Economic Analysis

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Economic Analysis

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1.1. INTRODUCTION

Economics is the science which studies human behavior as a relationship between ends and source means which have alternative uses. Economics is concerned with the efficient use of limited productive resources to achieve the maximum satisfaction of human material wants. There are two major disciplines of economics i.e. microeconomics and macroeconomics. This chapter give description of both micro and macro economics. Economics is social science that seeks to analyze and describe the production, distribution, and consumption of wealth. In the 19th century economics was the hobby of gentlemen of leisure and the vocation of a few academics; economists wrote about economic policy but were rarely consulted by legislators before decisions were made. Today there is hardly a government, international agency, or any large business organization that does not have its own staff of economists.

1.2. SCOPE OF ECONOMICS

The scope of economics is the area or boundary of the study of economics. Thus scope of economics answer and analyze the following three main questions:

(i) What is the subject matter of economics?
(ii) What is the nature of economics?
(iii) What are the limitations of economic?

Subject Matter of Economics:

Economists have different opinion about the subject-matter of economics. Adam Smith, defined economics as a subject, which is mainly concerned with the study of nature and causes of generation of wealth of nation.

Marshall introduced the concept of welfare in the study of economics. According to him; economics examines that part of individual and social actions which is closely connected with the material requisites of well being.

According to Robbins (a) human wants are unlimited (b) means at his disposal to satisfy these wants are not only limited, (c) but have alternative uses. Man is always busy in adjusting his limited resources for the satisfaction of unlimited ends. The problems that centre round such activities constitute the subject-matters of economics.

Nature of Economics:

The following questions are generally covered in the nature of economics. The economists also have different views regarding the nature of economics.

(a) Is economics a science or an art?
(b) Is it a positive science or a normative science?
(iii) Economics as a Science or an Art:

Economics is both a science and an art. Economics is considered as a science because it is a systematic knowledge derived from observation, study and experimentation. But laws of economics are less perfect as compared with the laws of pure sciences. An art is the practical application of knowledge for achieving definite ends. Science provides knowledge about a phenomenon and an art teaches us to do a thing. For example, inflation in a country. This information is derived from positive science. The government takes certain fiscal and monetary measures to bring down the general level of prices in the country. The study of these fiscal and monetary measures to bring down inflation makes the subject of economics as an art.

(iv) Economics is Positive or Normative Science:
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Lionel Robbins, Senior and Friedman have described economics as a positive science. They opined that economics is based on logic. It is a value theory only. It is, therefore, neutral between ends.

Marshall, Pigou, Hawtrey, Keynes and many other economists regard economics as a normative science. According to them, the real function of the science is to increase the well-being of man. They have given suggestions in their works for promotion of human welfare.

Economics, to conclude, has both theoretical as well as practical side. In other words, it is both a positive and a normative science.

1.3. DEFINITIONS OF ECONOMICS

a) Adam Smith’s definitions: An enquiry into the nature and causes of wealth of nations.

b) Ely’s definitions: The science which treats of those social phenomena that is due to the wealth getting and wealth using activities of man.

c) Dr. Alfred Marshall: Economics is a study of man’s actions in the ordinary business of life; it enquires how he gets his income & how he uses it. Thus it is on one side a study of wealth and on the other & more important side, a part of the study of a man.

d) Robbins: Economics studies human behavior on a relationship between ends and scarce means which have alternative uses.

1.4 HISTORICAL DEVELOPMENTS

15th to the 18th century: Greeks as well as medieval scholastics made significant contribution to economics as evidenced from pamphlet literature.


1817: David Ricardo wrote *Principles of Political Economy and Taxation*. Ricardo’s work gave an entirely new twist to the developing science of political economy.

**Marxism** : The Smith and Ricardo had espoused a “labour theory of value,” which holds that products exchange roughly in proportion to the labour costs incurred in producing them. Marx worked out all the logical implications of this theory and added to it “the theory of,” which rests on the axiom that human labour alone creates all value and hence constitutes the sole source of profits. surplus value

**The marginalists**: The next major development in economic theory, the marginal revolution, stemmed essentially from the work of three men: English logician and economist Stanley Jevons, Austrian economist Carl Menger, and French-born economist Léon Walras. Their contribution to economic theory was there placement of the labour theory of value with the “theory of value.” It was Léon Walras, though, living in the French-speaking part of Switzerland, who carried the marginalist approach furthest by describing the economic system in general mathematical terms.

The years between the publication of Marshall’s *Principles of Economics* (1890) and the may be described as years of reconciliation, consolidation, and refinement for the marginalists. The three schools of marginalist doctrines gradually coalesced into a single mainstream that became known as neoclassical economics. stock market crash of 1929

In the 1930s the growing harmony and unity of economics was rudely shattered, first by the simultaneous publication of American economist Edward Chamberlin ’s *Theory of Monopolistic Competition* and British economist Joan Robinson ’s *Economics of Imperfect Competition* in 1933, then by the appearance of British economist John Maynard Keynes *General Theory of Employment, Interest and Money* in 1936.

**Keynesian economics** : The second major break through of the 1930s, the theory of income determination, stemmed primarily from the work of John Maynard Keynes. Keynes was interested in the level of national income and the volume of employment rather than in the equilibrium of the firm or the allocation of resources.

**Postwar developments**
The 25-year period following World War II can be viewed as an era in which the nature of economics as a discipline was transformed. First of all, mathematics came to permeate virtually every branch of the field. New developments in economics were not limited to methodological approaches. Interest in the less-developed countries returned in the later decades of the 20th century, especially as economists recognized their long neglect of Adam Smith’s “inquiry into the causes of the wealth of nations.” There was also a conviction that economic planning was needed to lessen the gap between the rich and poor countries. Out of these concerns came the field of development economics, with offshoots in regional economics, urban economics, and environmental economics.

1.5 TYPES OF ECONOMICS

**Micro Economics:** This branch of economics studies the behavior of small individual factors or participants in an economy or of a small group e.g. study of equilibrium of an individual consumer so as to maximize his satisfaction. It studies all interactions in various sectors of the economy and their actions and reactions on each other in detail. The study of microeconomics is helpful for allocation of resources, distribution national income and consideration of welfare. As microeconomics study results are based upon some assumptions & are for individual factor of production, the aggregate analysis of whole economy cannot be performed. The scope of micro economics is depicted in Figure-1.1.

1. Theory of demand

The word 'demand' is so common and familiar with everyone that it seems superfluous to define it. The need for precise definition arises simply because it is sometimes confused with other words such as desire, wish, want, etc.

Demand in economics means a desire to possess a good supported by willingness and ability to pay for it. If you have a desire to buy a certain commodity, say a car, but you do not have the adequate means to pay for it, it will simply be a wish, a desire or a want and not demand. Demand is an effective desire, i.e., a desire which is backed by willingness and ability to pay for a commodity in order to obtain it.

Demand for a commodity is related to price per unit of time. It is the experience of every consumer that when the prices of the commodities fall, they are tempted to purchase more. Commodities and when the prices rise, the quantity demanded decreases. There is, thus, inverse relationship between the price of the product and the quantity demanded. The economists have named this inverse relationship between demand and price as the **law of demand**.

2. Theory of supply

*Supply* is of the scarce goods. It is the amount of a commodity that sellers are able and willing to offer for sale at different price per unit of time. In the words of Meyer: “Supply is a schedule of the amount of a good that would be offered for sale at all possible price at any period of time; e.g., a day, a week, and so on”.

There is direct relationship between the price of a commodity and its quantity offered for sale over a specified period of time. When the price of a goods rises, other things remaining the same, its quantity which is offered for sale increases as and price falls, the amount available for sale decreases. This relationship between price and the quantities which suppliers are prepared to offer for sale is called the **law of supply**.

3. Economics of welfare
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A branch of economics that focuses on the optimal allocation of resources and goods and how this affects social welfare. Welfare economics analyzes the total good or welfare that is achieved at a current state as well as how it is distributed. This relates to the study of income distribution and how it affects the common good. Welfare economics is a subjective study that may assign units of welfare or utility in order to create models that measure the improvements to individuals based on their personal scales.

Welfare economics uses the perspective and techniques of microeconomics, but they can be aggregated to make macroeconomic conclusions. Because different "optimal" states may exist in an economy in terms of the allocation of resources, welfare economics seeks the state that will create the highest overall level of social welfare. Some people object to the idea of wealth redistribution because it flies in the face of pure capitalist ideals, but economists suggest that greater states of overall social good might be achieved by redistributing incomes in the economy.

**Macro Economics:** This branch explains the process of the equilibrium of the entire economy as a whole. It gives a complete picture of the economy as a whole and is useful for formulating economic policy. In microeconomics, various factors are analyzed independently as a single factor. Studies of aggregate factors of the economy are analyzed by macroeconomics. Macroeconomic conclusions are expressed in terms of averages or aggregates, which are required to be used with caution as the concept/approach may be true at micro level but deceptive at macro level. The scope of macroeconomics is shown in Fig 1.2.

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**Fig 1.2: Scope of Macro Economics**

1. Theory of income and employment

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(a) Total Employment depends on Total output, which is equal to total income. So National Income = Total Employment.

(b) Total Value of employment depends on Effective Demand.

(c) Effective Demand is composed of Aggregate Demand Function (ADF) and Aggregate Supply Function (ASF). The Effective demand at the equilibrium price where ADF = ASF.

(d) ASF is given in the Short period, and ADF is the significant factor on Keynes's theory.

(e) ADF depends on total expenditure, which is composed of Consumption and Investment Function.

(f) Consumption Function depends on :- (i) Size of Income, (ii) Propensity to Consume.

(g) Investment Function depends on :- (i) Marginal Efficiency of Capital (MEC), (ii) Rate of Interest (Ri).

(h) MEC is determined by :- (i) Prospective Yield, (ii) Supply price of Capital Assets.

(i) Rate of Interest (Ri) is determined by Supply of Money and Demand for Money (Liquidity Preference). Supply of money is regulated by monetary authorities. Liquidity preference is determined by Transaction, Precautionary, Speculative motives, etc.

(j) According to Keynes, Investment Expenditure is the main determinant of the level of employment. The greater the difference between MEC and Ri the higher the inducement to invest and vice-versa. Since Rate of Interest (Ri) is stable in the short run, MEC, which is unstable, is the main determinant of Investment Function.

(k) The theory concludes that to raise employment, effective demand should be raised. So, Investment Expenditure must be raised by filling the gap between an increase in investment and consumption. Lack of Effective Demand leads to unemployment.

2. Theory of general price level and inflation

Inflation

As prices for goods and services that we consume increase, inflation is the result. The inflation rate is used to measure the rate of change in the overall price level of goods and services that we typically consume. While inflation is a regular annual occurrence in modern economic systems, it only becomes a policy concern when reaching unacceptably high levels.

Important features of Microeconomics

(i) Microeconomics and allocation of resources: It takes into account the total quantity of resources as given. It explain how resources are allocated for production of goods which further depends upon the price of various goods/services and the prices of factors of production. Microeconomics analysis how the relative prices of goods and factors are determined. Thus the theory of product pricing and the theory of factor pricing (rent, wages, interest and profit) fall within the domain of microeconomics.

(ii) Microeconomics and economic efficiency: The microeconomic theory explain whether problems of scarcity and allocation of resources so determined are efficient. Economic efficiency involves (a) efficiency in consumption (b) efficiency in production and distribution and (c) overall economic efficiency. The price theory shows under what conditions these efficiencies are achieved.

Importance

The importance and application of microeconomics in brief are as under.

(i) Beneficial in understanding and explaining the working of private enterprises: The microeconomics explains the working of free market economy. It describes how the prices of the goods/services and the factors of production are arrived at.

(ii) Make it possible to know the conditions of equilibrium: Microeconomics explains the conditions of efficiency in consumption, production and in distribution of the rewards of factors of production.

(iii) Discuss how an individual makes decision without central control: The microeconomics explains how an individual in a free enterprise economy functions without any central control.
Study of welfare economy: Microeconomic involves the study of welfare economics.

Limitations

Microeconomics despite its many plus points is not free from limitations. They are:

(i) It assumes full employment in the economy which is unrealistic.

(ii) It's assumption of liaises fair policy which is no longer in practice in any nation of the world.

(iii) It studies an individual decision making unit.

The important issues which are addressed by Macroeconomics

(i) It makes it possible to know determination of income and employment: Lord J.M. Keynes explained the forces or factors which determine the level of aggregate employment and output in the economy.

(ii) Determination of general level of prices: Macro economic analysis explains as to how the general price level is determined and what are the main factors influencing general price level.

(iii) Economic growth: The macro-economic models help to devise economic policies for achieving long run economic growth with stability. The new developed growth theories explain the causes of poverty in under developed countries and suggest remedies to overcome them.

(iv) Macroeconomics and business cycles: In macroeconomics causes of fluctuations in the national income are analyzed. It has also been possible now to frame policies for controlling business cycles and consequent inflation and deflation.

(v) International trade: Macro economics analyzes various features of international trade in goods, services and balance of payment problems, the effect of exchange rate on balance of payment etc.

(vi) Unemployment: Macro economics explains the causes of unemployment in the economy.

(vii) Macroeconomic Policies: Economy of nation is affected by fiscal and monetary policies. These two major policies are central in macro economic analysis of the economy.

(viii) Global Economic System: Macro economics emphasized that a country’s economy is a part of a global economic system. A good or weak performance of a country’s economy can affect the performance of the world economy as a whole.

Limitations

The main limitations of macroeconomics are as follows

(i) The macro economies do not pay attention to the welfare of the individual. For example, if national saving is increased at the cost of individual welfare, it is not considered a wise policy.

(ii) In macroeconomics analysis, aggregates are considered as homogeneous but do not look into its internal composition. For example, if the wages of the non teaching staff of university falls and the wages of the teaching staff rise, the average wage may remain the same.

(iii) It is not necessary that all aggregate variables are important. For example, national income is the total of individual incomes. If national income in the country goes up, it is not necessary that the income of all the individuals in the country will also rise. There is a possibility that the rise in national income may be due to the increase in the incomes of limited rich families of the nation.

1. Theory of income and employment: Macro-economics studies what factors and how these factors determine the level of income and employment. The level of income and employment is determine by aggregate demand. Aggregate demand is the sum of total consumption demand and total investment demand. Hence, consumption function and investment function are the important components of macro-economics. The theory of trade cycle is also covered by macro-economics.

2. Theory of general prices level: Macro-economics is concerned with how general price level is determined. The main aspect of general prices level is inflation. These are many theories of inflation. Inflation, one of the grave problem of present world,
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also an important component of macro-economics. The theories of money, banking and finance also fall under macro-economics.

3. Theory of economic growth: Growth economics or the theory of economic growth is another important branch of macro-economics. Many theories of economic growth have been developed. These theories suggest the way to accelerate the rate of growth of the economy. It is because economic growth is a prerequisite for the improvement in the levels of living of people and alleviation of poverty.

4. Modern theory of distribution: National income is distributed among different classes of people of a country in different ways. Macro-economics studies what factors and how these factors determine the relative share of different people national income. M. Kalecky and Nicholas Kaldor developed the modern theory of distribution called macro-economics theory distribution. Kalecky believed that the relative share of wages and profit depends on the degree of monopoly in the economy. Similarly, Kaldor believed that the relative share of the wages and profit depend on consumption function and the rate of investment.

1.6 INTERDEPENDENCE OF MICRO AND MACROECONOMICS

The micro and macro economics are interdependent. They are complementary and not conflicting. It is not possible to put them in water tight compartments. Both these approaches help in analyzing the working of the economy. If only one approach is studied and the other is neglected, it can be considered to be only half educated. Thus it is necessary to integrate the two approaches for the successful analysis of the working of economic system. The macro approach should be applied where aggregate entities are involved and micro approach when individual cases are to be examined. If one is ignored and emphasis is laid on the other, it will lead to wrong or inadequate conclusions.

1.7 THE CIRCULAR FLOW IN A SIMPLE ECONOMY

To concept of circular flow is described in its simplest form, a simple economy is considered in which there is no government, no financial markets, and no imports or exports. As an illustration, imagine that the households in this economy live entirely from hand to mouth, spending all their income on consumer goods as soon as they receive it, and that the firms sell all their output directly to consumers as soon as they produce it.
Lesson-2

Human Wants: Importance Features and Classification

2.1. INTRODUCTION

Human beings have unlimited wants such as food, clothing, shelter, education, entertainment, leisure, etc. when one want is fulfilled, immediately other wants grow up. This chapter describes basic characteristics of human wants.

2.2 HUMAN WANTS

Human being has many desires which culminate into wants. There is no end to human wants. Some wants are to meet basic necessities of life whereas some are to make life more comfortable and luxurious.

