in nature. Value judgments are ultimately derived from one's ideological position in the society.

1.8 SOME KEY WORDS

Capital : All man made non-labour resources (reproducible) are included in the factor capital. It represents part of society's output, which is not consumed currently but set aside to be used in the productive process sometimes in the future. It includes the stock of man made real physical goods, like machines, plants, equipments, buildings etc.

Economics : The word economics has Greek origin. Oikos Plus Nomos meaning Home and Law. The principle of household management. The word economics has something to do with economising on the use of means to attain ends, since means are scarce and limited.

Ends : The objective pursued by human beings while being engaged in economic activities.

Enterprise : A firm is an organisation formed for the purpose of producing goods
(or a firm) and services to be sold in a market. Firms purchase resources (inputs), organise their use in production and market the goods produced. In the process firms take risks. Activities within a firm are based on the principle of co-operation and division of labour.

Goods : Material means of satisfying human wants, desires and needs. The terms goods, products and commodities are used interchangeably and as synonymous in economics.

Labour : Labour as a factor of production includes the mental and physical powers (abilities) of human beings.

Land : All free gifts of nature and natural resources are included in the factor of production land.

Means : The instruments or resources used in attaining the perceived objectives.

Normative : Deals with ethical issues, questions and problems. For instance should
Economics unemployed people be given doles? Should government control prices?

Positive Economics	:	Deals with scientific issues and questions. For instance, what goods are to be produced and how they are to be produced. It analyses and solves economic problems without bringing in value judgments.
Production Possibilities Curve (PPC)	:	The locus of output combinations which a firm or an economy can produce using technically most efficient methods of production and allocating resources in an economically efficient manner, given production functions, input prices and endowment of resources.
Scarcity	:	Human needs outstripping availability gives rise to scarcity i.e., the imbalance between ends and means. Scarcity is a relative concept and not an absolute concept.
Wants	:	Desire for goods, material objects and services. Wants become demand when they are expressed in the market backed by willingness and ability to purchase.

1.9 SOME USEFUL BOOKS

Begg, D.R. Dornbusch, S. Fischer (1991), *Macroeconomics* (4th Edition), McGraw-Hill Book Co. New York

Lipsey, Richard (1997), *Introduction to Positive Economics* (8th Edition), Oxford University Press (ELBS Edition), London

Nicholson, W. (1995), *Intermediate Micro Economics* (VIth Edition), Dryden Press, New York.)

Roychoudhry, Kalyanjit (1999), *Modern Microeconomics* (II Edition), Book Land, Delhi

Salvatore D. (1996), *Micro Economic Theory* (Schaum series 3rd Edition), McGraw-Hill Book Co., New York.

Salvatore D. (1995), *Micro Economics* (2nd Edition), Harper Collins Publishers, New York

Treatment, Timothy (1996), Micro *Economics*, (Its Edition, 1996) McMillan, New York

1.10   ANSWERS OR HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1   Some essential food items milk, cereals, oil, pulses, vegetables, clothes and a small room for living. Since Rs.1000 is a very small income you can afford only small quantities of the above goods. Your consumption habits will determine the weights to be given to the various food items in your budget.

2   Some seeds, some fertilizer, certain amount of water, some labourers, may be some agricultural tools.

Check Your Progress 2

1   Since wants are unlimited and means are limited, all our wants cannot be satisfied simultaneously at any time. Hence you are required to establish

priorities as to which wants are to be satisfied with your limited means, given that means have alternative uses. For instance, on a given piece of land you can grow Rice or Vegetables or grow some cash crops. If means are specific to a particular use then no meaningful choice exists

2 You can either use public transport, you can cycle your way, you can use two wheelers and if you can afford, your motorcars. In some cities people even use local trains, trams, even waterways.

Check Your Progress 3

1. Hint already provided

2 With more resources the economy can produce more of both the goods (in a two goods situation). The PPC will shift outwardly. Of course it would ultimately depend on the technology used, the relative change in factor endowments and the efficiency with which resources are used in the production of the two goods.

Check Your Progress

1 Economics is not an exact science unlike physics and other natural sciences. Human behaviour cannot reveal any regularity unlike natural phenomenon. To the same stimuli the reactions of human beings can be different in different situations and varies from individual to individual. Hence one cannot say with 100% certainty that the quantity demanded of apples would increase when price of apples falls.

2 In the sense of using scientific methods of enquiry. Refer to the diagrams in section 1.5(b)

Check Your Progress 5

1 (a) Normative; (b) Positive; (c) Positive; (d) Normative; (e) Normative; (f) Normative; (g) Positive; (h) Positive; (i) Positive; (j) Normative

UNIT 2 BASIC ECONOMIC CONCEPTS

Structure

2.0 OBJECTIVES

After going through this unit you will be able to explain

l   the basic differences between two branches of economic theory: Micro and Macro

l   the concept of market and its functioning

l   demand function and supply function

l   the concepts of equilibrium and disequilibrium and their significance in economics,

l   the determination of the price of a good and its quantity traded by using demand-supply model.

2.1 INTRODUCTION

In this unit we will first spell out the distinction between micro and macroeconomics. Since in this block we will be concerned only with microeconomics, which deals only with markets, we start with the concept of market. Demand for and supply of a good form the basic tools of economic analysis when dealing with markets. If a good has market it also has a price attached to it. Hence, the next step will explain the concept of price. In market, transactions take place only at a price. The role of price in the market is to equate demand for and supply of a good so that an equilibrium can be attained. Hence in this unit the last concepts to be introduced are equilibrium and disequilibrium.

2.2 MICRO VS MACRO ECONOMICS

The words *Micro* and *Macro* have Greek origins Mikros and Makros. Mikros implies small and Makros large. Microeconomics is concerned with the most 'Elemental' economic units, like consumer, firm, input, market and industry. In other words, micro-economic theory analyses the behaviour of a consumer or a group of consumers; a firm, an industry, a market; a supplier of an input etc. The unit of analysis is small. In contrast to this, with macro-economic theory the unit of analysis is large. In fact, both micro and macroeconomics are two ways of looking at the same thing, the functioning

or the working of an economy. They are two starting points in analysing how an economy functions or operates. Micro-economic theory focuses attention on individual markets (like the grain market), consumers (say of wheat), firms, industries. It is an in-depth study of how these individual economic units or agents operate or function or make decisions, as well as how they interact with each other. Macro-economic theory, on the other hand, deals with broad aggregates like national income, national expenditure, aggregate consumption expenditure, aggregate investment expenditure, the level of employment, the general price level and so on. It analyses how the economy functions through the interactions of these broad aggregates; how these aggregative variables behave and how they are determined. The distinction between micro and macro is made in terms of the level of aggregation and disaggregation used in analysing the functioning of an economy. Microeconomics uses more disaggregative variables than macroeconomics. Together they form the two sides of the same coin. However, it must be noted that economic decisions are ultimately taken at the micro level, and the conjunction of all micro decisions have important ramifications at the macro level. For instance, when we add consumers' expenditures on all goods and services, we get the aggregate consumption expenditure for the economy as a whole, which is a macro concept. Similarly, the functioning of the economy at the macro level will have bearings for decision-making at the micro level. When income tax is raised, disposable income of households falls, firms will experience a decline in sales and as a result will cut back output. Hence, a macro level event will generate a micro manifestation.