2.2.1 Characteristics of Human wants

Human wants has following characteristics

1. Human wants are unlimited: Human being always lives in a stage of dissatisfaction. When one want gets satisfied another arises and when that gets satisfied another emerges. All Human beings undergo this process continuously. This leads to emergence of large number of wants one after the other. This cycle never ends and so one can say human wants are not limited.

2. Want is satiable with respect to time / place: On one hand human wants are infinite but on the other hand it is possible to satisfy a single want at particular time / place e.g. If one wants to own a luxurious house, one can get it provided one has money.

3. Wants are Complementary: It is not possible to get ourselves satisfied by using a single good. The very nature of most of the goods makes it necessary to use them in combination e.g. to own a vehicle according to one’s own financial capability is one of the important wants for most of the individuals. But mere owing vehicles does not given full satisfaction. If requires fuel to run the vehicles.

4. Wants are Competitive: Wants are unlimited but means to satisfy them is limited. Each person has limited money. One cannot satisfy all wants at a particular time. Thus based upon need, most pressing wants gets priority for satisfaction. Hence each want is in competition with other.

5. Wants change with people, place and time: Due to human psychology, for a single individual wants go on changing. As a young individual, person might want to lead a luxurious life and strive hard to achieve that. Later in the life, one wants piece of mind and prefers to join any religious sect. At the same time wants vary across the individuals of same age and group also.

6. Wants are alternative: A want can be satisfied by different alternatives. The choice of alternative depends upon preference and money at the disposal of individual e.g. If a person is hungry and want food, it can be satisfied by variety of alternatives.

7. Wants increases with progress of society: With progress of society, new avenues are available to mankind to satisfy diverse wants, with progress of society, technological advancements occurs which provides new things to satisfy human wants. Thus wants to people living in developed nations are different from those of developing and underdeveloped nations.

8. Wants differ in intensity and urgency: The unlimited wants occupy different positions in hierarchy. The human beings want to satisfy first of all most basic needs of foods, clothing, shelter, and then look for others.

9. Wants gets converted into habits: Continuous satisfaction of a particular want regularly lead to the formation of habit, e.g. Addiction of tea or coffee with most of the individuals in morning.

10. Wants Recurring: Many wants are of recurring nature e.g. each individual wants to satisfy need of hunger daily at regular interval.

11. Wants are influenced by customs or traditions: We live in society. Man is a social animal. Whether we like or not, we are bound to accept customs or traditions of our society.
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12. Wants are affected by Promotion and Income: Our purchasing power and promotion methods adopted by business organizations influence buying process.

2.3. Importance of Wants

Human wants have different characteristics, which are related with important laws of economics as depicted in Table 2.1.

Table 2.1: Relation of human characteristics with economic laws

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<th>Characteristics of human wants</th>
<th>Economic laws</th>
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<td>1.</td>
<td>Human wants are satiable</td>
<td>a. Law of diminishing marginal utility</td>
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<td></td>
<td></td>
<td>b. Law of demand</td>
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<td></td>
<td></td>
<td>c. Consumer surplus</td>
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<td></td>
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<td>d. Elasticity of demand</td>
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<td></td>
<td></td>
<td>e. Principle of progressive taxation</td>
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<td>2.</td>
<td>Human wants are competitive</td>
<td>Law of substitution</td>
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<td>3.</td>
<td>Wants become habits</td>
<td>Law of family expenditure</td>
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<td>4.</td>
<td>Wants are complimentary</td>
<td>Law of joint demand</td>
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2.4. Classification of human wants:

Based upon need, usage and importance human wants can be classified into following categories.

1. Necessity: This includes most essential things and further subdivided into following categories.

a) Necessity for existence: Human being requires certain basic things for their existence. It is difficult to survive without them. This includes basic necessities of life viz. food, clothing and shelter.

b) Necessity for efficiency: Some wants are of such a nature that human beings can live without them but if provided, they increases the efficiency. In today’s education system, a teacher can teach without LCD projector but if it is provided, it definitely increases the efficiency.

c) Necessity of convention: Human being is a social animal. The society specifies certain unwritten rules which each individual has to obey. Adoption of this rules give rise to conventional human wants e.g. It is mandatory to dress appropriately according to social situations such as marriage ceremony or mourning ceremony. This leads to wants of situation specific dress materials.

2. Comforts: In order to live a more pleasant and more fuller life, human beings go for additional wants. After obtaining necessity for existence, one goes for purchasing comfortable things e.g. fan is necessary of efficiency in offices but air conditioner is a comfort.

Luxury: Human being are still not satisfied with comforts, they still go for obtaining luxuries. It is not possible to categorize wants into a fixed category either as necessity, comfort or luxury. It depends upon preferences, living standard of persons, stage of economic development of a country, time period etc. A mobile was luxury in past but now it is probably necessity for most of the people. Similarly a private air craft is a luxury for most of the people but even it is a necessity for very busy owners of large business houses and politicians in election time.
Lesson-3
Basic Terms Part-I

3.1. INTRODUCTION

Economics may appear to be the study of complicated tables and charts, statistics and numbers but more specifically it is the study of what constitutes rational human behavior in the endeavor to fulfill needs and wants. In this context this chapter describes the basic terms used in the subject of economics.

3.2. BASIC TERMS OF ECONOMICS

3.2.1. Goods: Things that satisfy human wants are called goods. Goods can be classified as follows.

i) Free and Economics Goods: The goods which can be obtained free of cost are available in nature in abundant form e.g. Air. Things which are limited and one has to pay for the same are referred to as economic goods. Free goods are nature's gift whereas economic goods are manmade.

ii) Consumption and Capital Goods: The goods which provide satisfaction directly are called consumption goods. Majority of things which we use in our daily lives to meet our personnel need fall in this category e.g. food items, ornaments, notebook etc. The goods which are utilized to manufacture other goods are called capital goods. The things used in industrial establishments fall in this category e.g. plant and machinery, farm implements etc.

iii) Intermediate Goods: These are the goods used to manufacture consumption goods through use of capital goods. It comprises all types of raw material used in industrial establishments. E.g. Leather used between industries to manufacture shoes.

iv) Tangible and non tangible goods: Material goods having a specific physical form is a tangible good e.g. television. Certain intangible aspects of organization which are crucial for its success or failure are categorized as intangible goods e.g. reputation, services, etc.

v) Personal and impersonal Goods: The inherited specific characteristics possessed by any individual which determines his or her personality is a personal good. e.g. ability and skill of a carpenter. The outside external goods possessed by individuals/organizations is called impersonal goods e.g. A well-furnished office building.

vi) Transferable and Non Transferable Goods: The tangible goods for which ownership can be changed are transferable goods. This may involve actual physical transfer e.g. selling a car or mere change of ownership e.g. selling a house. The goods for which no such change either physical or otherwise can take place fall in the category of non transferable goods. e.g. skill of a physician.

vii) Public and Private goods: Common property belonging to all persons of a society is a public good. e.g. Road, government park etc whereas property belonging exclusively to specific individuals is a private good e.g. houses owned by individuals in their name.

viii) Necessaries, Comforts and luxuries: The goods which are very much essential for our existence are necessary goods e.g. food. The goods which are not essential but they improve the life or help to enjoy life in a better way are called comforts e.g. Air Conditioner. All superfluous consumption which even can be avoided are categorized as luxuries e.g. modern day costly cars.

3.2.2. Utility: Want satisfying quality of goods is known as utility. Utility is classified into form place and time utility. Form utility is provided by changing the physical form of an item and transferring that item and using it in scarcity renders it time utility e.g. converting milk into milk powder provides form utility. Transporting this milk powder to hilly areas in Himalaya for our defense personnel provides place utility. Storing this powder and using in lean season for reconstitution offers time utility.

3.2.1.1. Features of Utility

In Economics sense a thing might posses utility but it may not be useful. In certain circumstances it might be even injurious. e.g. for a drug addict drugs satisfy their want but is not useful. A gun provides utility and usefulness to military personnel but the same is not desirable in the hands of terrorist. In economics, utility is not associated with ethnicity or morality. Utility and Pleasure are also not associated. Due to health reasons, people are required to consume medicines. They do not give pleasure but do possess utility. Utility varies with circumstances and persons e.g. drugs do not provide any utility to a person who is not drug addict. An umbrella has a utility in rainy season. Utility is thus a subjective concept.

3.2.3. Wealth: The meaning of term wealth in ordinary language and economic language is different. It is given in the Table 3.1.
3.2.3.1. Prerequisite for Wealth: For a thing to be considered as wealth, it should satisfy all the following three conditions.

1. It should possess utility and satisfy human want
2. It should be scarce
3. It should be transferable

3.2.3.2. Classification of Wealth

1. Individual Wealth: Excluding the skill and intelligence which are not directly transferable of a person, all other material and non material things owned by an individual is called individual wealth.

2. Social Wealth: The common things owned by local government body and used by all persons are called social wealth e.g. government education institutes, hospitals.

3. National Wealth: It is summation of wealth of all citizens of nations.

Cosmopolitan Wealth: It is summation of wealth of all the nations.

<table>
<thead>
<tr>
<th>Ordinary Language</th>
<th>Economic Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Wealth associated with richness</td>
<td>1. Wealth is not associated with richness</td>
</tr>
<tr>
<td>2. Only rich people are considered wealthy</td>
<td>2. All persons are wealth. Even poor people are also considered wealthy.</td>
</tr>
<tr>
<td>3. Only money is considered as wealth.</td>
<td>3. Everything which has value is considered as wealth</td>
</tr>
<tr>
<td>4. Concept of Scarcity and usefulness is not applicable</td>
<td>4. A thing should be scarce and useful</td>
</tr>
</tbody>
</table>
Lesson-4

Basic Terms Part- II

4.1. INTRODUCTION

This lesson describes few more important term used in economics.

4.2. CONSUMPTION

It is defined as satisfaction of human wants using goods and services. Whenever a person uses any good or avail any kind of service it is said to be consumed. e.g. In a training session, participants are consuming the infrastructure facilities as well as services of professional trainer. In consumption wealth of the person is utilized. Consumption causes destruction of utility along with satisfying human wants. e.g. when we are hungry, we eat the food. We pay for the food & satisfy our want. During the course of eating, utility of original food items get destroyed & converted into another form.

The consumption function or inclination to consume refers to income consumption relationship.

It is a functional relationship between two aggregates i.e. total consumption and gross national income.

The relationship is represented as

\[ C = F(Y) \]

Where,

\begin{align*}
C &= \text{Consumption} \\
Y &= \text{Income} \\
F &= \text{Functional relationship between } C \text{ & } Y, \text{ where } C \text{ is dependent and } Y \text{ is independent variable}
\end{align*}

According to consumption function, consumption equals income over saving, thus

\[ C = Y - S, \text{ where} \]

\begin{align*}
C &= \text{consumption} \\
Y &= \text{Income}
\end{align*}
4.3. CLASSIFICATION OF CONSUMPTION

Consumption can be classified into two broad categories as below

1. Direct Consumption: When the goods & services are consumed by the individuals in straightforward way to satisfy their wants, the process is called direct consumption e.g. eating food.

2. Indirect Consumption: The process of using the goods for manufacturing other goods which ultimately satisfy human want is called indirect consumption. e.g. using various capital equipments to manufacture various finished goods.

3.4. SIGNIFICANCE OF CONSUMPTION

Consumption is the base for all economic activities. Human beings consume goods & services to satisfy their diverse wants. This propels all the economic activities of production including distribution & marketing. The rate of consumption decides the pace of production which ultimately decides the economic growth of a country & standard of living of its citizen.

4.5. DEMAND AND SUPPLY

4.5.1. Demand: It is desire backed by purchasing power and willing to pay. Demand for a product is time place & price specific. Demand for any product is the quantity which a consumer decides to buy at a given price, at a given time.

4.5.2. Supply: It refers to the quantity of product bought for sale at a price during a particular period of time. Supply is dependent upon price of the product, price of other products, factor prices, and state of technology and objectives of the firm.

4.6. CONSUMER SURPLUS

Consumer surplus is a measure of the welfare that people gain from the consumption of goods and services, or a measure of the benefits they derive from the exchange of goods.

Consumer surplus is the difference between the total amount that consumers are willing and able to pay for a good or service (indicated by the demand curve) and the total amount that they actually do pay (i.e. the market price for the product). The level of consumer surplus is shown by the area under the demand curve and above the ruling market price as illustrated in the Figure 4.1.
The concept of diminishing marginal utility states that the marginal utility of a commodity to a person tends to decrease as consumption is increased. Based upon this concept, a phenomenon of consumer surplus is derived. Due to the law of diminishing marginal utility, a consumer is ready to pay more prices for initial units but fewer prices for subsequent units as its utility goes on decreasing. But consumer has to pay the same price as all units of the item are same. By purchasing the commodity, consumer gets utility and price paid is viewed as sacrifice or disutility. A rational consumer will continue to purchase additional units of a particular item, till a stage is reached when the utility of an additional piece is same as the disutility of the price paid to purchase it. Thus at this last unit buyer does not get any surplus, but as the consumer pays same money for all the units, they get additional utility in the form of consumer surplus. Consumer surplus is the excess what a consumer is willing to pay over which they actually pay. It is the difference between what consumers are prepared to pay and what they actually pay.

\[
\text{Consumer surplus} = \text{Total utility} - \text{total amount spent}
\]

**Illustration**

For example, a consumer intends to purchase ice cream for consuming. The price of ice cream per cup is Rs. 20. Marginal utility derived from consuming different ice cream cups and consumer surplus is given in the following table.
4.6.1. Utility of Consumer Surplus

The concept is useful for government to tax the commodities in which consumers are willing to pay more consumer surplus. It is helpful to business houses to set price. They can set higher price for those commodities for which consumers are willing to pay higher consumer surplus. It aids in international trade by importing some of the items at cheap rate for which consumers are paying more for local manufactured goods.

\[
\begin{array}{|c|c|c|c|}
\hline
\text{Quantity of Ice Cream Cups} & \text{Marginal Utility (Rs.)} & \text{Consumer Surplus (Rs.)} & \text{Price of Ice Cream cup (Rs.)} \\
\hline
1 & 100 & 100 - 20 = 80 & 20 \\
\hline
2 & 80 & 80 - 20 = 60 & 20 \\
\hline
3 & 60 & 60 - 20 = 40 & 20 \\
\hline
4 & 40 & 40 - 20 = 20 & 20 \\
\hline
5 & 20 & 20 - 20 = 0 & 20 \\
\hline
\text{Total Utility} = 300 & \text{Consumer surplus} = 300 - 100 = 200 \\
\hline
\end{array}
\]

4.6.1. Utility of Consumer Surplus

The concept is useful for government to tax the commodities in which consumers are willing to pay more consumer surplus. It is helpful to business houses to set price. They can set higher price for those commodities for which consumers are willing to pay higher consumer surplus. It aids in international trade by importing some of the items at cheap rate for which consumers are paying more for local manufactured goods.
Lesson-5

Theory of Consumer Behaviour

5.1. INTRODUCTION

A law of economics stating that as a person increases consumption of a product while keeping consumption of other products constant there is decline in the marginal utility that a person derives from consuming each additional unit of that product. This chapter describes these phenomena by explaining the law of diminishing marginal utility.

5.2. THE LAW OF DIMINISHING MARGINAL UTILITY

This is a universal law based upon common consumer behavior that, as one goes on utilizing a commodity, the utility of each next unit (Marginal Utility) go on reducing. It is generally experienced by each person that as one goes on consuming any specific commodity, with each next unit of consumption satisfaction go on decreasing. The reason is that as person starts consuming a commodity to satisfy want, the intensity also starts diminishing and usefulness of commodity also starts decreasing. If the process of consumption of commodity is not stopped then a stage will reach when the consumer will not receive any satisfaction from the consumption of more units of that commodity. If the consumption of commodity is still continued beyond this stage than a dislike for the commodity will be generated resulting in negative marginal utility.

Dr. Alfred Marshall states the law 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. The law highlights that it is only the additional benefit that decreases and not the total benefit.

5.2.1. Diagrammatic Explanation of Law:

Following Table 5.1 and Figure 5.1 depicts the marginal and total utility derived by consumer by consuming ice - cream cups.
As can be seen from graph and table, as consumer starts consuming ice cream cups, the additional or marginal utility starts decreasing. The seventh ice cream cup does not provide additional satisfaction. Further consumption beyond seventh cup lead to dissatisfaction. The marginal utility decreases and total utility increases both at diminishing rate.

In the graph, X axis represents number of ice cream cups and Y axis marginal utility. The marginal utility curve slopes downward from left to right indicating, the marginal utility decreases as consumption of ice cream cups increases. When the consumption reaches seventh cup, marginal utility becomes zero and after that it turns negative.

5.2.2 Exceptions to the law of diminishing marginal utility:

1. The law is applicable for consumption of similar units only. If after first ice cream cup, the consumer consumes a larger size ice cream cup then first one, the satisfaction also will be more than first cup.
Economic Analysis

2. For full and through application of the law, appropriate quantity of units should be consumed. If ice cream is fed in terms of spoons, then initially the marginal utility will also increase. Contradicting the law. But finally the marginal utility will also decrease according to the law if consumption is continued with spoon also.

3. The law applies with only reasonable gap between the consumption. If the gap is too long the law does not hold true.

4. The law is applicable to ordinary household items only. For rare items such as old stamps, the satisfaction and marginal utility goes on increasing as consumption increases.

5.2.3. Significance of the law of diminishing marginal utility

The law is helpful to the government to frame tax policy. According to the law utility of money is less for rich man compared to poor. This helps the governments to adopt policy of progressive taxation.

1. The law is helpful to businessmen to set the price of their product. According to the law as the quantity of units of commodity increases with a person, the satisfaction also decreases. Thus he may be inclined to purchase lesser and lesser which can be then induced by reducing the price.

2. The law is helpful to individual to make their routine purchase considering limited money at the disposal. One thus tries to manage the purchase of household items till the utility of money spent is equal to the utility of the last unit of the commodity purchased.

5.3. LAW OF EQUIMARGINAL UTILITY

The law states that the utility maximizing market basket is one for which the consumer allocates income so that the marginal utility divided by the goods price is equal for every good purchased.

\[
\frac{M_1}{P_1} = \frac{M_2}{P_2} = \frac{M_3}{P_3} \ldots \frac{M_n}{P_n} = M_N
\]

Where

\(M_1, M_2, M_n\) is marginal utility of first, second and nth commodity \(P_1, P_2 \ldots P_n\) are the price of first, second and nth commodity \(M_N\) is the marginal utility of money or marginal utility of expenditure.

5.3.1. Description of the Law:

Human wants are unlimited and resources to satisfy them are limited. A rational consumer spends money to get maximum satisfaction by substituting one commodity with other based upon their marginal utilities. This law is therefore also referred to as law of maximum satisfaction or law of substitution. In order to derive maximum satisfaction, a rational consumer analyzes the satisfaction derived from his expenditure. If on analysis it is found that expenditure on a particular item derives
more satisfaction then other, then he continuous to purchase that commodity till satisfaction derived from last rupee spent on both the commodity is equal. The law is helpful to all rational consumers, business and service organization, government to allocate the limited resources wisely in the most optimal manner to gain maximum satisfaction

5.4. CARDINAL AND ORDINAL UTILITY APPROACH

Theories of consumer behavior are based on the measurement of utility. The two approaches used by economists for measurement of utility are cardinal and ordinal.

5.4.1. Ordinal Utility Approach:

Many economists, notable among them Engene Slutsky, Vilfredo, Pareto, John and Hicks and Kenneth Arrow were of the opinion that consumer cannot measure utility as it is subjective concept. Thus it is not possible to say that a cup of ice cream will give 9 utils (unit to measure the utility) and a gulabjamun will give 4 utils and so on. But it is possible to give the rank for their preferences according to the utility it provides, which is referred to as ordinal measure of utility. The concept of ordinal utility states that “The rational consumer is able to arrange different preferences of goods and services in a scale of preferences”. This implies that consumer is able to state his preference among commodities or state whether he is indifferent among given two commodity bundles. In case of difference in preference, the utility function provides higher numerical score to most preferred choice and lower score to less preferred choice. In case of indifference between two choices same numerical score is assigned to both of them.

5.5. INDIFFERENCE CURVE

Indifference curve indicates the combination of goods between which a person is indifferent.

The important characteristics of indifference curves are as follows:

(1) Indifference Curves are Negatively Sloped: As the consumer increases the consumption of X commodity, he has to give up certain units of Y commodity in order to maintain the same level of satisfaction. Therefore indifference curve slopes downward from left to right. This means that an indifference curve is negatively sloped.
In Figure 5.2 the two combinations of commodity milk and commodity rice is shown by the points a and b on the same indifference curve. The consumer is indifferent towards points a and b as they represent equal level of satisfaction.

At point (a) on the indifference curve, the consumer is satisfied with OE units of ghee and OD units of rice. He is equally satisfied with OF units of ghee and OK units of rice shown by point b on the indifference curve. It is only on the negatively sloped curve that different points representing different combinations of goods X and Y give the same level of satisfaction to make the consumer indifferent.

(2) Higher Indifference Curve Represents Higher Level:

A higher indifference curve that lies above and to the right of another indifference curve represents a higher level of satisfaction and combination on a lower indifference curve yields a lower satisfaction.

In other words, we can say that the combination of goods which lies on a higher indifference curve will be preferred by a consumer to the combination which lies on a lower indifference curve.
In this diagram (5.3) there are three indifference curves, IC\(^1\), IC\(^2\) and IC\(^3\) which represents different levels of satisfaction. The indifference curve IC\(^3\) shows greater amount of satisfaction and it contains more of both goods than IC\(^2\) and IC\(^1\) (IC\(^3\) > IC\(^2\) > IC\(^1\)).

(3) **Indifference Curve are Convex to the Origin:**

This is an important property of indifference curves. They are convex to the origin (bowed inward). This is equivalent to saying that as the consumer substitutes commodity X for commodity Y, the marginal rate of substitution diminishes of X for Y along an indifference curve.
In this figure (5.4) as the consumer moves from A to B to C to D, the willingness to substitute good X for good Y diminishes. This means that as the amount of good X is increased by equal amounts, that of good Y diminishes by smaller amounts. The marginal rate of substitution of X for Y is the quantity of Y good that the consumer is willing to give up to gain a marginal unit of good X. The slope of IC is negative. It is convex to the origin.

(4) Indifference Curve Cannot Intersect Each Other

Given the definition of indifference curve and the assumptions behind it, the indifference curves cannot intersect each other. It is because at the point of tangency, the higher curve will give as much as of the two commodities as is given by the lower indifference curve. This is absurd and impossible.
In Figure 5.5, two indifference curves are showing cutting each other at point B. The combinations represented by points B and F given equal satisfaction to the consumer because both lie on the same indifference curve IC$_2$. Similarly the combinations shows by points B and E on indifference curve IC$_1$ give equal satisfaction to the consumer.

If combination F is equal to combination B in terms of satisfaction and combination E is equal to combination B in satisfaction. It follows that the combination F will be equivalent to E in terms of satisfaction. This conclusion looks quite funny because combination F on IC$_2$ contains more of good Y (rice) than combination which gives more satisfaction to the consumer. We, therefore, conclude that indifference curves cannot cut each other.

(5) Indifference Curves do not Touch the Horizontal or Vertical Axis

One of the basic assumptions of indifference curves is that the consumer purchases combinations of different commodities. He is not supposed to purchase only one commodity. In that case indifference curve will touch one axis. This violates the basic assumption of indifference curves.
In Figure 5.6, it is shown that the indifference IC touches Y axis at point C and X axis at point E. At point C, the consumer purchase only OC commodity of rice and no commodity of rice, similarly at point E, he buys OE quantity of rice and no amount of rice. Such indifference curves are against our basic assumption. Our basic assumption is that the consumer buys two goods in combination.

5.6. CONSUMER EQUILIBRIUM

"The term consumer’s equilibrium refers to the amount of goods and services which the consumer may buy in the market given his income and given prices of goods in the market".

The aim of the consumer is to get maximum satisfaction from his money income. Given the price line or budget line and the indifference map. "A consumer is said to be in equilibrium at a point where the price line is touching the highest attainable indifference curve from below".

Conditions

Thus the consumer’s equilibrium under the indifference curve theory must meet the following two conditions:

**First**: A given price line should be tangent to an indifference curve or marginal rate of satisfaction of good X for good Y (MRS<sub>xy</sub>) must be equal to the price ratio of the two goods. i.e.

\[ MRS_{xy} = \frac{P_x}{P_y} \]

**Second**: The second order condition is that indifference curve must be convex to the origin at the point of tangency.
Assumptions:

The following assumptions are made to determine the consumer’s equilibrium position.

(i) **Rationality**: The consumer is rational. He wants to obtain maximum satisfaction given his income and prices.

(ii) **Utility is ordinal**: It is assumed that the consumer can rank his preference according to the satisfaction of each combination of goods.

(iii) **Consistency of choice**: It is also assumed that the consumer is consistent in the choice of goods.

(iv) **Perfect competition**: There is perfect competition in the market from where the consumer is purchasing the goods.

(v) **Total utility**: The total utility of the consumer depends on the quantities of the good consumed.

Explanation:

The consumer’s consumption decision is explained by combining the budget line and the indifference map. The consumer’s equilibrium position is only at a point where the price line is tangent to the highest attainable indifference curve from below.

(1) **Budget Line should be Tangent to the Indifference Curve**: The consumer’s equilibrium in explained by combining the budget line and the indifference map.
In the Figure 5.7 there are three indifference curves IC\(^1\), IC\(^2\) and IC\(^3\). The price line PT is tangent to the indifference curve IC\(^2\) at point C. The consumer gets the maximum satisfaction or is in equilibrium at point C by purchasing OE units of good Y and OH units of good X with the given money income.

The consumer cannot be in equilibrium at any other point on indifference curves. For instance, point R and S lie on lower indifference curve IC\(^1\) but yield less satisfaction. As regards point U on indifference curve IC\(^3\), the consumer no doubt gets higher satisfaction but that is outside the budget line and hence not achievable to the consumer. The consumer’s equilibrium position is only at point C where the price line is tangent to the highest attainable indifference curve IC\(^2\) from below.

(2) **Slope of the Price Line to be Equal to the Slope of Indifference Curve:**

The second condition for the consumer to be in equilibrium and get the maximum possible satisfaction is only at a point where the price line is a tangent to the highest possible indifference curve from below. In fig. 3.11, the price line PT is touching the highest possible indifferent curve IC\(^2\) at point C. The point C shows the combination of the two commodities which the consumer is maximized when he buys OH units of good X and OE units of good Y.
Geometrically, at tangency point C, the consumer’s substitution ratio is equal to price ratio $\frac{P_x}{P_y}$. It implies that at point C, what the consumer is willing to pay i.e., his personal exchange rate between X and Y (MRS$_{xy}$) is equal to what he actually pays i.e., the market exchange rate. So the equilibrium condition being $\frac{P_x}{P_y}$ being satisfied at the point C is:

**Price of X / Price of Y = MRS of X for Y**

The equilibrium conditions given above states that the rate at which the individual is willing to substitute commodity X for commodity Y must equal the ratio at which he can substitute X for Y in the market at a given price.

(3) **Indifference Curve should be Convex to the Origin:**

The third condition for the stable consumer equilibrium is that the indifference curve must be convex to the origin at the point of equilibrium. In other words, we can say that the MRS of X for Y must be diminishing at the point of equilibrium. It may be noticed that in Figure 3.11, the indifference curve IC$^2$ is convex to the origin at point C. So at point C, all three conditions for the stable-consumer’s equilibrium are satisfied.

**Summing up**, the consumer is in equilibrium at point C where the budget line PT is tangent to the indifference IC$^2$. The market basket OH of good X and OE of good Y yields the greatest satisfaction because it is on the highest attainable indifference curve. At point C:

$$\text{MRS}_{xy} = \frac{P_x}{P_y}$$
6.1. INTRODUCTION

In ordinary terms, demand means desire or want for something. Economic meaning of demand is much broad. It refers to the quantum of goods consumers are willing to purchase at a given price over a given period of time. Demand is the desire or want for any particular item backed up by ability to pay & willingness to pay. Thus a poor man’s desire to purchase a luxury car will not constitute demand due to lack of purchasing power. At the same time if a rich man desire to own a luxury car but if he not willing to spare the money then also it will not constitute demand. Demand is always quoted with price & time e.g. Demand for whole milk for middle income household is 1 liter per day at price of Rs. 28 per liter. Thus demand may be defined as ‘The demand for a product is the amount of it which will be bought per unit of time at a particular price.

6.2. LAW OF DEMAND

“The demand for a commodity increases with reduction in its price and decreases with increase in its price, other things remaining same.”

Explanation of the law of Demand: Following table depicts the hypothetical demand schedule for a whole milk.

<table>
<thead>
<tr>
<th>Price of Whole Milk (Rs.)</th>
<th>Quantity demand (Liters per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>11</td>
</tr>
<tr>
<td>36</td>
<td>13</td>
</tr>
<tr>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>28</td>
<td>17</td>
</tr>
<tr>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>20</td>
<td>21</td>
</tr>
</tbody>
</table>

By plotting the data of table we get a demand curve as shown in Figure 6.1

Fig- 6.1: Illustration of law of demand
6.2.1. Assumption of the Law of Demand

The following are the assumption of the law of demand:

1. **Consumers income remain same**: During the time period of the law, it is necessary that there is no change in consumer income. If it increases he/she may be inclined to buy more even at higher price.

2. **Consumer Preferences remains same**: Consumers taste, choice, habits, should not change otherwise it may happen that if any product goes down the consumer preference scale than if might be purchased in less quantity even at same price.

3. **No variation in fashion**: If the product/item goes out of fashion, consumers might not purchase it even at reduced price.

4. **Price of related goods should not change**: If the price of substitute & complementary goods of a commodity decreases, consumers will be switching over to its purchases.

5. **Price rise or shortage is not expected in future**: If such a change is expected than consumers raise the demand in response to initial price rise. Such tendencies of consumers invalidate the law.

6. **No change in demographics**: During the operation period of the law, the number of persons, their age profile, sex ratio etc should not change.

7. **No new varieties**: Consumer should not get new type of goods due to innovations; otherwise it may change the choice of consumers.

8. **No change in government rules**: Government frames many rules for business houses including different types of direct & indirect taxes. Any change in such rules will effect the purchases by consumers.

Thus the law of demand is valid based on may such fixed preconditions. Any change is going to invalidate the law.

6.2.2. Exceptions to the Law of Demand

The consumer behaviour of demanding more at a higher price and vice versa is just the opposite to the law of demand, such a behaviour is exhibited by consumers for following goods/conditions.

1. **Giffin goods**: Giffin goods are inferior goods e.g. cheap vegetables & food products. It is observed that when price of such giffin goods decreases, quite often less quatity is demanded than before due to negative income effect & increasing preferences for a better product with increase in their real income.

2. **Snob appeal articles**: Certain goods are attached with status symbol e.g. Luxury cars, diamonds etc. They are very costly & give psychological satisfaction. Thus some of the rich people prefer to buy such snob appeal articles in higher quantum with their increase in price.

3. **Forecasting**: If people believe that price of certain goods is going to increase in future, they may try to purchase them in present times even at higher price. Such a phenomena is observed in stock Market.

**Wrong beliefs**: If consumer has certain wrong belief that quality of product always decreases with fall in price, then they avoid purchases in such circumstances. Owing to such belief some consumers do not buy in stock clearance sale.
7.1. INTRODUCTION

Demand of a commodity is influenced by many factors which can be shown by demand function. This chapter describes demand schedule, demand function and determinants of demand.

7.2. DEMAND SCHEDULE

This is a relationship of price and quantity demanded of a particular commodity indicated in the form of a table. It shows the exact quantity demanded by the consumer corresponding to a particular price at a particular point of time. There are 2 types of demand schedules.

**Individual demand Schedule:** This shows the quantity demanded by an individual consumer for a specific time period. Following table indicates imaginary individual demand schedule for a consumer.

<table>
<thead>
<tr>
<th>Price of chocolate (Rs/Per kg)</th>
<th>Quantity demanded (kg/week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>6</td>
</tr>
<tr>
<td>60</td>
<td>8</td>
</tr>
<tr>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>40</td>
<td>14</td>
</tr>
<tr>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

a) The individual demand schedule represents only variation in demand at different price. It represents purchasing behavior by consumer at different prices. It highlights the characteristics of law of demand that higher the price, lower is the quantity demanded and vice versa.

b) **Market demand schedule:** It is simply summation of individual demand schedules of individual consumers in particular market segment at a particular point of time.
7.3. DEMAND FUNCTION

Demand for a product depends upon many variables. A demand function is a mathematical expression showing functional relationship between demand and dependent variables considering the most common variables affecting the demand, a common generalized demand schedule can be expressed as follows.

\[ D_z = f (P, P_s, P_c, d, T, A, N, E), \] Where

\( D_z \) = Quantity demanded of goods \( Z \)

\( P_s \) and \( P_c \) = Price of substitute and complimentary goods respectively

\( d \) = Disposable income of consumer

\( T \) = Change in taste and preference of consumers

\( A \) = Impact of promotion and specifically advertisement

\( N \) = Population change

\( E \) = Any other unspecified variable impacting demand

7.4. DETERMINANTS OF DEMAND

Demand depends upon following determinants

---

**Table-7.2: Market demand schedule**

<table>
<thead>
<tr>
<th>Price (Rs. In Lacks)</th>
<th>Quantity demanded of specified dairy machines</th>
<th>Total Market Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Firm A</td>
<td>Firm B</td>
</tr>
<tr>
<td>12</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>
Economic Analysis

1. Price of the goods: This is one of the important determinants of demand of goods. Generally less quantity is demanded at higher price then lower price.