Micro-economic theory will be basically concerned with relative prices of commodities and factors of production (inputs). Hence, we will not be incorrect if we call Micro-economic theory, a price theory. Following *Quirk* we can say, "micro-economic theory provides the framework within which the economist describes and analyses the behaviour patterns and inter-relationships of the elemental economic units like consumer, firms, industries, commodities and markets. The main objective of micro-economic theory is to explain and predict how production, exchange and distribution of goods and services respond to the incentive structure operating in a given society." (James Quirk, - **The Intermediate microeconomics**, Ist Edition).

Check Your Progress 1

1. Which of the following statement pertains to microeconomics?

    (a) When inflation occurs, the Indian economy is able to export smaller volume of textiles.

    (b) When supply of wheat goes up, its price falls.

    (c) When there is strike in Mother Dairy the price of milk goes up.

    (d) An increase in investment increases employment.

2.3   THE CONCEPT OF MARKET IN ECONOMICS

In ordinary language, by market we mean the place where goods and services are bought and sold. Remember the places like Sabzi Mandi at Azadpur and Okhla; Timber Market at Paharganj or Kotla; Grain Market at Khari Baoli; Cloth Market at Chandni Chowk, Car Bazar at Lajpat Nagar, Paper Market at Chawri Bazar and Furniture market at Kirti Nagar all situated in Delhi. However, the meaning of market in economics is different. By market an economist would mean a complex set of activities by which potential buyers are brought into contact with potential sellers in the process of purchase and sales of goods and services. When two or more individuals undertake exchange transactions, a market is established irrespective of time and place. The physical presence of buyers and sellers are not at all relevant in the economist's conception of market. Due to the development of modern mode of communication based on computer technology, physical presence is not required for

establishing a market. What is more relevant is that there must exist two groups of transactors who are willing to undertake exchange transactions.

The essential characteristic of a market is the confrontation between potential buyers and potential sellers, making bids and offers in the process of determining the terms at which exchange would take place. The emphasis is on the word <u>Potential</u>. Every one comes to the market with his or her notion of how much to buy or sell depending on the prevailing prices. If the prevailing price of a good is high, those who have made plans to buy at a lower price will be priced out of the market. Similarly, if price is low those sellers who planned to sell at higher prices will be eliminated from the market. Activities on a market would determine what the price will be, what quantities will be bought and sold, and who the buyers and sellers are. In a market-based economy, it is through the market that resources get allocated among competing ends.

Markets in economics vary from perfectly competitive, to monopoly, to imperfectly competitive, to monopolistically competitive, to oligopolistically competitive.

The existence of markets provides efficiency in the use of resources. In economies where markets do not exist, resources cannot be used efficiently. Markets provide information required for making optimal decisions. The kind of information provided by a market would pertain to the nature of goods traded, the prices prevailing, and who the transactors are. No other information is transmitted by the market. Also information transmitted by markets would be costless, though for many goods one has to spend money, time and efforts to acquire the relevant market information. Modern modes of tele-communication make information gathering, storing and processing much easier. This surely must have improved the quality of decision-making.

Markets can exist and function efficiently if and only if there exist ownership rights in commodities (property rights) which are well defined, transferable and are protected by the laws of the country. Ownership rights or property rights imply that the individual owning a commodity can take certain actions with respect to that commodity. Such rights include the right to allow access to the commodity on the part of any other individual(s), and also include the right to charge others for the use of the commodity or service as well as transferring the ownership of the commodity to someone else. As Quirk says, "What is produced, exchanged and consumed in a society are bundles of property rights that we call commodities. The pattern of economic activity within a society is closely linked to the structure of property rights of that society, because it is through the acquisition of property rights that self-interest is expressed and incentives operate."

2.4   WHAT IS MEANT BY DEMAND?

In economics, by demand we mean effective demand and not absolute demand. The demand for a good by an individual consumer means individual's desire for the good backed by a capacity to pay. Human desires backed by purchasing power constitute demand. In other words, an individual's desire for a good to satisfy a particular want backed up by his/her willingness and ability to pay gives rise to demand for that good. If and only if individuals have means to pay that demand becomes effective in the market for goods. An individual's income measures his/her capacity to pay, purchasing power or means to pay for the goods desired.

Example: A beggar desires milk, but has no purchasing power. Hence a beggar's desire for milk does not constitute an effective demand for milk. As a result a beggar cannot participate in market activities. However, suppose this beggar becomes successful in getting a job, becomes a helper in a shop and for his work as helper gets paid for in money. The beggar who is now a helper earns an income, with which she can buy milk. The beggar's demand for milk, which earlier constituted only an absolute demand, has now become an effective demand. This particular beggar's demand for

milk now adds to the market demand for milk, which a potential supplier of milk has to take into account in deciding how much milk must be produced and supplied. Note that the person's demand will be effective demand even if she had not picked up a job and had paid for milk out of her collection of alms. Hence, for demand (for a good like milk) to exist two conditions must be fulfilled:

(i)   individuals must have a desire for that good, and

(ii)   their desire must be supported by income or purchasing power or means to pay.

Check Your Progress 2

1. Your monthly income from salary is Rs. 3000. You desire to travel by taxi to and fro from office every day. Does your desire constitute demand for taxi?

2.   You are fond of tea. Analyse what happens when price of coffee rises; your income goes up and suddenly some guests come to stay with you?