2. Consumer’s income: This determines consumers purchasing power. Higher the income, higher will be the demand for necessary and luxury items.

3. Taste, habits and Preferences: Consumer taste, habits and preferences affect the demand. Demand of products are dependent upon criteria like vegetarian, non-vegetarian, addiction to drinks, drugs or cigarettes.

4. Price of other related goods: If a demand can be satisfied with other similar type of good then it is a substitute, e.g. different types of cooking oils are substitute. Thus if price of groundnut oil increases, consumers may go for cotton seed oil which is relatively cheaper. If satisfaction of a want requires more than one good, then those goods are referred to as complimentary goods. For e.g. vehicle and fuel. In case of complimentary goods, if price of one increases the demand for other complementary goods decreases and vice versa. Thus, when price of fuel (petrol and diesel) increase, the demand for household vehicles (Two wheelers and four wheelers) decreases.

5. Buyer’s expectation: If a buyer expects decreases in price in future, they may demand less in present and if they expect increase in price in future, they may buy more in present times.

6. Promotional effect: In present day modern world, demand for many of the consumer durables is affected by promotional methods (advertising, sales promotion, publicity) etc used by the organizations.

7. Demographic profile: The total number and its age structure as well as sex ratio of people living in the country also impact the demand.

8. Scientific developments: With research and development new items enter the market with more added features e.g. electronic goods which creates new demands.

9. Government policy: Government policy of taxation including both income tax and sales tax determines the price goods and purchasing power of customers determines demand of goods.

Fashion and social rules: Demand for goods are also influenced by prevailing fashion and customers of society e.g. demand of clothes differs in India and America.
8.0. INTRODUCTION

Demands can be grouped into at least 90 different types depending upon time, geographic and product orientation. This chapter explains some of the important types of demand classification.

8.1. Types of demand

1. **Demand for buyers goods**: Goods and services sought by buyers for their direct consumption are called consumer goods. E.g. demand for items of basic necessity like food, clothing, services of electrician, plumber etc.

2. **Demand for manufactured goods**: Goods required in industries for manufacturing other goods. E.g. milk required in dairy industry for manufacturing milk products is a manufactures demand while demand for milk products by consumers is a buyers demand.

   Buyer demand is direct or autonomous and manufacturers demand is derived based upon demand of final output.

3. **Perishable goods demand**: Perishable goods have less shelf-life. This is generally consumed quickly in one shot service. The demand for perishable goods is immediate and more elastic. E.g. demand for milk and milk products, fruits, vegetables etc constitute demand for perishable goods by manufacturers.

4. **Non perishable goods demand**: Non perishable goods are repeatedly used for longer time. In short run, demand for non perishable goods is less elastic which tends to be more elastic in long run. Due to dynamic business circumstances, demand for non perishable capital goods like different types of machinery tends to be fluctuating. Thus due to this dynamism ascertaining such demand is a complex phenomena. Non perishable goods can be stored, their purchase can be postponed, such goods also need replacement etc are the associated problems encountered in ascertaining the demand for non perishable goods.

5. **Autonomous demand**: Human wants are unlimited. This creates an urge to satisfy some wants directly and is a final direct demand. It is called autonomous demand. E.g. Demand for consumer goods.

6. **Derived demand**: When demand for a good is dependent on demand for some other goods, such a demand is called derived demand. For e.g. demand for floor tiles is dependent on number of new buildings and demand for battery charger is dependent on number of mobile handsets. In general
most of the demands are derived demand. Some as a part of final product/ component and some being a complimentary product e.g. demand for tyres is related with vehicles.

7. Joint demand: If to satisfy a single want, two goods are required than they form a joint demand e.g. vehicles and fuels. Change in demand for such products occurs in the same direction and more or less in the same proportion.

8. Composite demand: when a good is required for more than one purpose, it creates a composite demand. For such a demand, change of demand for one use pattern creates changes in demand for other use patterns also, e.g. demand for uranium, which is required in molecular reactors for generating electricity or for making atomic bombs.

9. Time dependent demand viz short run or long run demand: There is no clear cut demarcation for demand to be classified as short run or long run. Short run demand is present demand dependent upon price, income and other variables. Long run demand is final ultimate demand resulting due to changes in various variables.

10. Company demand and Industry demand: Demand of a particular company’s product is called company’s demand whereas aggregate of company’s demand producing a same good is called industry demand.

Thus it can be seen that demand of a commodity can be explained in more than one classification criteria. This classification criteria helps marketing organization to satisfy consumers in more effective way.
9.1. INTRODUCTION

Demand forecasting is related with future. Future is not certain and production of goods is carried out in present to be used in future. This necessitates to get an idea about future. This is carried out by the process of demand forecasting. This chapter describes process of demand forecasting.

9.2. DEMAND FORECASTING

Demand Forecasting is a forecast is a prediction about most likely future event under assumed conditions. Demand forecasting is an estimate of future demand based upon reasonable judgment of future probabilities of events affecting business supported by scientific evidence.

9.3. LEVELS OF DEMAND FORECASTING

Demand forecasting can be carried out at different levels. When each individual production or service organization estimate demand for their products or services, it is called micro level demand forecasting. When demand as estimated for a group of similar production or service organizations, it is called industry level demand forecasting. When aggregate demand for industrial output by the whole country is carried out, it is called macro level demand forecasting. Macro level demand forecasting is based upon national income or aggregate expenditure of the nation.

9.4. IMPORTANCE OF DEMAND FORECASTING

1. For Planning: Production involves committing resources in terms of raw materials, labour and fixed machineries etc. It is necessary to have estimate of future demand so as to avoid investments leading to excess capacity or underproduction.

2. Allocation of financial resources: Each firm has to allocate the limited funds wisely so as to ensure continuity and growth of business. Demand forecasting helps to allocate resources and aids in preparing good budget.

3. Inventory Planning: Inventory is useful but idle resource. It is necessary to keep only requisite amount of inventory avoiding unnecessary blockage of funds and ensuring continuity of production also. This is achieved by appropriate demand forecasting.

4. Future Growth Plans: Demand forecasting helps in judicious allocation of resources and aids in future expansion plans.

5. National Policy Making: Macro level demand forecasting is useful for national Planners for establishment of production capacities as well as determining export import policy.
9.5. Types of Demand Forecasting

On the basis of time horizon, the demand forecasting can be divided into following types

1. **Short Term Forecasting**: When forecasting is carried out for a period upto a year, it is referred to as short term forecasting. Short term forecasting is very useful to the firm for deciding its various policies related with production, pricing, purchase, finance etc.

2. **Long Term Forecasting**: When time period of forecasting is more than one year it is called long term forecasting. The time period may be 3 – 5 years or even more than a decade. Such forecasts are useful for long term policy making like growth, manpower planning, capital and financial planning etc.

9.6. METHODS OF DEMAND FORECASTING

Different methods employed by firms for estimating demand are as follows

1. **Survey Method**: This is the direct method of asking the users about their preferences. Based upon the choice of respondent, it can be either consumer survey or sales force survey. Depending upon number of persons surveyed, it can be census or sample survey. In case of industrial buyers, where the number is less it is possible to survey all of them by conducting census survey. For consumer products sample survey is conducted by selecting a small number of consumers by statistical sampling method.

   In case of survey methods information is obtained by directly contacting the person and conducting the interview or by using mail questionnaire. Based upon time and budget any one of the approach can be adopted. The survey method is simple but its success depends upon skill of interviewer in case of personnel interview approach and design of questionnaire in case of mail approach. In case of sales force survey, subjectivity of salesperson is a limiting factor.

2. **Expert Opinion**: Experts may be asked to give their estimate of the demand based upon their experience. Experts may be managers, distribution channel members, policy makers etc. This can be carried out by conducting a personnel focus group approach wherein all the experts are to meet personally at a common place and arrive at a final estimate through consensus deliberation. The other approach is referred as delphi method in which experts are asked to give their estimate but are not brought in physical contact with each other. The process includes several rounds. At the end of each round the experts are told the estimate given by others and asked to revise their earlier estimate. Anonymity is maintained during the process.

3. **Experimentation**: Experiments can be carried out in laboratories in controlled conditions to evaluate the consumer behaviour or in actual market environment called market test. Market test is generally used for new product wherein any past behavioral trend is not known. In test market, for a chosen market an experiment is conducted under controlled conditions by varying one or more of demand determinants such as price, promotion method etc and consumer behaviour is observed and recorded. To ensure validity, test marketing should be carried out on large population.

4. **Statistical Methods**: Certain statistical methods can be used to estimate future demand. They are more scientific as compared to crude value judgments. The statistical methods also should be used in combination to have better accuracy and cross checking purpose. The various methods are
9.7. STATISTICAL METHODS OF DEMAND FORECASTING

Some of the statistical tools and techniques, as a part of quantitative methods for business decisions.

(1) Time series analysis or trend method: Under this method, the time series data on the under forecast are used to fit a trend line or curve either graphically or through statistical method of Least Squares. The trend line is worked out by fitting a trend equation to time series data with the aid of an estimation method. The trend equation could take either a linear or any kind of non-linear form. The trend method outlined above often yields a dependable forecast. The advantage in this method is that it does not require the formal knowledge of economic theory and the market, it only needs the time series data. The only limitation in this method is that it assumes that the past is repeated in future. Also, it is an appropriate method for long-run forecasts, but inappropriate for short-run forecasts. Sometimes the time series analysis may not reveal a significant trend of any kind. In that case, the moving average method or exponentially weighted moving average method is used to smoothen the series.

(2) Barometric Techniques or Lead-Lag indicators method: This consists in discovering a set of series of some variables which exhibit a close association in their movement over a period or time.

For example, it shows the movement of agricultural income (AY series) and the sale of tractors (ST series). The movement of AY is similar to that of ST, but the movement in ST takes place after a year’s time lag compared to the movement in AY. Thus if one knows the direction of the movement in agriculture income (AY), one can predict the direction of movement of tractors’ sale (ST) for the next year. Thus agricultural income (AY) may be used as a barometer (a leading indicator) to help the short-term forecast for the sale of tractors.

Generally, this barometric method has been used in some of the developed countries for predicting business cycles situation. For this purpose, some countries construct what are known as ‘diffusion indices’ by combining the movement of a number of leading series in the economy so that turning points in business activity could be discovered well in advance. Some of the limitations of this method may be noted however. The leading indicator method does not tell you anything about the magnitude of the change that can be expected in the lagging series, but only the direction of change. Also, the lead period itself may change overtime. Through our estimation we may find out the best-fitted lag period on the past data, but the same may not be true for the future. Finally, it may not be always possible to find out the leading, lagging or coincident indicators of the variable for which a demand forecast is being attempted.

3) Correlation and Regression: These involve the use of econometric methods to determine the nature and degree of association between/among a set of variables. Econometrics, you may recall, is the use of economic theory, statistical analysis and mathematical functions to determine the relationship between a dependent variable (say, sales) and one or more independent variables (like price, income, advertisement etc.). The relationship may be expressed in the form of a demand function, as we have seen earlier. Such relationships, based on past data can be used for forecasting. The analysis can be carried with varying degrees of complexity. Here we shall not get into the methods of finding out ‘correlation coefficient’ or ‘regression equation’; you must have covered
those statistical techniques as a part of quantitative methods. Similarly, we shall not go into the question of economic theory. We shall concentrate simply on the use of these econometric techniques in forecasting.

We are on the realm of multiple regression and multiple correlation. The form of the equation may be:

$$D_X = a + b_1 A + b_2 P_X + b_3 P_y$$

You know that the regression coefficients $b_1$, $b_2$, $b_3$ and $b_4$ are the components of relevant elasticity of demand. For example, $b_1$ is a component of price elasticity of demand. The reflect the direction as well as proportion of change in demand for $x$ as a result of a change in any of its explanatory variables. For example, $b_2 < 0$ suggest that $D_X$ and $P_X$ are inversely related; $b_4 > 0$ suggest that $x$ and $y$ are substitutes; $b_3 > 0$ suggest that $x$ is a normal commodity with positive income-effect.

Given the estimated value of $a$ and $b_i$, you may forecast the expected sales ($D_X$), if you know the future values of explanatory variables like own price ($P_X$), related price ($P_y$), income ($B$) and advertisement ($A$). Lastly, you may also recall that the statistics $R^2$ (Co-efficient of determination) gives the measure of goodness of fit. The closer it is to unity, the better is the fit, and that way you get a more reliable forecast.

The principle advantage of this method is that it is prescriptive as well descriptive. That is, besides generating demand forecast, it explains why the demand is what it is. In other words, this technique has got both explanatory and predictive value. The regression method is neither mechanistic like the trend method nor subjective like the opinion poll method. In this method of forecasting, you may use not only time-series data but also cross section data. The only precaution you need to take is that data analysis should be based on the logic of economic theory.

(4) Simultaneous Equations Method: Here is a very sophisticated method of forecasting. It is also known as the ‘complete system approach’ or ‘econometric model building’. In your earlier units, we have made reference to such econometric models. Presently we do not intend to get into the details of this method because it is a subject by itself. Moreover, this method is normally used in macro-level forecasting for the economy as a whole; in this course, our focus is limited to micro elements only. Of course, you, as corporate managers, should know the basic elements in such an approach.

The method is indeed very complicated. However, in the days of computer, when package programmes are available, this method can be used easily to derive meaningful forecasts. The principle advantage in this method is that the forecaster needs to estimate the future values of only the exogenous variables unlike the regression method where he has to predict the future values of all, endogenous and exogenous variables affecting the variable under forecast. The values of exogenous variables are easier to predict than those of the endogenous variables. However, such econometric models have limitations, similar to that of regression method.
Lesson-10
Elasticity of Demand – Meaning, Price Elasticity

10.1. INTRODUCTION
This lesson describes the concept of elasticity of demand. According to the law of demand, demand increases with decrease in price and vice versa, other things remaining same. According to the law, demand changes with price. But this change is not same in all circumstances. In some instances change is very wide & in some it is very small. This variation indicates the responsiveness of demand with change in price. Economists use the term elasticity to measure this responsiveness.

10.2. ELASTICITY OF DEMAND
Elasticity of demand is ratio of two variables as given below.

\[
\text{Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in determinant of demand}}
\]

The three important types of elasticity of demand are
(i) Price elasticity (ii) Income elasticity (iii) Cross elasticity

10.3. PRICE ELASTICITY OF DEMAND:
This indicates the response of demand with respect to change in price, other factors remaining constant, mathematically it is indicated by

\[
e = \frac{\text{The Percentage change in quantity demanded}}{\text{The Percentage change in price}}
\]

Or

\[
e = \frac{\text{The Proportional change in quantity demanded}}{\text{The Proportional change in price}}
\]

By using any of the above formula, it is possible to measure & know values of coefficient of price elasticity which varies from zero to infinity. Through this producer can know how much demand of its product will be affected by a change in its price.

10.4. CLASSIFICATION OF PRICE ELASTICITY

Based upon extent of responsiveness of demand with change in price, price elasticity is further categorized into following five types.

Perfectly Elastic Demand: According to this concept, demand & Price are so much related that at a particular given price demand is endless but if even a very small price rise is noticed then buyers stops purchasing the commodity. The numerical coefficient of perfectly elastic demand is infinity (\(e = \alpha\)). Graphically at can be indicated as given below.
Figure 10.1 shows that at given price OP, the consumer will be purchasing infinite quantity and with an even slight increase in price beyond OP, Consumer will stop buying. Actually this is a theoretical concept. In actual practice one cannot find such consumer behaviour.

Perfectly inelastic Demand: This is another theoretical concept which highlight that demand remain same irrespective of price change. Its numerical co-efficient value is zero. Graphically the concept can be represented as given below.

The Figure 10.2 shows that the demand DD remains same irrespective of price rise from $P_1$ to $P_2$ to $P_3$.

Unitary Elastic Demand: When the percentage change in quantity demanded is exactly the same as percentage change in price, the demand is called unitary elastic whose numerical value is 1. Graphically it can be represented as shown below.
Figure 10:3, indicates that when price increases from P1 to P2 the demand decreases from M2 to M1 exactly in the same proportion.

Relatively Elastic Demand: Under this concept, the proportion change in price whose numerical value is in between 1 and infinity. Graphically it can be represent as shown in figure below.

Figure 10.4 clearly indicates that as price decreases from P2 to P1, relatively higher proportional change is visible in quantity demanded from M2 to M1.

Relatively Inelastic Demand: Under this concept, the proportion change in quantity demanded is relatively less as compared to corresponding proportion change in price. The numerical value of relatively inelastic demand lies between zero and one. Its graphical representation is shown below.
Figure 10.5 indicates that when price changes decreases P2 to P1, the relative increase in quantity demanded is less as seen from M2 to M1.
Lesson-11
Income Elasticity and Cross Elasticity

11.1. INTRODUCTION
This lesson describes the concept of income elasticity of demand. There are five different types of income elasticity of demand. There are three different methods for measurement of income elasticity of demand.

11.2. INCOME ELASTICITY OF DEMAND
Apart from price of the commodity, income of consumer is also important factor affecting demand. Thus income elasticity of demand is defined as ratio of proportional or percentage change in quantity demanded to the proportional or percentage change in income. Mathematically it is represented as

\[
\text{Income elasticity } e_{\Delta} = \frac{\text{Proportion or percentage change in quantity demanded}}{\text{Proportion or percentage in Consumers Income}}
\]

11.3. CLASSIFICATION OF INCOME ELASTICITY
Following table gives classification of Income elasticity.

### Table 11.1: Classification of Income elasticity

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of Income Elasticity</th>
<th>Value of Elasticity</th>
<th>Characteristics</th>
<th>Type of Engel’s curve</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unitary Income Elasticity</td>
<td>$e_m = 1$</td>
<td>Percentage change in demand is same as percentage change in income.</td>
<td>Upward slope at 45 degree.</td>
<td>Normal goods e.g. many household items</td>
</tr>
<tr>
<td>2</td>
<td>Income elasticity greater than unity</td>
<td>$e_m &gt; 1$</td>
<td>Percentage change in demand is greater than percentage change in income</td>
<td>Flatter</td>
<td>Luxury goods e.g. costly cars, electronic goods</td>
</tr>
<tr>
<td>3</td>
<td>Income elasticity less than unity</td>
<td>$e_m &lt; 1$</td>
<td>Percentage change in demand is less than percentage change in price.</td>
<td>Steeper</td>
<td>Essential goods e.g. food products</td>
</tr>
<tr>
<td>4</td>
<td>Zero income elasticity</td>
<td>$e_m = 0$</td>
<td>No effect in demand irrespective of change in income in any direction of any proportion</td>
<td>Vertical Line</td>
<td>Essential goods e.g. salt matchbox.</td>
</tr>
<tr>
<td>5</td>
<td>Negative income elasticity</td>
<td>$e_m &lt; 1$</td>
<td>Decrease in demand even with increase in income</td>
<td>Downward Sloping</td>
<td>Inferior goods, cereals like jowar, bajra etc.</td>
</tr>
</tbody>
</table>

#### 11.3.1. Cross elasticity of Demand:

In case of price and income elasticity, commodities price and consumers income are considered as determinants of demand respectively. A demand for a commodity is also affected by price and availability of related goods. Related goods are either substitutes or complimentary goods. Two goods are called substitute goods if they can be used to satisfy same human want. Two goods are called complimentary goods if both are required to be used simultaneously to satisfy human want. The concept of cross elasticity is defined as responsiveness of demand for a good with respect to change in price of a related good. In mathematical form cross elasticity is given by
The concept of cross elasticity is useful to know the relationship between commodities viz., substitute, complimentary or unrelated. Following Table-11.2 shows the relationship between type of cross elasticity of goods.

### Table-11.2: Relationship between type of cross elasticity of goods

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Type of cross elasticity</th>
<th>Type Of product</th>
<th>Numerical value of coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Positive</td>
<td>Substitute</td>
<td>$e_{AB} &gt; 0$</td>
</tr>
<tr>
<td>2</td>
<td>Negative</td>
<td>Complimentary</td>
<td>$e_{AB} &lt; 0$</td>
</tr>
<tr>
<td>3</td>
<td>Zero</td>
<td>Unrelated</td>
<td>$e_{AB} = 0$</td>
</tr>
</tbody>
</table>

The above mentioned relationship is duplicated in graphical form below

11.3. **UTILITY OF ELASTICITY OF DEMAND**

The concept of utility is helpful to modern business men in setting price of their product. It is helpful to government to frame a suitable tax policy in order to realize the necessary tax revenue. It is helpful to policymakers and trade unions to adjust their policies to benefit the members. The concept is also helpful in international trade.
11.3.1. Measurement of elasticity
The following methods are used to measure elasticity.
Ratio method: It is also referred to as percentage method or proportion method. It is measured by calculating ratio of the relative changes in demand and price varieties.

\[ e = \frac{\% \Delta Q}{\% \Delta P} \]

where \( \% \Delta Q \) = Percentage change in demand
\( \% \Delta P \) = Percentage change in price.

or

Elasticity = \( \frac{\text{Proportionate change in demand}}{\text{Proportionate change in price}} \)

= \( \frac{\text{Change in demand}}{\text{amount demanded}} + \frac{\text{change in price}}{\text{price}} \)

(a) Total revenue or total expenditure method: In this method, elasticity of demand is measured by examining the change in total expenditure corresponding to change in price of the commodity.
(b) Geometric method: In this method elasticity is measured at a point on the demand curve.

\[ \text{Elasticity} = \frac{\text{Lower segment of demand curve below the given point}}{\text{Upper segment of the demand curve above the given point}} \]

\[ = \frac{CA}{CB} \]
If the demand curve is not a straight line then by drawing tangent elasticity is measured.

Let the straight line demand curve be extended to meet the two axis as shown in Figure 9.2(a). When a point is plotted on demand curve like point C in Figure 9.2(a), it divides the curve into two segments. The point elasticity is thus measured by the ratio of lower segment of the curve below the given point to the upper segment of the curve above the point. If the demand curve is non linear, then draw a tangent at the given point, extending it to intercept both the axes as shown in Figure 9.2(b). Point elasticity is thus measured by the ratio of the lower point of the tangent below the given point to the upper part of the tangent above the point.
Lesson-12
Concept of Firm and Industry

12.1. INTRODUCTION

In economics, a firm holds important position as at the firm level managerial decisions are taken. In common language a firm is considered as a manufacturing unit involved in production of goods. The scope of the term firm in economics is broad. It represents any business organization inhering service & agriculture organization also.

12.2. DEFINITION OF FIRM

Some definitions of firm given by renowned economists are given below.

1. Firm is a unit of production that employs factors of production (or inputs) to produce goods & services under given state of technology.

2. It is an independently administered business unit – Hanson.

3. It is a center of control where the decisions about what to produce & how to produce are taken.

4. It is a business unit which hires productive resources for the purpose of producing goods & services.

5. A firm is an independent organization whose destiny is determined by the magnitude of the aggregate pay off & in which the aggregate pay off production & sale of goods or services ( Harvey Leibenstein).

All these definitions have evolved during different time periods. They try to emphasis the different economic problems faced by firms. From various definitions different characteristic features of firm emerge which are listed below.

1. It is a place where all decision making related to production are taken viz what, where & how much to produce.

2. It is a place where manpower is hired for production.

3. It is a place where all the resources of production are brought together, production is done as well as sale & distribution of the manufactured product is carried out.

4. The state of technology is defined by the firms production function.
A firm is required to carry out all diverse functions related to production & marketing at the same time. While earning profit, firm as a production unit tries to manufacture the goods or provide service as per the consumer demand. The main objective of any firm is to maximize profit. Traditionally it was assumed that firm tries to maximize profit in each time period. But now it is realized that firm’s objective should be to maximize profit in long run irrespective of profit or loss in short run.

12.2. INDUSTRY

Industry is a group of related firms. The relationship between the firms may be either based upon product or process criterion, e.g. dairy industry or food processing industry etc. The concept of industry is helpful to government and businessmen to formulate their policies.

12.2.1. Types of industry

The activities which are undertaken to produce, convert, extract and fabricate raw materials into finished goods are termed as industries. It is the process where goods are made usable and consumable. There are four different types of industries. These are:

a) Genetic Industry: It involves activities in reproducing and multiplying certain species of plants and animals for the sake of earning profit from their sale. Fish culture, cattle breeding, goatery and piggery are included in genetic industries.

b) Extractive Industry: The industries engaged with the discovery or extracting natural resources like minerals soil, water and forests are called extractive industries. Mining, agriculture and fishing are best examples of extractive industries.

c) Manufacturing Industries: The industries engaged in the conversion of raw material into finished products are called manufacturing industries. Cotton textile, sugar, iron and steel are the best examples of manufacturing industries.

d) Construction Industry: The industries in the construction of infrastructure like building, dams, roads, bridges and canals are called construction industries.
Lesson-13

Production Function for a Single Product

13.1. INTRODUCTION

Resources used in production are called factors of production or inputs. These are classified as labour, land and capital. The relationship between the inputs to the production process and the resulting output is explained by production function.

13.2. PRODUCTION FUNCTION

The inputs to the production function are classified as fixed and variable. Production is generally carried out based upon market demand. Based upon market demand it is possible to change some of the inputs (either increase or decrees) whereas it is not possible to change some of the inputs immediately. The former are called variable inputs and later, the fixed inputs. The labour and raw material are examples of variable input whereas buildings, major capital equipment are examples of fixed input.

The mathematical relationship between input and output can be given by

\[ P = f(a, b, c, \ldots n) \]

Where P is dependent variable and represent rate of output.

\( a, b, c, \ldots, n \) are independent variables represents inputs employed by the firm.

An organization can combine different independent inputs in different ways. For example agricultural university has vast stretch of land at its disposal. This land can be used for either crop production of different variety or even for constructing colleges, hostels etc. The mode of use of land will thus decide the quantum and type of output. Thus according to professor Samuelson production function exhibit technical relationship between the maximum output by using each and every set of specified inputs.

13.2.1. Assumptions of production function

Following are the assumptions of production function

a) Production function is for a particular specified time frame.

b) A given state of technology which remains same during the specified time period.

c) The organization employs best available technology

d) Factors of production are subdivided into small viable units.
13.2.2. Characteristics of Production function

Important characteristics of production function are given below.

1. Flow concept: Production function exhibits flow concept. It represents flow of inputs and the resulting output flow for a specified time period.

2. Physical concept: It exhibit technical relationship between physical input and physical output only and not in any other firm.

3. Complementary: Input show complementary characteristics. For example if man and machine combination produces 5 units of a commodity per day. By employing 2 man and 2 machines, 10 units of that commodity can be produced.

4. Substitutability: Some factors may be substitutable. For example X and Y are substitutable factor, X may be increased instead of Y. X is fixed while Y is variable. one can use less capital and more labour and vice versa for obtaining same output. For example, if agricultural university wants more agricultural produce, it can use more land or can adopt new improved varieties of seeds, fertilizers and other inputs to get more produce from the same land.

5. Specificity and versatility: If a factor of production can be used for only one purpose, it is considered as specific on the other hand if it can be used for more than one purpose it is referred to as versatile. In production some factors are specific and some are versatile. A thrasher and tractor are versatile farm equipment whereas chemical spraying pump is specific.

Short run and long run production function: Short run production function represents a time period in which the inputs of some factors of production cannot be changed. They are referred to as fixed factors e.g. plant, machinery and equipment. Long run production function represents time period which allows change in the input of all factors of production used by the organization.
Lesson-14

Basic Factors of Production and their role: Land, Labour and Capital

14.1. INTRODUCTION

Milk producers rear milch animals. Milk producers obtain raw milk from milch animals. This milk is processed and made suitable for human consumption by the process of pasteurization. Various products are also prepared from milk. e.g. milk powder. This creates form utility. These products are then transported to urban areas to be sold. This creates place utility. If this products are stored and used in scarcity, it creates time utility e.g. milk powder manufactured from milk and then transported to Himalaya regions to be used by our defence personnel illustrates the form, place and time utility concept of production during which wealth is created. Production is thus defined as the creation or addition of value or of wealth.

14.2. FACTORS OF PRODUCTION

Through production wealth is created but this requires use of several factors. For example to obtain milk products, milk is required. Milk is obtained from milch animals which require land for grazing. Machines, manpower and money are required in an organizational set up of dairy plant.

14.3. LAND

In Agricultural sciences, the term land means soil. In geography land means surface of earth. In Economics the term land has a very broad meaning. It includes all free gifts of nature available to mankind viz., air, water and land. It includes all types of land surfaces such as mountains, valley, plains, forests etc. It includes all types of water resources such as rivers, oceans, etc. Thus the term land includes all natural resources on, above and below the earth's surface.

14.3.1 Economic Significance of Land

Land is the most important basic factor of production. Type of land decides the prosperity of a country to a large extent. If a country has rich natural resources e.g. fertile land for different types of crop production, mines to obtain minerals, water bodies and water falls to meet demand of water and generation of electricity than by efforts of citizens of that country, it can easily become rich and prosperous. On the other hand if a country does not have rich natural resources then even with efforts of citizens, it will be difficult to be rich and prosperous.

14.3.2 Characteristics of Land

1. Free gift of nature: Land is a free gift nature to mankind. Man has not to pay anything but has to use it wisely. Unwise use of land by mankind has caused many problems.
2. Fixed quantity: The total area of land on earth is limited. Due to increased population pressure, mankind tries to increase land surface by reclaiming it from water bodies e.g. in the form of river front. Due to fixed quantity and greater demand by mankind, its economic value goes on increasing day by day.

3. Stationary and Permanent: Land cannot be moved from one place to another by any natural factors of production. It cannot be destroyed by any natural or manmade forces but its form can be changed e.g. floods, earthquakes, and destruction by atom bomb.

4. Diversity: Land is of varied nature. All its different forms are providing economic benefits. e.g. forests provide wood and helpful in rainfall, plains are useful for cultivation of crops, land with different soil characteristics help in growing variety of crops.

14.4. LABOUR

Labour is defined as any mental or physical exertion undertaken partly or wholly with a view to earning some good other than pleasure derived directly from the work (Marshall).

In ordinary language, the word labour is associated with manual work only, those done by unskilled workmen. But in Economics, the word labour includes mental labour also along with manual labour. Thus the work done by any person whether skilled or unsealed is considered as labour as far as it is done to get money. e.g. work done by professor, engineers, doctor, lawyers, craftsmen, etc.

14.4.1 Characteristics of Labour

The important characteristics of labour are as follows are as follows

1. Labour and labourer are associated. To get the work done, labourer has to physically execute the work e.g. To teach a lesson, professor has to be present in the class, To attend a patient doctor has to be there etc.

2. It is not possible to purchase labour. It is possible to purchase services of labour. If a person is not willing to sell his service then it is not possible to make him slave.

3. Labour is the most perishable resource. If no productive work is carried out on a particular day then it is lost. It is not possible to have fruitful use of foregone time in which labour is wasted.

4. In India due to very high population and high unemployment scenario, labour has less bargaining power.

5. Labour (mankind) is a social animal. It is possible to motivate the labour and get more output and vice versa.

6. It is not possible to immediately adjust to the demand.

7. Labours vary in their efficiency.

14.5. CAPITAL
Goods used in production are called capital. Portion of man's wealth excluding land which yields an income or which aids in production of more wealth is capital. Capital is produced means of production. This definition excludes land and labour from capital as they are primary or original factors of production. Capital is also defined as instrument of production made by man. From the above definitions it can be said that all physical goods which are produced for use in future production is capital. Machines, tools and instruments, factories, irrigation projects, transport equipments, raw materials etc constitute capital. Money securities and shares are not considered as capital.

14.5.1 Features of capital

The important features of capital are as mentioned below

1. It is manmade depending upon requirement and based upon availability of other resources it is possible to increase stock of capital.

2. It is involved in all phases of production cycle. Some kind of raw materials which should be used as input to produce an output (another form and capital) through use of a (Capital Equipment) e.g. stainless steel will be used in factories to produce milk pump to be used in dairy plants.

3. Based upon usage pattern, capital is categorized as fixed and working capital. Fixed capital constitutes durable use producer goods used in production repeatedly till they wear out e.g. different machineries. Working capital is single use producer goods, e.g. different raw materials.

4. Capital and wealth are not same. All capital is wealth but all wealth is not capital. A private air craft used by rich businessmen used for enjoyment is wealth for him but not capital.