2.5 THE DEMAND FUNCTION FOR A GOOD

In Section 2.4 we have considered various influences on the demand for a good. Here, it must be pointed out that there could be many other influences working on the demand for a good, which we have not considered. However, the above four factors are the major influences on the demand. In any particular situation if we keep factors other than own price as constant, we can derive a demand schedule, a demand function, and a demand curve. A demand schedule lists the various quantities of a good, which a potential consumer buys from the market at different prices, observed at a given moment of time. Its tabular representation would be as follows:

| Price of Milk (In Rs. per litre)	20	15	10	5
Quantity Demanded (In liters)	1	1.5	3	6

A demand function for a good expresses a causal relationship between quantity demanded of the good and its own price. In other words, it is a functional relationship between demand and price. If the good is X (milk in our case), Q^d_x is quantity demand and P_x is the own price of good X then the general form of the demand function will be

$$Q^d_x \;=\; f(\,P_x\,)$$

What it says is that quantity demanded depends on price. Price is the *cause* and quantity demanded is the *effect*. Stated alternatively, price is the independent variable while quantity demanded is the dependent variable. In technical terms, independent variables are also called *exogenous variables* while dependent variables are called *endogenous variables*. The demand function which expresses the functional relationship between the quantity demanded of a good and its own price is based on *ceteris paribus* assumptions. That is, we only allow the own price of commodity to vary with demand with everything else held constant at their pre-assigned values. In other words, when we try to capture the relationship between quantity demanded of a good and its own price, we ignore all other influences on the demand for that good (like prices of substitute goods, complementary goods, the households income level, tastes and so on).

The graph of the demand function on a two dimensional Euclidean space with horizontal axis measuring the quantity demanded and vertical axis measuring the price, we get the demand curve for the good. Since the normal behaviour is one of an inverse

relationship between quantity demanded of a good and its own price, the demand curve for a good will be downward sloping. For convenience we can assume the demand curve to be a downward sloping straight line. This is illustrated in Fig. 2.1.
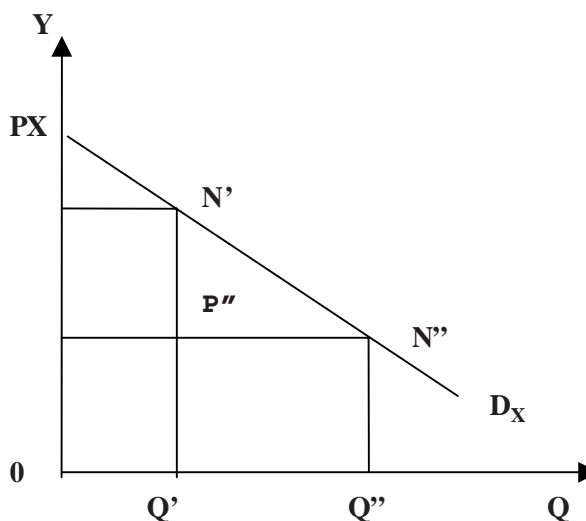
Fig. 2.1: We have shown price of milk in rupees on vertical axis and quantity in litres on the horizontal axis. The consumer buys OQ' quantity at OP' price. As the price falls to OP", she is willing to buy OQ" amount. N' and N" show there are two situations on the demand curve DX.

In the figure the quantity demanded of good X (milk) is plotted on the horizontal axis (abscissa) and the price of good X on the vertical axis (ordinate). The quantity demanded is measured in physical units of the good. In case of milk, physical unit is litres. Price of the good is, however, expressed in monetary units (in rupees or paise). In case of milk, the price of milk would read as Rs. 8 per litre or Rs. 12 per litre etc. A downward sloping demand curve for good X would imply that when price is lowered, the quantity demanded would tend to increase. And when the price is raised, the quantity demand would tend to be reduced. In the diagram when price is OP^1 the consumers of good X operate at point N^1, demanding (purchasing or buying) OQ^1 quantity of good X. When price falls to OP^{11}, the consumers operate at point N^{11} on the demand curve Dx, demanding OQ^{11} quantity of X. A lowering of price induces a larger quantity of it being demanded. This is supposed to be a commonly observed aspect of consumer behaviour. As to the question why demand curve is downward sloping, we defer the explanation to Units No. 4 and 5. *A downward sloping demand curve reflects the law of demand. This law says that, other things remaining the same, a consumer (or, in general consumers) would tend to buy more when price falls and buy less when price rises.*

Here, it can be pointed out that when the demand curve for a good is a straight line, the corresponding demand function will have a linear equation of the type:

$$Q^d_x = a - bP_x$$

where 'a' is the quantity intercept and 'b' is the slope. The slope, b, expresses the rate at which quantity demanded changes (increases or decreases) when price changes (falls or rises). That is,

$$b = dQ / dP$$

When we plot the demand curve, we actually plot the inverse demand curve

$$P_x = \alpha - \beta Q_x$$

Where $\alpha = a/b$ is the price intercept and $\beta = 1/b$ is the slope of the inverse demand curve and equals dP/dQ.

Note: Here it must be pointed out that in economics when we plot diagrams the convention is to plot the independent variable on the vertical axis and the dependent variable on the horizontal axis. In mathematics we do just the opposite.

In its normal form $Q^d_x = a - bP_x$, the demand curve would indicate the maximum quantity demanded at any given price of the good whereas in its inverse from $P_x = \alpha - ß Qx$, it would indicate, for each given quantity demanded, the maximum price a consumer (or consumers) would be willing to pay rather than doing without that quantity. The demand curve (or its inverse form) always indicates the maximum boundary to consumers. No consumer will be willing to pay for **OQ¹** quantity a price higher than **OP¹** $(=N^1Q^1)$ in the above diagram. Also since price paid by buyers reflects the average revenue (AR) earned by sellers, the inverse demand curve is also known by the name AR curve. Note that the demand curve touches the price axis. It gives us the price at which quantity demanded falls to zero. Such a price is called the prohibitive price **(OP).**

Check Your Progress 3

1. For the following demand function determine what will be the quantity demanded when the price assumes the values Rs. 5, Rs.4, Rs. Rs.3, Rs.2, Rs.1.

   Q = 40 - 0.5 P.

2. How do you interpret the following two functions?

   (a) Q = 100 - 2 P
   (b) P = 50 - 0.5 Q

2.6   WHAT IS MEANT BY SUPPLY

By supply of a good we mean a producer's desire to produce (manufacture) a good backed up by her capacity to produce as determined by technological knowledge and command over employable resources. A commodity (good) can be supplied if and only if it is produced. The concept of supply is, therefore, related to the concept of production.