It plays important role in economic development. It is essential for production and increasing productivity. It creates employment opportunities during its production and its use for producing other items.
Lesson-15

Law of Return

15.1. INTRODUCTION

Earlier economists differentiated between three laws of returns also referred to as laws of production viz., law of diminishing, increasing and constant returns. Modern economists are of the view that these three laws are really three aspects of same law viz., the Law of variable proportions. This chapter explains law of return.

15.2. LAWS OF PRODUCTION

Laws of production explain the phenomena of production by organizations. These laws are classified into following categories.

a. Traditional View Point: Output can be produced by one or some factors fixed while other are kept variable. Law of diminishing marginal utility is based upon this traditional view point.

b. Modern View Point: Only one factor is variable while other factors are kept constant. Law of variable proportion is based upon this modern view point.

c. A type of production function in which quantities of all inputs can be changed to produce output of different quantities. This law is referred to as law of returns to scale.

15.2.1. SHORT RUN AND LONG RUN PRODUCTION FUNCTION

Production function is stated with reference to a particular period of time. In economics we are concerned with two types of production function : (i) the production function when the quantities of some inputs are constant and the quantity of one input is varied. This type of input-output relationship forms the subject-matter of the law of variable proportion. Secondly the productions function with all factors variable. This type of input-output relationship forms the subject-matter of the law of returns to scale.In case of short-run production function (variable proportion) some factors held constant and other factors are combined with varied proportion. The ratio of variable factor to that of the fixed factor goes on increasing on the quantity of the variable factor is increased. When all factors are increased in the same proportion the increase in output so obtained represents returns to scale. In the long run all factors are varied.

15.3. THE LAW OF DIMINISHING MARGINAL RETURNS

This law was traditionally associated with agricultural production. In case of agricultural production land is a constant factor and other factor can be varied, when variable factors were varied during the experiments. Proportionate increase in output was not observed. Based upon this observation, law of diminishing marginal return was propounded which state that ' An increase in factors of capital and manpower applied to cultivation of land causes in general a less than proportionate increase in the amount of produce from the land, unless it is obtained by application of new improved scientific methods of agriculture’. This law was initially associated with only agricultural production but later on it was observed that it is applicable to all other field viz mining, fishing construction etc.

15.4. THE LAW OF VARIABLE PROPORTIONS

This is modern view point of traditional law of diminishing marginal returns. According to the law "As additional input of one factor in equal installment is carried out while keeping all other factor input constant, after a certain point, the output of the product also decreases i.e. the marginal product will decrease. To be more specific, "In the short run, as the amount of variable factors increase, other things remaining equal, output will increase more than proportionately to the amount of variable input in the beginning, then it may increase in the same proportion and ultimately it will increase less than proportionate."
15.4.1 Explanation of the Law of Variable Proportion

(a) Total product: Total number of units of output obtained in a unit time by using all input factors.

(b) Average Product: Total product per unit of a given variable factor.

Marginal Product: The new additional total product obtained on addition of a unit of variable factor to the production process, keeping all other factors constant.

<table>
<thead>
<tr>
<th>Unit of Capital (K)</th>
<th>Unit of Labour (L)</th>
<th>Total Product (T_p)</th>
<th>Average Product (T_p/L)</th>
<th>Marginal Product (ΔT_p/ΔL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>120</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>240</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>320</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
<td>380</td>
<td>76</td>
<td>60</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>432</td>
<td>72</td>
<td>52</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>448</td>
<td>64</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>448</td>
<td>56</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>432</td>
<td>48</td>
<td>-16</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>400</td>
<td>40</td>
<td>-32</td>
</tr>
</tbody>
</table>

The above table indicates phenomena of law of variable proportion. The capital is fixed at 10 units and shown in first column. The labour units increase from zero to 10 units, shown in second column. The third column show the total output. The data of the table indicates that there is no production when labour unit is zero. Then as labour input increases, keeping the capital fixed, output increases first at an increasing rate and then at a decreasing rate, up to seventh unit of labour. At eighth unit, there is no increase in output. At seventh and eighth labour unit the output remains same as 448 units. Beyond eighth unit more units of labour is Counter Productive because output decrease as labour is increased. The average product shown in fourth column also increases initially then falls after fourth unit. The marginal product shown in fifth column also increases initially, then decreases and ultimately becomes negative, reason being use of variable input too intensively with the fixed input.

15.4.2. Example to illustrate law of diminishing returns

Agriculture economics department of agricultural university is conducting experiments on field to study various laws associated with economics. In one of the experiments, authorities have applied capital and labour in certain fixed quantities referred to as set. The number of such set are varied (increased) and its effect on output is judged which is shown in table below. The cost of each set is Rs 1000/-. The output from the farm and marginal output are shown in the table below.
### Table 15.2 Total and Marginal output

<table>
<thead>
<tr>
<th>Number of set</th>
<th>Total output Return (kg)</th>
<th>Marginal output Return (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>33</td>
<td>08</td>
</tr>
<tr>
<td>4</td>
<td>38</td>
<td>05</td>
</tr>
<tr>
<td>5</td>
<td>43</td>
<td>05</td>
</tr>
<tr>
<td>6</td>
<td>43</td>
<td>00</td>
</tr>
<tr>
<td>7</td>
<td>38</td>
<td>-05</td>
</tr>
</tbody>
</table>

**Fig-15.1: Total and Marginal output**
The experiment revealed that with increase in set, the additional returns in the form of marginal output goes on decreasing as shown in third column. The total output shown in second column increases but not at the same rate. It increases at diminishing rate. For example on application of one set, the output is 15 kg but on application of two sets, the output is 25 kg and not doubles. The total output also decreases after reaching a particular stage. In the above experiment, after sixth set the output decreases.

15.5 LAW OF INCREASING RETURNS

This law is opposite to the law of diminishing returns. Here the return is more than proportionate. It results in lower cost per unit as production increases. In case of industries in which all input factor of production are available in abundant quantity all the time so that no defective combination of input factors occurs, the law of increasing returns applies. This law is also applicable up to the optimum point; beyond which laws of diminishing returns apply. Thus the law of increasing return is stated as "As the proportion of one factor in a combination of factors is increased, up to a point, the marginal product of the factor will increase.

15.5.1 Illustration

Suppose Ice Cream Cup manufacturing industry increases its investment in equal installments of Rs. 5000 each, the output of cups and its associated cost is shown in following table

<table>
<thead>
<tr>
<th>Investment (Rs. 5000 each)</th>
<th>Total Output of Cups (Number)</th>
<th>Cost of Production per Cup Rs.</th>
<th>Marginal Output (Cups)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>300</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>600</td>
<td>3</td>
<td>300</td>
</tr>
<tr>
<td>3</td>
<td>1100</td>
<td>2</td>
<td>500</td>
</tr>
<tr>
<td>4</td>
<td>1700</td>
<td>1.50</td>
<td>600</td>
</tr>
<tr>
<td>5</td>
<td>2000</td>
<td>1.00</td>
<td>900</td>
</tr>
</tbody>
</table>

From the table it can be said that as the Ice Cream Cup manufacturer goes on increasing investment by Rs. 5000 each, the total output goes on increasing, the cost of cup goes on decreasing and the marginal output goes on increasing.
The law of increasing returns is applicable in manufacturing industries. Due to use of continuous machinery, specialized labour and lack of natural interferences like agriculture makes it possible to apply the law. Moreover due to large scale operations in industries, it is possible to realize internal and external economics in purchase, administration etc which facilitate cost savings.

15.6 LAW OF CONSTANT RETURNS

This law states that irrespective of scale of production, the cost of product per unit remains the same. Here the return remains same weather business is expanded or contracted. The law of increasing return state that marginal return increases up to optimum level. If at this optimum level, operations are stabilized than law of constant return is achieved.

The milk can manufactures inverts Rs. 1 Lakhs in equal installments. The number of cans, cost and can and marginal output of cans is shown in table below.

<table>
<thead>
<tr>
<th>Investment (Rs. in Lakhs)</th>
<th>Total no. of cans Produced</th>
<th>Cost per Can</th>
<th>Marginal output of Cans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,00,000</td>
<td>100</td>
<td>1000.00</td>
<td>-</td>
</tr>
<tr>
<td>2,00,000</td>
<td>200</td>
<td>1000.00</td>
<td>100</td>
</tr>
<tr>
<td>3,00,000</td>
<td>300</td>
<td>1000.00</td>
<td>100</td>
</tr>
<tr>
<td>4,00,000</td>
<td>400</td>
<td>1000.00</td>
<td>100</td>
</tr>
<tr>
<td>5,00,000</td>
<td>500</td>
<td>1000.00</td>
<td>100</td>
</tr>
</tbody>
</table>
The table and figure indicates that with increase in investment in equal proportion, the number of cans manufactured is also increased in equal proportion.

The law of diminishing marginal returns is application in sectors like agriculture when influence of nature is significant. The law of increasing return is applicable where man plays dominant role. In situations where the influence of both nature and man is balances, the law of constant returns is applicable.

In all industries influence of nature and men is evident. Nature influences raw material availability and man influences the production side. In dairy industry, the two aspects of agriculture and industry are combined and thus it is possible to apply the law constant returns.

In actual practice instead of three differed laws, only one law of variable proportion is applicable in all the industries. The stage of diminishing, increasing and constant return will vary. A rational manufacturer will manage the three stages optimally to derive maximum profit.

15.7. EXPANSION PATH

The level of optimal factor proportions may change when output or factor-price ratio changes. Let us assume that the input prices do not change, but size of available budget to be spent on the input does change. Since input prices do not change, the relative input price structure is not affected. This means that the slope of the iso-cost curve remains the same. Under these circumstances, any change in the level of expenditure on inputs and hence in the level of output can effectuate a shift in the iso-cost curve. For example, if the top management decides to spend more on inputs: labour and capital, and if wage rate and interest rate have not changed, then there will be a parallel rightward shift in the iso-cost curve. As the there will be a parallel downward shift in the iso-cost curve. As the iso-cost curve thus shifts upward or downward, the point of producer’s equilibrium, satisfying the decision rule of proportionality may also change. For example, in Figure V. 9a when the iso-cost curve shifts from ML to M’L’, the equilibrium point shifts from e to e’; when the iso-cost curve shifts from ML to M”L”, the equilibrium points shifts from e to e”
The locus of these equilibrium points is traced out by a curve called the expansion path which shows how factor proportions change when output or expenditure changes, input prices remaining constant throughout. If expenditure has gone up such that the producer can buy either MM’ of additional capital or LL’ of additional labour—then the factor combination has changed form (OK+ON) to (OK’ + ON’). In case of constant returns to scale, the expansion path OE will be a straight line, which reflects that factor proportions are independent of the level of output. The shape of the expansion path changes depending upon the type of returns to scale prevalent. It is the expansion path which is critical in determining the long-run costs of production.

Fig: 15.4-Expansion path
Lesson-16

Fixed and Variable Costs, Average and Marginal Costs

16.1. INTRODUCTION

The main objective of any firm is to earn profit. In order to survive and grow in this competitive market conditions, it is necessary that firm has clear idea about different cost concepts so as to frame suitable policies. In producing goods or offering services, resources are used. Value of resources denotes cost. The term cost has various concepts which are described below.

16.2. REAL COST

The term real cost is defined in various ways. According to one of the definition real cost of production of a commodity or offering a service includes work of labour, sacrifice in the form of opportunity cost and social effects of pollution, congestion and environmental distortions. For example real cost of manufacturing milk can is composed of wages of labours, material cost, depreciation of tools which are used for manufacturing can etc. Thus real cost is the summation of real productive resources which goes in the production of a good or offering a service.

Alfred Marshall (1920) defined real cost as "The exertions of all different kinds of labour that are directly or indirectly involved in making it, including waiting required for saving the capital used in making it. All these sacrifices and efforts together are called real cost.

16.3. NOMINAL OR MONEY COST

It is the cost of production measured in money terms or expense of production. The expenses are paid to obtain factor of production. They are of two types: explicit and implicit money cost.

a. Explicit Money cost: It refers to actual money paid to obtain physical resources or obtain the services of persons for production purposes. It includes cost of raw materials, wages and salaries, electricity/ power expenses, rent on building, interest payments of capital, insurance premiums, taxes and miscellaneous expenses such as promotional measures.

b. Implicit cost: Opportunity cost of the use of resources which an organization does not purchase but already possess them. e.g. wages the owner might have earned, interest which might have earned on his invested capital, rent of buildings and other assets owned by the owner, normal profit retained in the business.

16.4. OPPORTUNITY COST

Human wants are unlimited and resources to satisfy those wants are limited. A particular resource can be used to satisfy a particular want at a time or it can be put to use to produce any one particular commodity or offer service. Thus opportunity cost is measured in terms of foregone benefits from the next best alternative use of a given resource.
16.5. FIXED AND VARIABLE COSTS

In short run time period some factors of production cannot be altered or changed. These are fixed factors e.g. machineries, factory building, managerial staff etc. The amount spent by the organization on fixed inputs in the short run is called fixed cost. Fixed costs remain constant irrespective of level of output. At zero level of output also fixed cost remains same.

They are also called supplementary cost or overhead costs. e.g. Rent for buildings, Insurance premium, depreciation and maintenance allowance, taxes, administrative expenses like salaries. Variable factors are the inputs which are varied to change the output level in the short run. e.g. labour raw materials and power etc. The costs incurred on such variable factors are called variable costs. They vary in direct proportion to output. When there is no production, variable cost will be zero and as production increases, variable cost also increases and vice versa. They are also referred to as direct cost or prime cost. e.g. price of raw material, labour wages, fuel and power charges, excise duty, sales tax, transport expenditure etc. Diagrammatic representation of fixed and variable cost is given in the Figure 16.1

![Figure 16.1: Fixed and variable cost](image)

16.6. TOTAL COST

It is summation of all expenses incurred by the organization in producing given level of commodity or offering a service. Total cost includes all the money costs. In short run total cost is given by
Total Cost = Total fixed cost + Total variable cost

16.7. AVERAGE AND MARGINAL COST

Average cost is the total cost divided by the number of units produced.

\[
\text{Average cost} = \frac{\text{Total Cost}}{\text{units of output}}
\]

Marginal cost is the cost of producing one more additional units of output. e.g. If total cost of producing 75 units of a particular commodity is 1050 Rs. the cost of producing 76th unit is 1064. Then marginal cost will be (1064-1050) = Rs. 14.

16.8. TOTAL FIXED COST

It is cost of fixed inputs in the short run. It remains same in short run at all levels of output. For example an entrepreneur starts a business. The rent for the hired shop is Rs. 2000. He took loan of Rs. 25000/- at 10% and purchased capital equipment worth Rs. 5000. Then his monthly total fixed cost will be as under

Rs.2000 (Rent) + Rs.5000 (equipment cost) + Rs. 250 (Monthly interest on bank loan) = Rs.7250

16.9. TOTAL VARIABLE COST

It is the cost of Variable input used in short run production. It is obtained by aggregating product of quantities of inputs multiplied by their price. e.g. The entrepreneur cited in the above example employs a skilled labour at the rate of 100 Rs. per unit of output, buys the raw material worth Rs. 2500 and spends Rs. 500 as miscellaneous expenses to produce 5 units.

The total variable cost for producing 5 units of the product will be

Rs.2500 (Raw material) + Rs.5000 (Miscellaneous expenses) + Rs. 500 (Labour Charges) = Rs.3500

16.10. AVERAGE FIXED COST

It is the total fixed cost divided by total units of output. For example in the above cited cost, total units of output are five then

\[
\text{Average fixed cost} = \frac{\text{Total fixed cost}}{\text{Total units of output}} = \frac{7250}{5} = 1450
\]
16.11. AVERAGE VARIABLE COST

It is total variable cost divided by total units of output.

\[
\text{Average Variable cost} = \frac{\text{Total Variable Cost}}{\text{Total units of output}} = \frac{3500}{5} = \text{Rs. 700}
\]

16.12. AVERAGE TOTAL COST

It is the total cost dividend by total unit of output.

This can be simply found out by adding average fixed cost and average variable cost.

Average total cost = Average fixed cost + Average Variable cost

= 1450 + 700

= Rs. 2150 per unit of output.
Lesson-17

Short run and long run costs, Cost curves and their shapes

17.1. INTRODUCTION

The time period in which it is possible to vary the output by varying only the amount of variable factors such as labour and raw materials. In the short run, the fixed factors such as capital equipment, managerial persons, factory building etc cannot be changed. Thus in the short run if an organization intends to increase production, then it can be done by hiring more workers or buying and using more raw materials. In the short run it is not possible to enlarge the size of the plant. Thus in the short run only variable factors can be varied and the fixed factors remain the same.

In long run time period it is possible to vary all factors of production. Thus it is possible to increase output in long run either by increasing capital equipment or by adding capacity to existing plant or installing an altogether new plant of bigger size.