2.7   THE SUPPLY FUNCTION OF A GOOD

How much of a good gets produced and supplied will depend on many factors. Some of these factors are the own price of the good, the prices of inputs used to produce the goods, the technology used etc. Of these factors the own price of the good is an important factor determining how much of it will be supplied. The supply function captures that relationship. The general form of supply function of a good is the following:

$$Q^s_x = F (P_X)$$

Where X is the good. Recall that a function expresses a cause-effect relationship. The above relationship indicates that the quantity supplied varies directly with the price of the good under consideration and the relationship is one of a positive correlation between quantity supplied and own price. As price of good X rises the quantity supplied tends to increase. And when own price of good X decreases the quantity supplied tends to decline. This is supposed to be a normal behaviour on the part of suppliers. Of course, such a relationship is based on *ceteris paribus* assumption. All other influences like technology, prices of inputs and so on are held constant.

A supply schedule of good X indicates the quantities that will be supplied by potential sellers at its prevailing prices. In other words, it lists the various amounts of a good that potential suppliers will put up for sale at the alternate prices prevailing. A supply schedule will look something like the following:

Supply Schedule

| Price of Good X (In Rs.)	Quantity of Good X Supplied (In the physical unit of the good)
9	100
8	80
7	75
6	65
5	45

When the above schedule is plotted on a two dimensional graph with price of good X measured on the *ordinate* and the quantity supplied on the *abscissa*, we get the supply curve of good X which will be upward sloping. This is shown below (Fig. 2.2).
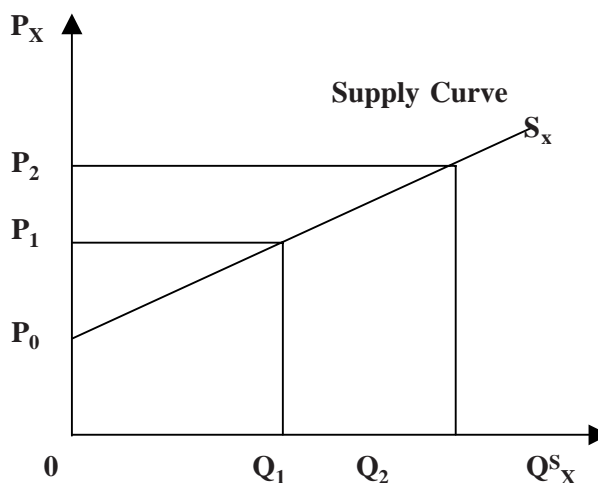
Fig. 2.2 At OP0 price, the producer does not supply anything. As price rises to OP, she will be ready to supply OQ1. A further rise in price to OP2 makes the producers willing to supply OQ2 quantity.

The supply curve can be linear (straight line) or non-linear (curve). In the diagram below we have depicted both the cases. An upward sloping supply curve implies that as price rises the quantity supplied tends to increase. A higher price induces a larger supply.

The supply curve or a **market supply curve** is an aggregate of individual supply curves. Since the supply curve is the graph of supply function, it is also based on c*eteris paribus* assumption, and considers only the relationship between quantity supplied of a good and own price.
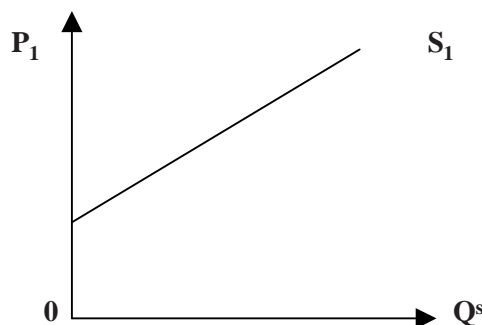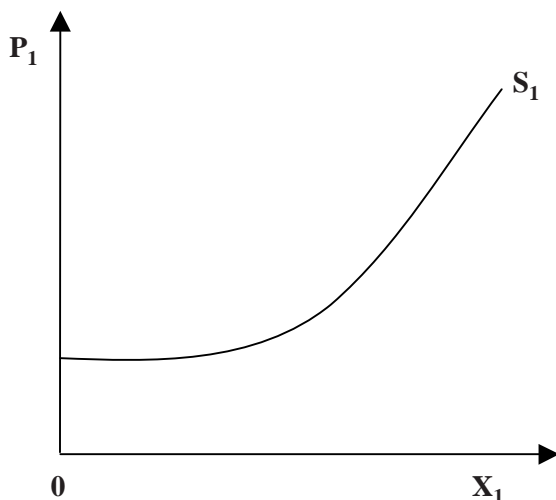

Fig. 2.3a

Fig.2.3b

Note that in defining the concepts of demand and supply the stress is on the word potential. Each buyer or seller comes to the market with her notion of how much to buy or sell. If some buyers have made plans to buy at a given price will leave the market if price of the good rises. They will be priced out of the market. Similarly, if market price is low, those sellers who had made plans to sell at a higher price, will be priced out of the market. Hence, the emphasis is on the word potential in the definitions of demand and supply.

Like the demand curve, the supply curve also indicates the planned (expected) behaviour of sellers (or, producers-cum- sellers). At any given price it would indicate the maximum quantity produced and supplied. To put it in a different way, if a given quantity of a good is to be produced and supplied, the supply curve would indicate the minimum price of the good expected by each seller (in order to cover the cost of production and to earn a normal rate of profit).

In the Fig. 2.4, if OQ_1 quantity is to be forthcoming in the market, OP_1 price must prevail. However, if the price is $E_1Q_1 = OP_2$ then an output OQ_1 will not be produced and supplied. At such a price if OQ_1 is produced and supplied the producer-cum-supplier will suffer losses.
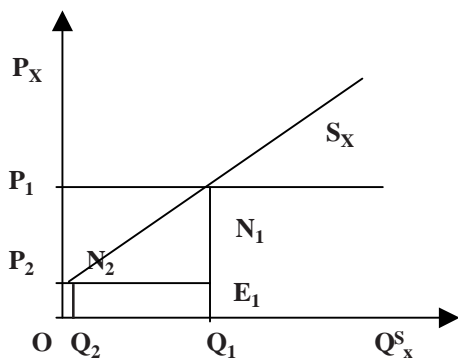

Fig. 2.4 Producer expects a minimum price OP1 for quantity OQ1. At price OP2, if she is asked to supply OQ1, she should refuse as it involves suffering a loss equal to triangular area N1 E1 N2

Check Your Progress 4

1. For the following supply function determine what will be the quantity supplied when price assumes values 1, 2, 3, 4, 5, 6.