17.2. SHORT RUN TOTAL COST SCHEDULE

The cost - output relationship (Cost behaviour) is seen in the short run as well as long run. Thus there are two types of cost function, short run cost function which shows cost output relationship for a given scale of output in the short run and long run cost function shows the behaviour of costs with changing scale of output in the long run.

17.2.1. Short run Cost Behaviour

The short run cost behaviour is explained by following hypothetical example.

<table>
<thead>
<tr>
<th>Capital Units (Fixed Factor)</th>
<th>Labour Units (Variable factor)</th>
<th>Total product (TP)</th>
<th>Total fixed cost (TFC) (Rs.)</th>
<th>Total Variable cost (TVC) (Rs.)</th>
<th>Total Cost (TC) (TFC + TVC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0</td>
<td>0</td>
<td>150</td>
<td>-</td>
<td>150</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>4</td>
<td>150</td>
<td>12</td>
<td>162</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>7</td>
<td>150</td>
<td>24</td>
<td>174</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>12</td>
<td>150</td>
<td>36</td>
<td>186</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>17</td>
<td>150</td>
<td>48</td>
<td>198</td>
</tr>
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<td>5</td>
<td>20</td>
<td>150</td>
<td>60</td>
<td>210</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>22</td>
<td>150</td>
<td>72</td>
<td>222</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>23</td>
<td>150</td>
<td>84</td>
<td>234</td>
</tr>
</tbody>
</table>

The data in the above table shows the behaviour of total fixed cost, total variable cost, Total cost in the short run. Following assumptions are made about the data: price of labour is Rs. 12 per Unit and Price of capital is Rs 30 per Unit.

17.2.2. Behaviour of Total Cost
Economic Analysis

1. Total fixed cost remains same at Rs. 150 at all levels of output. Even when production is not done (TP = 0), total fixed cost is Rs. 150.

2. Total Variable costs varies with the output. When production is not done, Total Variable cost is zero.

Total cost varies directly as total variable cost. In the short run fixed cost remains same and change in total cost are affected due to change in variable costs.

![Diagram showing Total Cost (TC), Total Variable Cost (TVC), and Total Fixed Cost (TFC) curves]

**Fig-17.1: Behaviour of total cost, total variable cost and fixed cost**

17.2.3. Short Run Average Cost Curves

For a hypothetical example, Average cost curves are shown in following Table 17.2.
From the above figure, following conclusions can be drawn about short run cost curve:

### Table-17.2: Average cost

<table>
<thead>
<tr>
<th>Output (Units)</th>
<th>Total Fixed cost (TFC) (Rs.)</th>
<th>Total Variable cost (TVC) (Rs.)</th>
<th>Total Cost (Rs.)</th>
<th>Average Fixed cost (AFC) = TFC / Q</th>
<th>Average Variable cost (AVC) = TVC / Q</th>
<th>Average Total cost (ATC) = TFC / Q</th>
<th>Marginal Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>220</td>
<td>0</td>
<td>220</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>220</td>
<td>100</td>
<td>320</td>
<td>220</td>
<td>100</td>
<td>320</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>220</td>
<td>140</td>
<td>360</td>
<td>110</td>
<td>70</td>
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<td>40</td>
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<tr>
<td>3</td>
<td>220</td>
<td>160</td>
<td>380</td>
<td>73.33</td>
<td>53.33</td>
<td>126.66</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>220</td>
<td>192</td>
<td>412</td>
<td>55</td>
<td>48</td>
<td>103</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>220</td>
<td>260</td>
<td>480</td>
<td>44</td>
<td>52</td>
<td>96</td>
<td>68</td>
</tr>
<tr>
<td>6</td>
<td>220</td>
<td>400</td>
<td>620</td>
<td>36.66</td>
<td>66.66</td>
<td>103.33</td>
<td>140</td>
</tr>
</tbody>
</table>

Plotting the data of Table No 17.2. On graph following graph is obtained.

![Graph of average cost](image)

**Fig-17.2: Behaviour of average cost**

From the above figure, following conclusions can be drawn about short run cost curve:
Economic Analysis

1. As output increases, average fixed cost decreases. The total fixed cost remains same for all level of output, but average fixed cost decreases continuously because of spreading it over more number of units as output increases.

2. Average variable cost first decreases and then increase as output increases.

3. Average total cost decreases initially. It remains same at a point for a while and then go on increasing as output increases.

4. Marginal cost decreases initially but then increases as the output is increased.

5. When the average cost is minimum, marginal cost is equal to average cost.

17.3. LONG RUN COST CURVES

In the long run, all the factor inputs are variable. In the long run it is possible for the organization to change the overall plant capacity as per demand. In the long run there is no distinction of fixed and variable costs. There is only variable or direct cost as total cost.

Long run is a vision of future. It is a planning horizon. In the long run also, all economic activities actually operate in the short run. Thus a long run consists of many possible short run situations and a choice is made for actual courses of operation from them. Thus long run average cost curve is the envelope of the number of short run cost curves. It is drawn as tangent to the short run average cost curves. Long run cost curve is shown in following figure in which long run cost curve is drawn on the basis of 3 possible plant sizes.

![Fig-17.3: Behaviour of long run cost](image)
Lesson-18

Economies and Diseconomies of Scale

18.1. INTRODUCTION

Large scale Production is profitable due to economies of scale. Economics of scale is defined as ' Any aspect of production which reduces average cost of production in the long run as output increases.' Economies of scale occurs upto a certain expansion limit of the firm. If the firm becomes too large that it is difficult to manage it efficiently, then diseconomies of scale occur.

18.2. ECONOMIES OF SCALE

Economics of scale is measured in money terms and is of two types (a) Internal (b) External. Internal economics are realized independently by individual firms as they expand irrespective of other firms. External economics is shared by all the firms when its size expands. In reality both internal and external economics overlap.

18.2.1 Forms of Internal Economies

Different forms of internal economics are

1. Labour Economies : Due to expansion of firm, division of labour with more specialization occurs. A big firm can also attract efficient labour due to better carrier advancement opportunities. In large firms, skill, efficiency and productivity of labour decreases the cost per unit of output and lead to labour economics.

2. Technological Economies : This economics occur in a large firm due to use of superior technology, mechanical advantage of using large machines, continuous processes, and economics in power consumption and use of by products.

3. Managerial Economies : Due to indivisibility of functions of managers, the cost per unit of management decreases as output increases. It is possible to recruit proficient managers by large firms leading to increase in efficiency.

4. Marketing Economies : This occurs due to purchase of large quantity of raw materials at low cost and distributing larger quantity of finished products leading to reduced distribution cost.

5. Financial Economies : It is possible to raise finance through shares as well as get requisite finance from banks and other financial institutions at lower interest rate.

6. Risk Minimizing Economies : A Large firm can reduce the risk of diversification of output, by diversification of market, by diversification of sources of supply as well as process of manufacturing.

18.2.2. Forms of External Economies

Different forms of external economics are

1. Economies of localization: This is obtained in the form of availability of skilled labour, better transport facilities and availability of other infrastructure facilities at reduced rate.
2. Economies due to Common Research Output: It is possible to carry out a common research experiments so as to reduce the cost. The results can be used by all the partner organization.

3. Economies of Vertical Disintegration: With expansion of industry there will be growth of other subsidiary industries to supply inputs at reduced rate.

4. Economies of Byproducts: With superior technology and new research breakthrough it is possible to convert waste materials into byproducts leading to more profit.

### 18.3. Diseconomies of Scale

Economies of scale occurs upto a certain expansion limit of the firm. If the firm becomes too large that it is difficult to manage it efficiently, then diseconomies of scale occur.

This occurs due to difficulty in managing, co-ordination and decision making by managers. There is delay in decision making. There is also possibility of increased risk and even scarcity of common factor inputs due to increased competition. For a very large firm financial and marketing diseconomies also can occur due to difficulty in obtaining required amount of finance and not able to market their products to diverse markets as needs of each market will be different.

Economies of scale occur up to a certain expansion limit of the firm. If the firm becomes too large that it is difficult to manage it efficiently then diseconomies of scale occur.

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**Fig-18.1: Economics and diseconomies of scale**
LESSON-19

CLASSIFICATION OF MARKETS

19.1. INTRODUCTION

There is an unsolved debate in management literature as to whether the first step in the strategic marketing process is to identify opportunities or to set objectives. It is possible to start the strategic-marketing process by looking either at opportunities or at objectives. Growth opportunities can be generated for an industry by mapping its core marketing system and then moving to three levels of analysis. The first level of analysis discerns those opportunities present in the current product-market activity of the company; we call these intensive growth opportunities. The second level discerns those opportunities present in other parts of the core marketing system; we call these integrative growth opportunities. The third level discerns those opportunities present completely outside of core marketing system; we call these integrative growth opportunities.

19.2. CLASSIFICATION OF MARKET STRUCTURES

Market means a place where people gather to carry out transaction and exchange something for value. Market is an essential part of any economy and provides the sellers and buyers a meeting place to facilitate exchange. According to market structure, markets are of the following types:

a) Perfect Competition
b) Monopoly
c) Monopolistic Competition
d) Duopoly
e) Oligopoly

a) Perfect Competition

In economic theory, perfect competition describes markets such that no participants are large enough to have the market power to set the price of a homogeneous product. Because the conditions for perfect competition are strict, there are few if any perfectly competitive markets. Still, buyers and sellers in some auction-type markets, say for commodities or some financial assets, may approximate the concept. Perfect competition serves as a benchmark against which to measure real-life and imperfectly competitive markets.

Characteristics:

– The product is homogeneous.
Economic Analysis

– There is free entry and exit in the industry.

– Every firm’s action is independent of the other firm.

– In this market there is perfect mobility of factors.

– The sellers operate in conditions of certainty having complete knowledge of costs, demand, price and quantities.

b) Monopoly

A monopoly exists when a specific person or enterprise is the only supplier of a particular commodity. In law, a monopoly is a business entity that has significant market power, that is, the power, to charge high prices. Although monopolies may be big businesses, size is not a characteristic of a monopoly. A small business may still have the power to raise prices in a small industry (or market). Monopolies are thus characterized by a lack of economic competition to produce the good or service and a lack of viable substitute goods.

Characteristics

– There is only one firm selling the product.

– The firm has no rivals or direct competitors.

– Substitutes may exist. However, close substitutes are non existent.

– Difficult entry for other firms.

– The monopolist is the price maker and tries to take the best of whatever demand and cost conditions exist without the fear of new firms entering to compete.

– Monopoly is not a permanent situation. Due to reasons like emergence of close substitutes, entry of new firms, etc. a firm which is a monopoly now may not be a monopoly in the future.

c) Monopolistic Competition

Monopolistic competition refers to a situation where the product to be sold is differentiated and there are many sellers operating to sell it. The competition is not perfect and is between firms making similar products (not substitutes).

Characteristics

– There are many sellers and no seller is big enough to influence the market price.

– Each seller has an independent price-output policy.

– Product is heterogeneous due to differentiation. Product of each firm is a close
Economic Analysis

substitute of the product of other firm.

– Patent rights, advertising, quality differentiation, etc. are used as the main instruments of product differentiation.

– There are no restrictions on the entry and exit of firms.

– Each individual firm enjoys some monopoly power due to product differentiation and hence, the demand curve is more elastic than that of the monopoly firm.

d) Duopoly

A true duopoly is a specific type of oligopoly where only two producers exist in one market. In reality, this definition is generally used where only two firms have dominant control over a market. In the field of industrial organization, it is the most commonly studied form of oligopoly due to its simplicity.

Characteristics

– The number of sellers in this market structure is only two.

– The decision of the sellers is not independent of each other.

– The change in price and output by one seller affects the other seller who reacts to the change.

– The product can be homogenous or differentiated.

– The decision variables include price, product differentiation, selling expenses, etc.

but the decisions depend upon the strategies of the competitor.

– Product differentiation is the entry barrier and also the firm dominating the market can pose as an entry barrier.

e) Oligopoly

An oligopoly is a market form in which a market or industry is dominated by a small number of sellers (oligopolists). Because there are few sellers, each oligopolist is likely to be aware of the actions of the others. The decisions of one firm influence, and are influenced by, the decisions of other firms. Strategic planning by oligopolists needs to take into account the likely responses of the other market participants.

Characteristics

– There is small number of large sellers.
Economic Analysis
– The product they sell can be differentiated or homogeneous.

– The policies of each seller have a noticeable impact due to the extent of influence of each seller.

– The element of interdependence.

– Cross elasticity of demand is very high due to the close substitutes of the product.

– Existence of price rigidity.

– The firms may enjoy some monopoly power.

– Strategies available to an oligopolist include advertising, quality improvement, etc. as the firms suffer from rigidity of prices.

– Oligopoly can be classified as perfect and imperfect oligopoly on the basis of product differentiation, open or closed oligopoly on the basis of entry of firms, partial or full depending upon presence or absence of market leader.

– When the firms follow a common price policy, it is known as collusive oligopoly.

19.3. INTENSIVE GROWTH

Intensive growth makes sense for a company if it has not fully exploited the opportunities latent in its present products and markets.

The three major types of intensive growth opportunities are described below:

1. Market penetration

Market penetration consists of a company seeking increased sales for its present products in its present markets through more aggressive marketing effort.

2. Market development

Market development consists of a company seeking increased sales by taking its present products into new markets.

3. Product development

Product development consists of a company seeking increased sales by developing improved products for its present markets.

19.4. INTEGRATIVE GROWTH

Integrative growth makes sense for a company if (a) the basic industry has a strong growth future and/or (b) the company can increase its profitability, efficiency, or control by moving backward, forward, or horizontally within the industry.
The three integrative growth possibilities are discussed below:

1. **Backward integration**: Backward integration consists of a company seeking ownership or increased control of its supply systems.

2. **Forward integration**: Forward integration of a company seeking ownership or increased control of its distribution systems.

3. **Horizontal integration**: Horizontal integration consists of a company seeking ownership or increased control of some of its competitors.

19.5. **DIVERSIFICATION GROWTH**

Diversification growth makes sense for a company (a) if the core marketing system does not show much additional opportunity for growth or profit, or (b) if the opportunities outside of the present core marketing system are superior. Diversification does not mean that the company will take up any opportunity however unrelated to its present distinctive competencies or needs. On the contrary, the company would attempt to identify fields that make use of its distinctive competencies or help it overcome a particular problem. There are three board types of diversification moves:

1. **Concentric diversification**: Concentric diversification consists of the company’s seeking to add new products that have technological and/or marketing synergies with the existing product line; these products will normally appeal to new classes of customers.

2. **Horizontal diversification**: Horizontal diversification consists of the company’s seeking to add new products that could appeal to its present customers though technologically unrelated to its present product line.

3. **Conglomerate diversification**: Conglomerate diversification consists of the company’s seeking to add new products for new classes of customers because this (a) promises to offset some deficiency or (b) represents a great environmental opportunity; in either case, these products have no relationship to the company’s current technology, products, or markets.

19.6. **MARKET SEGMENTATION**

Market consists of buyers, and buyers differ in one or more respects. They may differ in their wants, purchasing power, geographical locations, buying attitudes and buying practices. This varied and complex buyer behavior is the root cause of market segmentation. A market segment is a meaningful buyer group having similar wants. Each segment can be a group of people with similar or homogeneous demand and this will enable the enterprise to have tailor-made marketing mix to each market segment. Segmentation is a consumer oriented marketing strategy. Though wants and desires of consumers are diverse, segmentation helps in grouping those consumers having similar wants or desires.

Market segmentation is a method for achieving maximum market response from limited marketing resources. This is made possible by recognizing the difference in the response characteristics of various parts of the market. In a sense, market segmentation is the strategy of ‘divide and conquer’.
Studies reveal that different organizations have different perceptions of marketing. And these differing perceptions have led to the formation of different concepts of marketing. It is found that at least five distinct concepts of marketing have guided that are still guiding business firms. They are:

- The exchange concept
- The production concept
- The product concept
- The sale concept; and
- The marketing concept

The Exchange concept of marketing, as the very name indicates, holds that the exchange of a product between the seller and the buyer is the central idea of marketing.

Production and technology dominate the thinking process of the key people in the business. They believe that marketing can be managed by managing production. The concept holds that consumers would, as a rule, support those products that are produced in great volume at a low unit cost.

Product Concept of marketing believes that the consumers would automatically vote for products of high quality. They concentrate on achieving product excellence.

The Product Concept is somewhat different from the Production Concept. Whereas the Production Concept seeks to win markets and profits via high volume of production and low unit costs of production, the Product Concept seeks to achieve the same result via produce excellence, improved products, new products and ideally designed and engineered products. It also places emphasis on quality assurance. In general, it tries to take care of the marketing task through the product attributes.