   Q = -4 + 4P

2. How do you interpret the following two functions?

   (a) Q = -20 + 4P
   (b) P =   5 + 0.25 Q

2.8 MEANING OF PRICE IN ECONOMICS

In economics we always talk of prices, the price of wheat, the price of milk, the price of a car, prices of vegetables, input prices like wages, interest and rent. If a commodity has a market it will have a price associated with it. A price can be expressed in one of the following two ways. Firstly, we have price expressed in terms of a n*umeraire commodity* (NC). Suppose, we choose gold as the *numeraire* commodity, then the price of a commodity, say, wheat, is the number of units of gold (of a particular specification), which would exchange for one unit of the commodity (that is, one kilogram of wheat). It is to be noted that the price of gold in terms of itself always equals one. In theory any commodity can be chosen as a *numeraire*. However, in practice the choice would depend on a number of attributes, which a *numeraire* commodity must possess. They are: the commodity chosen must be finely divisible, must not be bulky, must not be subject to physical decay, and must be easily transportable. It must be noted that the *numeraire* commodity is not intended to perform the function of money as a medium of exchange, but supposed to function only as a unit of account, in terms of which all values are expressed and measured. Expressed in terms of a *numeraire, prices are commodity rates of exchange-the rate at which each commodity exchanges per unit of the numeraire good. Prices are ratio of the form X_g/X_i, where X_g is the units of gold (the NC) and X_i is the units of commodity i.* As rates of exchange, prices are measured in the physical units of the commodities.

The second way in which prices can be expressed is in terms of an *Abstract Unit* of account used in a bookkeeping sense. It has no physical substance attached to it (unlike the first case). When a unit of commodity is sold, certain number of units of account is credited to one's account, while if a unit of commodity is bought, the same number of units of account is debited from one's account. *The price of the commodity is then the number of units of account credited or debited per unit of the commodity. In the Indian context Rupee is such an abstract unit of account. Price of a commodity will then be the number of Rupees per physical unit of the commodity.* "Notes and coins have no intrinsic worth, but are simply tokens representing number of units of account which are passed around directly and form part of the credit side of one's account. As between the two ways of expressing prices the second way represents the way prices are expressed in reality" (Gravelle and Rees, *Micro Economic Theory*, 2nd Edition)

Check Your Progress 5

1. If four kg. of wheat exchanges for one kg. of rice, which concepts of price we are referring to?

2. The price of a bicycle is Rs. 1000/-, which concept of price we are referring to?

2.9 MEANING OF EQUILIBRIUM OR DISEQUILIBRIUM

As with many other concepts in economics, the concept of equilibrium is also borrowed from physics, to be precise, mechanics. Equilibrium is described to be a situation

where a body subjected to actions of opposing forces attains a position of rest. That is, the state when opposing forces are in balance. In the same way, *in economics equilibrium is said to exist in a market where the forces operating from the side of potential buyers exactly offsets the forces operating from the side of potential sellers.* This means that when quantity supplied balances (matches) the quantity demanded, the market for that commodity reaches equilibrium. Once again, *for equilibrium to exist, opposing forces must be in balance.* The price at which demand equals supply is the equilibrium price and the corresponding quantity traded, the equilibrium quantity for that price. Such an equilibrium is a static concept, describes the position of the market when it is at rest. So long as the factors on which demand and supply depend do not change, equilibrium will be maintained period after period. This is one definition of *equilibrium*, describing it *as a position of rest.*

There is another concept of equilibrium, which is used in neo-classical economics, that is, equilibrium defined as a chosen position of individuals (the participants in a market transactions). As Gravelle & Rees put it, "*Equilibrium as being that state in which economic agents find themselves in those positions in which they wish to be*" (Gravelle & Rees). According to this definition, a market is in equilibrium when at a given price all economic agents can buy what they had planned to buy and all sellers can sell what they had planned to sell and the chosen position of buyers and sellers coincide.

It is quite possible that the two ways of defining equilibrium may or may not coincide. In the demand-supply model of price determination under perfect competition that we will be developing later, the point where demand schedule and supply schedule intersects is the point where both the definitions of equilibrium will coincide. In static micro theory we will be concerned with equilibrium configurations of markets.

When the market is not in equilibrium, it must be in disequilibrium, which reflects a situation in which demand and supply forces are not in balance. What the buyers plan to buy do not match what the sellers plan to sell. So the market is not cleared. Either unsold stocks of inventories remain or a shortage develops which requires interventions by authorities with previously accumulated stocks. When the market is in a disequilibrium situation, the market adjustment process or corrective process must be brought into the picture, to analyse how the situation can be corrected. Such an analysis must be dynamic in nature, i.e., it involves movement of the market through time. When the market is not in equilibrium the role of economic agents and decision-makers become very important and relevant. In actual situation, equilibrium is never attained. As the market tends towards equilibrium, disturbances occur due to dynamic changes always taking place in the economy, which prevents equilibrium being attained. Hence, disequilibrium analysis is more relevant. However, equilibrium analysis is simpler and easier to handle.
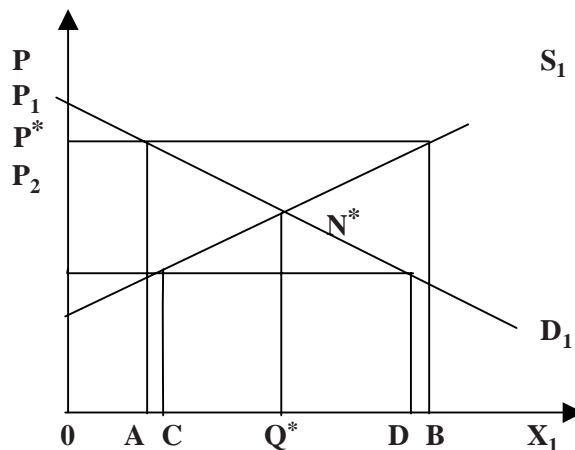
Fig. 2.5 **Equilibrium price and quantity are OP* and OQ* respectively. At a higher price OP1, producers are ready to supply OB units while buyers demand only OA. Thus, excess supply equal to A, emerges. On the other hand, if price falls to OP$_2$, buyers demand OD but sellers are willing to supply only OC. Hence, there emerges an excess demand in the market (=CD).**

Check Your Progress 6

1. Consider the following demand and supply schedules

Price (in Rs.)	Quantity demanded (in kg.)	Quantity supplied (in kg.)
0	100	0
10	90	0
20	75	40
30	65	65
40	40	80
50	30	90
60	15	110

What is equilibrium price and quantity?

1.6 LET US SUM UP

We have started this unit with a distinction between microeconomics and macroeconomics. They represent two different ways of looking at the functioning of a market economy. Only the degree of aggregation or disaggregation is different. Microeconomics is a more disaggregated study of economics where individual economic agents and individual markets are the focus of attention. In Macroeconomics individual agents as well as individual market are aggregated into broad categories like consumption, investment, employment, and markets like goods market, money market and factor markets. Microeconomics is based on partial equilibrium analysis where each market is studied in isolation of the rest of the economy. Macroeconomics, on the other hand, is based on general equilibrium analysis where all markets are interrelated (see Unit-4).

Since economics, whether micro or macro, deals with markets, we have tried to explain what the concept of market means to an economist as different from that to a layman. Market does not refer to any physical area where buyer or seller congregate to bargain and haggle to obtain better terms for themselves. To a layman that is what market means. To an economist a market for good exists whenever two or more persons are willing to undertake exchange transactions irrespective of place and context. In this sense market can have no physical boundaries. This is made possible by the development and use of modern technology in transport and communication.

In markets, transactions are made by potential buyers and sellers. As a result the buyers demand function and the sellers supply function constitute two market forces to determine the equilibrium market price and the equilibrium market quantity traded (bought and sold). We have also defined the concept of price, which is always expressed in items of a unit of account whether real or abstract. In the Indian context price of a good is expressed in terms of Rupees. The number of rupees given up to acquire a unit of a good is defined as a price of a good.

In economics, equilibrium price is determined whenever quantity demanded of a good equals quantity supplied. At the equilibrium price the market is cleared in the sense that whatever buyers wish to buy matches whatever sellers wish to sell. Given that market demand curve for a good is downward sloping and market supply curve of the good is upward sloping, at any other price the market for the good will be in

disequilibrium. At such a price either demand exceeds supply or the supply exceeds demand. Since demand and supply do not balance when the market is in disequilibrium, an excess demand pressure or an excess supply pressure will develop which will move the market price towards the equilibrium price. This happens only when demand and supply curves are normally shaped. Otherwise, even if equilibrium exists, it may not be a stable equilibrium.

1.7 SOME KEY WORDS

A Demand Curve : Captures the relationship between the quantities of a good which consumers would be willing to purchase at alternative prices, *ceteris paribus*.

Demand Function : The demand function of a good expresses a relationship between the quantity demanded of a good and its own price *ceteris paribus*. It is derived from the utility function by applying an optimisation rule. It reflects the consumer's maximising behaviour.

Demand : Means human desires backed by willingness and ability to pay. It means effective demand and not absolute demand.

Disequilibrium : Defined as a situation in which opposing forces are not in balance, that is, when the forces of demand and of supply are not in balance.

Equilibrium : Defined as a situation in which opposing forces are in balance. A market attains equilibrium whenever quantity demanded equals quantity supplied. The forces of demand and supply are in balance.

Macro : A large unit of analysis.

Market : When two or more individuals undertake exchange transactions a market is established irrespective of time and place. It is not restricted to a particular area or a place. The development of modern communication technology has extended the spatial limits of a market.

Micro : A small unit of analysis.

Price : The rate at which each and every commodity exchanges per unit of the *numeraire* good (unit of account).

Supply and Supply Function : By supply we mean how much of a good will be produced and offered for sale at alternative prices given technology, input prices and resources. The supply curve captures such a relationship given *ceteris paribus* conditions.

2.12 SOME USEFUL BOOKS

Same as in Unit-1.

2.13 ANSWER OR HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1. (a) Micro Economics

(b)   Micro Economics
(c)   Micro Economics
(d)   Macro Economics

Check Your Progress 2

1.   With a monthly salary of Rs. 3000 you cannot afford to travel in Taxies. Your desire for Taxi ride does not constitute effective demand.

2.   The demand curve for tea *shifts* upward to the right. In other words, at the same price you tend to buy more. This phenomenon is known as *increase in demand.*

Check Your Progress 3

1.

Price (in Rs.)	Quantity demanded Q = 40 - 0.5P. (in physical unit like Kg.)
5	37.5
4	38.0
3	38.5
2	39.0
1	39.5
0	40.0

2. (a) At any given price this equation indicates the quantity demanded. Hence, it is called the demand equation (function).

(b) This would indicate for any given quantity demanded the maximum price the buyers would be willing to pay rather than doing without the units. Hence, the equation would indicate the inverse demand curve.

Check Your Progress 4

1.

Price (in Rs.)	Quantity Supplied Q = - 4 + 4P (in physical units like kg.)
1	0
2	4
3	8
4	12
5	18
6	20

2. (a) This equation would indicate at any given price the quantity supplied by the sellers. Hence, it constitutes the supply curve.

(b) This is the inverse supply curve. It would indicate the minimum price at which each unit of the good will be supplied in the market, (for instance to cover the cost of production).

Check Your Progress 5

1. Price as an exchange ratio. This is expressed in terms of a unit of account. (Wheat is the unit of account)

2. It is the money price of the good. It is expressed in terms of an abstract unit of account called Rupee.

Check Your Progress 6

1. Equilibrium Price is Rs. 30; the equilibrium quantity demanded and supplied is 65 kg.

UNIT 3 METHODS OF ECONOMIC ANALYSIS

Structure

3.0   OBJECTIVES

After going through this unit, you will be able to explain :

l   difference between partial and general equilibrium approaches;

l   the difference between static and dynamic methods of analyses;

l   the difference (if any) between an economic theory and an economic law;

l   the difference between a stock variable and a flow variable and

l   the art of constructing economic theory by using the principles of scientific method of enquiry.

3.1   INTRODUCTION

Continuing with the discussion on methodology of economic analysis, we, in this *unit go through the discourse on the distinction between partial and general equilibrium analysis. The focus of partial approach is on single market in isolation, while in the general equilibrium approach it is on simultaneous working of all markets in an economy in an interwoven manner.* An economist has to take recourse to both the methods depending on the types of problems and issues that are to be analysed. As we proceed in the text we will have more to say on this subject. On the question of methodology itself, an economic analyst would also like to make a distinction between static and dynamic methods of analysis. Like partial equilibrium approach, the static method is easier to handle than dynamic analysis. We will complete our discussion on methodology by describing how economic theories are constructed and verified. Remember that we described economics as a science in Unit 10. Here, a scientific method of enquiry will be used to construct and verify an economic theory. Subsequently, we will explain the difference between a theory and a law. Are economic laws immutable? I can be pointed out that the purpose of constructing a theory is both to provide an explanation of the phenomenon that is under study and to using it for making predictions of events which have not yet occurred in the economy. The discussion in this unit is closed by describing the difference between a stock variable and a flow variable. Most of the variables we deal with in Micro and Macroeconomics are flow variables. However, market exists for flow as well as stock variables.

3.2 PARTIAL VERSUS GENERAL EQUILIBRIUM ANALYSIS

In partial equilibrium analysis, we concentrate on a single market, in isolation from the rest of the economy. We analyse in detail a particular market or a set of markets neglecting everything else. For instance, when we want to study the market for wheat in detail, we do not bother about other markets in the economy. Such an analysis is based on c*eteris paribus* assumption. Demand and supply models of price determination of a good is based on partial equilibrium analysis. It ignores various linkages and inter-relationships that might exist between different markets. On the other hand, in general equilibrium analysis we analyse simultaneously all the markets in the economy. The basic premise in such an analysis is that, "everything depends on everything else". *All the markets of the economy are interdependent and interrelated so that a disturbance originating from any one market will have repercussions throughout the economy*. In such a situation general equilibrium analysis is the correct approach for analysing the functioning of the economy. In fact, partial and general equilibrium analyses are two ways of looking at the functioning of the economy.

Partial equilibrium analysis is appropriate when we want to analyse in detail the functioning of a particular market or a particular sector of the economy. It is used when a market is self-contained or insulated from other markets or when the market in question is relatively small, relative to the size of the economy, or when the cross-effects generated by this particular market are negligible and hence can be ignored. Partial equilibrium analysis makes the analysis of a problem more manageable, unlike general equilibrium analysis which is often difficult to comprehend. Reality is so complex that one needs a process of simplification (abstraction) to understand it. Partial approach is one such form of simplification, where each market is viewed in isolation. Partial equilibrium analysis was championed by Alfred Marshall (1890) and is based on "*ceteris paribus*" assumption. Such an assumption abstracts from all interconnections and inter-links that exist between the market under study and the rest of the economy. For instance, we use demand-supply model to show how equilibrium price and quantity is determined in each market, independently of other markets. However, we know very well that a change originating from any market has spillover (repercussions) effects on other markets. When these changes in other markets (sectors or industries) are significant, the partial equilibrium analysis is inappropriate and inadequate. By taking into account only the direct effect on price and quantity, partial equilibrium approach, "provides a misleading measure of the total, final effect, after all the repercussions or feedback effects from the original change have occurred." If and only if the market or the sector (industry) from which the original change occurs is relatively small and has very few linkages with the rest of the economy, the partial equilibrium analysis would be the right approach to study the operation of market system . Otherwise a general equilibrium approach is needed.

When market (economic) interdependencies or interrelationships are not taken into account, or do not exist, partial equilibrium analysis is the correct approach. However, when such interrelationships and interdependencies exist and are important, and the ignorance of which will have serious consequences or will prove costly in terms of the quality of economic predictions, a general equilibrium analysis must be used. It must be used whenever an event has all pervading effect.

Check Your Progress 1

1) If you want to study in details the working of the market for milk in your city, which methodology will you use?

2) As demand for automobiles goes up, the demand for steel goes up, which in turn

increases the demand for aluminum and so on. Is this an example of partial equilibrium approach or general equilibrium approach ?

3.3 STATIC VERSUS DYNAMIC METHOD OF ANALYSIS

Economic analysis can be conducted either by using a static framework or a dynamic setting. Static and dynamic modes of analysis can be differentiated in more than one ways. According to one definition, in a static model (theory) the variables (cause-effect) are not dated. The demand-supply model of market behaviour is a static model. The model that demand depends on own price, supply depends on own price, with an equilibrium condition that demand must equal supply, time does not enter into the picture at all and the variables are all undated. According to this definition, a dynamic model would be one where the relevant variables are dated. If the demand-supply model is restructured as follows, then the model would become dynamic according to this criterion.

$$D_t = f(P_t)$$

$$S_t = g(P_t)$$

$$D_t = S_t$$

where 't' is the relevant time unit.

However, according to some economists, even if the variables are dated the model does not become dynamic. A dynamic model according to this definition would be one where the variables must be dated and a time lag must exist in their relationships According to this criterion the following would be a dynamic model.

$$D_t = f(P_t)$$

$$S_t = g(P_{t-1})$$

$$D_t = S_t$$

There is **no lag** in the demand relationship. Demand in period 't' depends on own price of the same period. However, in the supply relationship a gestation lag exists which makes the model dynamic. Supply in period 't' depends on price prevailing in the previous period (t-1). The price level in previous period (t-1) would have induced the producers to increase or decrease the supply, full impact of such decisions are visible in time period 't' only. For market to attain equilibrium, demand in period 't' must equal supply in period 't'.

It must be noted that if one is concerned with the equilibrium configurations of a market for a good, one has to take recourse to a static methodology. *Equilibrium is a static concept*. It describes the position of a market at rest. In constrast, disequilibrium analysis must pertain to dynamics. It brings into focus the market adjustment process (or, market corrective process), the interplay of which would move the market back to equilibrium. One has to analyse how the market moves through time during the period the adjustment process is working. In a static framework, we implicitly assume that market adjustment is instantaneous, and without any loss of time, equilibrium is or is not restored. How the economic agent behaves in the disequilibrium situation is not the concern of static analysis. This is where dynamic analysis sets in. It must be noted that in a static framework one might be interested in comparing (or evaluating) two or more equilibrium positions before and after a change in some exogenous forces. Such a method is known as **comparative static**. For instance, consider analysing the

effect on price of cars when demand increases. We concentrate on two equilibrium positions, one before change and another after the change in demand has taken place. What happens in the interim period is not the concern of static analysis.

Check Your Progress 2

1) Consider the following demand/supply functions

A) i) Q^D_X = $a - bP_x$;
   ii) Q^S_t = $f(P_t)$;

B) i) Q^D_X = $A - BP_x$
   ii) Q^S_t = $f(P_{t-1})$.

Are these models Static or Dynamic ?

3.4 CONSTRUCTION AND VERIFICATION OF ECONOMIC THEORIES

Construction of economic theory consists of the following stages:

1) We choose a hypothesis or a proposition about the phenomenon or events we are interested in investigating. This is derived from the empirical observation of the phenomenon under study. For instance, we choose as a hypothesis the inverse relationship between the quantity demanded for tea and the market price of tea. This hypothesis is thrown up by market observations (or data).

2) At the next step, we formulate an economic model (which is our theory) about the causal relationship among the relevant variables embedded in the hypothesis. The method *of deductive reasoning* is used to develop such a cause-effect relationship. It deals with an '*if-then*' kind of argument in terms of why such as relationship exists. To develop such a model or theory a process of abstraction has to be applied. Since reality is infinitely complex, to make any headway in explaining a phenomenon simplification process has to be used. In other words, the inessentials are discarded while the essentials are incorporated into the model. Such type of simplification is required in order to keep the model manageable. One such model is the cardinal utility theory of demand.

3) Next, the model is applied to the hypothesis or the proposition to derive the implications or the conclusion as regards the phenomenon under study. For instance, when we use *the cardinal utility theory of demand*, we find that when a consumer consumes larger quantity of a good, the marginal utility tends to fall. Hence, unless the price is lowered, larger quantity will not be consumed (since the theory would postulate that price reflects marginal utility). Thus, the conclusion that when price is lowered a larger quantity is demanded (which is our hypothesis to start with).

4) The last step relates to conclusion derived from the model is put to empirical testing. In other words, the conclusion regarding the phenomenon or the object under study is set against or confronted with the observations on the phenomenon or object as it is found in reality. In order to test empirically the conclusion of a theory we have to take recourse to statistical or econometric methods to scan the empirical data for relationship it is trying to establish. If such a testing confirms the relationships established by our model, then we accept the theory as providing a logically valid explanation for the phenomenon or objects as observed in reality. However, if empirical testing contradicts our conclusions about the object under study then either we discard the theory altogether or modify the hypothesis (going

back to the first step and starting the enquiry process once again) as well as the model. This process of going back and forth from hypothesis to empirical observation and testing is repeated till it is possible to find a hypothesis which agrees with observations on the phenomenon as they are found in reality.

3.5 ECONOMIC THEORY AND ECONOMIC LAWS

A model is one, which is used to describe a set of causal relations among economic variables or economic objects. *A hypothesis, which is successfully tested, is called a theory. The purpose of a theory is to explain and predict.*

An economic theory, which is true under similar set of circumstances, is called a law. For instance, the Law of Demand.

Check Your Progress 3

Consider the statements:

i)   Consumption depends on income

ii)   Population rises when per capita income goes up .

Which of the above statement is a theory or a law?

3.6 STOCK VARIABLE AND FLOW VARIABLE

In economics we deal with two types of variables, *flow variables* and *stock variables*. Anything, which varies, is a variable, (For instance price, quantity demanded and supplied, income, investment, exports, imports, employment, cost of production, profits etc.). However, for variation to be observed we will have to specify the period of time. Whether it is a week, a month, or a year or a longer period of time. Now in each of these periods the relevant variable may be a stock variable or a flow variable. *Both stocks and flows are expressed at a precise moment in time. However, a flow variable has both a time dimension and a time reference*, while a stock variable has only a time reference. Though both are measured at fixed points in time, flow variables are measured in "temporally determined units". *In other words, flows are always expressed per unit of time. While stocks are always expressed at a point in time.* For instance, capital is a stock variable, since it has no time dimension but has only time reference, like stock of capital on 1st January 2000. Investment, however, is a flow variable since it is expressed per unit of time, like 10 per cent per annum. *Wealth is a stock magnitude while income is a flow magnitude.* Stocks and flows are related to each other in the sense that differences in stocks in the two periods (say 1-1-2000 and 31-12-2000) will constitute flows during the period (the time interval 1-1-2000 to 31-12-2000). It is through flows that stocks are added (to, or depleted). For instance, capital stock on 1-1-2000 plus the net flows of investment (net of depreciation)during the period 1-1-2000 to 31-12-2000 will make the stock of capital on 31-12-2000. The importance of stocks and flows is that there exists markets for both stocks and flows. In micro-economic theory we will be concerned more with flows than with stocks.

Check Your Progress 4

Identify the 'stock' and 'flow' among the following:

i)   Inflation rate, rate of interest, money supply, population

ii)   Demand for wheat and supply of wheat

3.7 LET US SUM UP

To recapitulate, in this unit we concentrated once again on methodological issues in economics. Essentially, microeconomic theory is based on partial equilibrium approach while macroeconomic theory is based on general equilibrium approach. The distinction between the partial and general equilibrium analysis has been spelt out in great details. Partial equilibrium analysis is based on *ceteris peribus* assumptions, while general equilibrium is characterised by *"everything depends on everything else"*. You must be often hearing the terms static and dynamic. We focussed on this distinction as well in this unit. In a very pedestrian manner we found that *'static'* deals with timeless situation while *'dynamic'* deals with changes over time. Equilibrium analysis is supposed to be static in nature while disequilibrium analysis pertains to dynamics. A description or the characterisation of equilibrium constitutes static framework.

We have concluded this unit with a discussion on how to construct and verify an economic theory. We have already tackled this question in the very first unit itself while expanding upon Lionel Robbins' definition of economics. One uses the scientific method of deductive logic to construct economic theories. The conclusions derived from an economic theory must be tested empirically using the scientific method of econometrics. One cannot, however, be 100 per cent sure as to the success of such tests.

3.8 SOME KEY WORDS

Dynamics : When variables are dated. When changes take place over time.

Economic Laws : An economic theory, which is true under similar set of circumstances, is called a law.

Economic Theory : A model, which is used to describe a set of causal relations among economic variables or economic objects. A hypothesis, which is successfully tested, is called a theory. The purpose of a theory is to explain and predict.

Flow : A variable expressed per unit of time. It has both time dimension and time reference.

General Equilibrium : An equilibrium analysis where we analyse simultaneously all markets in the economy. All markets are considered to be inter-dependent and inter-related. It represents a more complex analytical framework than partial equilibrium analysis.

Partial Equilibrium : An equilibrium analysis pertaining to a particular market with everything else ignored. In particular, the interactions between various markets of the economy are not taken into account.

Static : When variables are not dated. Refers to 'timeless' situations.

Stock : Variable measured at a point of time. It has only a time reference.

3.9 SOME USEFUL BOOKS

Same as in Unit No. 1.

3.10 ANSWERS OR HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

i)   Partial equilibrium

ii) General equilibrium analysis

Check Your Progress 2

1) a) Static

    b) Dynamic

Check Your Progress 3

i)   Statement of a theory

ii) More of a law

Check Your Progress 4

i)   flow, flow, stock, stock.

ii) flow as well as stock.