The Sales Concept became the dominant idea guiding marketing as more and more markets became buyers’ markets and as the entrepreneurial problem became one of solving the shortage of customers rather than the shortage of goods.

Marketing is much wider than selling, and much more dynamic. Selling revolves around the needs and interests of the seller; marketing revolves around the needs and interests of the buyer. Selling starts with the existing products of the corporation and views business as a task of somehow promoting these products. Marketing, on the other hand, starts with the customers of the corporation – present and potential – and views business as a task of meeting the needs of the customers by producing and supplying those products and services that would exactly meet the needs of the customers. Selling seeks profits by ‘pushing’ the products on the buyers. Marketing seeks profits not through the aggressive pushing of the products but by meeting the needs of the customers and by creating value satisfactions for them. In other words, marketing calls upon the corporation to choose products, prices and methods of distribution and promotion that would meet the needs of customers.

The Marketing Concept was born out of the awareness that marketing starts with the determination of consumer wants and ends with the satisfaction of those wants. The concept puts the consumer at
Economic Analysis

both the beginning and end of the business. It stipulates that the company should be organized totally around the marketing function, anticipating, and stimulating and meeting customers’ requirements.
LESSON-20

PERFECT COMPETITION

20.1. INTRODUCTION

What exactly is perfect competition? A perfectly competitive market is one in which no firm is large enough to affect the market price. Perfect competition is an idealized market of atomistic firms who are price-takers. In fact, while they are easily analyzed, such firms are hard to find.

We begin with an analysis of perfectly competitive firms. If you own such a firm, how much should you produce, if the product sells at 13 per kg? In analyzing the supply behaviour of perfectly competitive firms, we make two observations. First, we will assume that our competitive firm maximizes profits. Second, we observe that perfect competition is a world of atomistic firms who are price-takers.

20.2. PERFECT COMPETITION

Perfect competition is the world of price-takers. A perfectly competitive firm sells a homogenous product (one identical to the product sold by the others in the industry.) It is so small relative to its market that it cannot affect the market price; it simply takes the price as given.

Why would a firm want to maximize profits? Profits are like the net earnings or take-home pay of a business. They represent the amount a firm can pay in dividends to the owners, reinvest in new plant and equipment, or employ to make financial investments. All these activities increase the value of the firm to its owners.

Profit maximization requires the firm to manage its internal operations efficiently (prevent waste, encourage worker morale, choose efficient production processes, and so forth) and to make sound decisions in the marketplace (buy the correct quantity of inputs at least cost and choose the optimal level of output).
Because competitive firms cannot affect the price, the price for each unit sold is the extra revenue that the firm will earn.

Key points:

1. Under perfect competition, there are many small firms, each producing an identical product and each too small to affect the market price.

2. The perfect competitor faces a completely horizontal demand (or \(dd\)) curve.

3. The extra revenue gained from each extra unit sold is therefore the market price.

Given its costs, and desire to maximize profits, how does a competitive firm decide on the amount that it will supply? Assume that the market price for oil is `40 per unit. Suppose selling is 3000 units. This yields total revenue of `40 × 3000 = `120,000, with total cost of `130,000, so the firm incurs a loss of `10,000.

Now you analyze your operations and see that if you sell more oil, the revenue from each unit is `40 while the marginal cost is only `21. Additional units bring in more revenue than they cost. So you raise production to 4000 units. At this output, the firm has revenues of `40 × 4000 = `160,000 and costs of `160,000, so profits are zero.

Flush with your success, you decide to boost output some more, to 5000 units. At this output, the firm has revenues of rupees (40 × 5000) 200,000 and costs of rupees 210,000. Now you’re losing rupees 10,000 again. What went wrong?
Economic Analysis
When you go back to your accounts, you see that at the output level of 5000, the marginal cost is 60, which is more than the market price of 40, so you are losing 20 (equal to price minus MC) on the last unit produced. Now you see the light: The maximum profit output comes at that output where marginal cost equals price.

The reason underlying this proposition is that the competitive firm can always make additional profit as long as the price is greater than the marginal cost of the last unit. Total profit reaches its peak—is maximized—when there is no longer any extra profit to be earned by selling extra output. At the maximum profit point, the last unit produced brings in an amount of revenue exactly equal to that unit’s cost. What is that extra revenue? It is the price per unit. What is that extra cost? It is the marginal cost.

20.3. Rule for a firm’s supply under perfect competition

A firm will maximize profits when it produces at that level where marginal cost equal price:

Marginal cost = price or $MC = P$

Hence, at a market price of 40, the firm will wish to produce and sell 4000 units. We can find that profit-maximizing amount in Figure 5-2 at the intersection of the price line at 40 and the $MC$ curve at point $B$.

For a profit-maximizing competitive firm, the upward-sloping marginal cost (MC) curve is the firm’s supply curve. For market price at $d' \neq d''$, the firm will supply output at the intersection point $B$. 
at A. Explain why intersection points at B and C represent equilibria for prices at d and d¢¢ respectively. The shaded gray region represents the loss from producing at A when price is `40.

In general, then, the firm's marginal cost curve can be used to find its optimal production schedule: the profit-maximizing output will come where the price intersects the marginal cost curve.

We designed this example so that at the profit-maximizing output the firm has zero profits, with total revenues equal to total costs. Point B is the zero-profit point, the production level at which the firm makes zero economic profits; at the zero profit point, price equals average cost, so revenues just cover costs.

What is the firm chooses the wrong output? Suppose the firm chooses output level A in figure 5-2 when the market price is ` 40. It would be losing money because the last units have marginal cost above price. We can calculate the loss of profit if the firm mistakenly produces at A by the shaded gray triangle in Figure 5-2. This depicts the surplus of MC over price for production between B and A.

A profit-maximizing firm will set its output at that level where marginal cost equals price. General rule for firm supply leaves open one possibility—that the price will be so low that the firm will want to shut down. Isn’t it possible that at the $P = MC$ equilibrium,

For example, suppose the firm were faced with a market price of `35, shown by the horizontal d¢¢¢ line in Figure 5-2. At that price, $MC$ equals price at point C, a point at which the price is actually less than the average cost of production. Would the firm want to keep producing even through it was incurring a loss? Surprisingly, the correct answer is yes. The firm should minimize its losses, which is the same thing as maximizing profits. The firm will minimize losses where MR = MC. At this level of output, the firm is covering all of its variable costs and a portion of its fixed costs (Figure 5-3).
Producing at point \( C \) would result in a loss of only \$20,000, whereas shutting down would involve losing \$55,000 (which is the fixed cost). The firm should therefore continue to produce.

To understand this point, remember that a firm must still cover its contractual commitments even when it produces nothing. In the short run, the firm must pay fixed costs such as interest to the bank, rentals on the oil rigs, and directors’ salaries. The balances of the firm’s costs are variable costs, such as those for materials, production workers, and fuel, which would have zero cost at zero production. It will be advantageous to continue operations, with \( P \) at least as high as \( MC \), as long as revenue covers variable costs.

The critically low market price at which revenues just equal variable costs (or, equivalently, at which losses exactly equal fixed costs) is called the shutdown point. For prices above the shutdown point, the firm will produce along its marginal cost curve because, even through the firm might be losing money, it would lose more money by shutting down. For prices below the shutdown point, the firm will produce nothing at all because by shutting down the firm will lose only its fixed costs. This gives the shutdown rule:

**20.4. Shutdown rule**

The shutdown point comes where revenues just cover variable costs or where losses are equal to fixed costs. When the price falls below average variable costs, the firm will maximize profits (minimize its losses) by shutting down.

Figure 5-3 shows the shutdown and zero-profit points for a firm. The zero-profit point comes where price is equal to \( AC \), while the shutdown point comes where price is equal to \( AVC \). Therefore, the firm’s supply curve is the solid rust line in Figure 5-3. It first goes up the vertical axis to the price corresponding to the shutdown point; next jumps to the shutdown point at \( M \ell \), where \( P \) equals the level of \( AVC \) and then continues up the \( MC \) curve for prices above the shutdown price.

The analysis of shutdown conditions leads to the surprising conclusion that profit-maximizing firms may in the short run continue to operate even though they are losing money. This condition will hold particularly for firms that are heavily indebted and therefore have high fixed costs (the airlines being a good example). For these firms, as long as losses are less than fixed costs, profits are maximized and losses are minimized when they pay the fixed costs and still continue to operate.
The firm’s supply curve corresponds to its MC curve as long as revenues exceed variable costs. Once price falls below $P_s$, the shutdown point, losses are greater than fixed costs, and the firm shuts down. Hence the solid rust curve is the firm’s supply curve.
In perfectly competitive, total industry demand DD is so vast relative to the efficient scale of a single seller that the market allows viable coexistence of numerous perfect competitors.

**Fig-20.5: Market structure under perfect competition**
LESSON -21

MONOPOLY

21.1. INTRODUCTION

If a firm can appreciably affect the market price of its output, the firm is classified as an “imperfect competitor.” Imperfect Competition prevails in an industry whenever individual sellers have some measure of control over the price of their output. Imperfect competition does not imply that a firm has absolute control over the price of its product.

21.2. DIFFERENT KINDS OF IMPERFECT COMPETITION

The major kinds of imperfect competition are monopoly, oligopoly, and monopolistic competition. We shall see that for a given technology, prices are higher and outputs are lower under imperfect competition than under perfect competition. But imperfect competitors have virtues along with these vices. Large firms exploit economies of large-scale production and are responsible for much of the innovation that propels long-term economic growth. If you understand how imperfectly competitive markets work, you will have a much deeper understanding of modern industrial economies.

The perfectly competitive firm can sell all it wants along its horizontal dd curve without depressing the market price. (b) But the imperfect competitor will find that its demand curve slopes downward as higher price drives sales down. And unless it is a sheltered monopolist, a cut in its rivals’ prices will appreciably shift its own demand curve leftward to d ¢ d ¢ .

Fig-21.1: Firm’s demand curve under perfect and imperfect competition
We can also see the difference between perfect and imperfect competition in terms of price elasticity. For a perfect competition, demand is perfectly elastic; for an imperfect competitor, demand has a finite elasticity.

21.3. MONOPOLY

Monopoly is a single seller with complete control over an industry. It is the only firm producing in its industry, and there is no industry, and there is no industry producing a close substitute. Most monopolies persist because of some form of government regulation or protection. For example, a pharmaceutical company that discovers a new wonder drug may be granted a patent, which gives it monopoly control over that drug for a number of years. In such cases there is truly a single seller of a service with no close substitutes. A natural monopoly is a market in which the industry’s output can be efficiently produced only by a single firm. This occurs when the technology exhibits economies of scale over a range of output that is as large as the entire demand.

True monopolists are rare today. Most monopolies persist because of some form of government regulation or protection. For example, a pharmaceutical company that discovers a new wonder drug may be granted a patent, which gives it monopoly control over that drug for a number of years. But even monopolists must always be looking over their shoulders for potential competitors. The pharmaceutical company will find that a rival will produce a similar drug; telephone companies that were monopolists a decade ago now must reckon with cellular telephones. In the long run, no monopoly is completely secure from attack by competitors.

![Diagram of Monopoly](image)

**Fig-21.2: Market structure under natural monopoly**

When costs falls rapidly and indefinitely, as in the case of monopoly, one firm can expand in order to monopolize the industry.
Some important examples of natural monopolies are the local distribution in telephone, electricity, gas, and water as well as long-distance links in railroads, highways, and electrical transmission. Many of the most important natural monopolies are “network industries”. Similar trends in other markets, such as cable TV, are occurring as competitors invade them into hotly contested oligopolies. Technological advances, however, can undermine natural monopolies.

A final important case is natural monopoly. A natural monopoly is a market in which the industry’s output can be efficiently produced only by a single firm. This occurs when the technology exhibits economies of scale over a range of output that is as large as the entire demand. Fig. 2 shows the cost curves of a natural monopolist. The technology has perpetual increasing returns to scale, and average and marginal costs therefore fall forever. As output grows, the firm can charge lower and lower prices and still make a profit, since its average cost is falling. So peaceful competitive coexistence of thousands of perfect competitors will be quite impossible because one large firm is so much more efficient than a collection of small firms.

Some important examples of natural monopolies are the local distribution in telephone, electricity, gas, and water as well as long-distance links in railroads, highways, and electrical transmission. Many of the most important natural monopolies are “network industries”. Technological advances however can undermine natural monopolies. Most of the U.S. population is now served by two cellular telephone networks, which use radio waves instead of wires and are undermining the demand for landline telephone services. Similar trends in other markets, such as cable TV, are occurring as competitors invade these natural monopolies and are turning them into hotly contested oligopolies.

21.4. BARRIERS TO ENTRY

Although cost differences are the most important factor behind market structure, barriers to entry can also prevent effective competition. Barriers to entry are factors that make it hard for new firms to enter an industry. When barriers are high, an industry may have few firms and limited pressure to compete. Economics of scale act as one common type of barrier to entry, but there are others, including legal restrictions, high cost of entry, advertising, and product differentiation.

21.5. LEGAL RESTRICTIONS

Governments sometimes restrict competition in certain industries. Important legal restrictions include patents, entry restrictions, and foreign-trade tariffs and quotas. A patent is granted to an inventor to allow temporary exclusive use of the product or process that is patented. For example, pharmaceutical companies are often granted valuable patents on new drugs in which they have invested hundreds of millions of research and development dollars. Patents are one of the few forms of government-granted monopolies that are generally approved of by economists. Government grant patent monopoly patent protection, a company or a sole inventor might be unwilling to devote time and resource to devote time and resources to research and development. The temporarily high monopoly price and the resulting inefficiency is the price society pays for the invention.

Government also impose entry restrictions on many industries. Typically, utilities, such as telephone, electricity distribution, and water, are given franchise monopolies to serve an area. In these cases, the firm gets an exclusive right to provide a service, and in return the firm agrees to limit its profits and provide universal service in its region even when some customers might be unprofitable.

Historians who study the traffic have written, “The tariff is the mother of trusts.” This is because government-imposed imposed import restrictions have the effect of keeping out foreign competitors. It
could be very well be that a single country’s market for a product is only big enough to support two or three firms in an industry, while the world market is big enough to support a large no of firms. Then a protectionist policy might change the industry structure. When markets are broadened by abolishing tariffs in a large free-trade area, vigorous and effective competition is encouraged and monopolies tend to lose their power. One of the most dramatic example of increased competition has come in the European Union, which has lowered tariff among member countries steadily over the last three decades and has benefited from larger markets for firms and lower concentration of industry.

21.6. HIGH COST OF ENTRY

In addition to legally imposed barriers to entry, there are economic barriers as well. In some industries the price of entry simply may be very high. Take the commercial-aircraft industry, for example. The high cost of designing testing new airplanes serves to discourage potential entrants into the market. It is likely that only two companies – Boeing and Airbus – can afford the $10 to $15 billion that the next generation of aircraft will cost to develop.

In addition, companies build up intangible forms of investment, and such investments might be very expensive for any potential new entrant to match. Consider the software industry. Once a spreadsheet program or a word-processing program (MS Word) has achieved wide acceptability, potential competitors find it difficult to make inroads into the market. Users, having learned one program, are reluctant to switch to another. Consequently, in order to get people to try a new program, any potential entrant will need to run a big promotional campaign, which would be expensive and may still result in failure to produce a profitable product.

21.7. ADVERTISING AND PRODUCT DIFFERENTIATION

Sometimes it is possible for companies to create barriers to entry for potential rivals by using advertising and product differentiation. Advertising can create product awareness and loyalty to well-known brands. For example, Pepsi and Coca-Cola spend hundreds of millions of dollars per year advertising their brands, which makes it very expensive for any potential rivals to enter the cola market.

In addition, product differentiation can impose a barrier to entry and increase the market power of producers. In many industries—such as breakfast cereals, automobiles, household appliances, and cigarettes—it is common for a small number of manufacturers to produce a vast array of different brands, models, and products. In part, the variety appeals to the widest range of consumers. But the enormous number of differentiated products also serves to discourage potential competitors. The demands for each of the individual differentiated products will be so small that they will not be able to support a large number of firms operating at the bottom of their U-shaped cost curves. The result is that perfect competition’s DD curve contracts so far to the left that it becomes like the demand curves of oligopoly or monopoly. Hence, differentiation, like tariff, produces greater concentration and more imperfect competition and more imperfect competition.

21.8. PRICE DISCRIMINATION

Price discrimination exists when sales of identical goods or services are transacted at different prices from the same provider. In a theoretical market with perfect information, perfect substitutes, and no transaction costs or prohibition on secondary exchange (or re-selling) to prevent arbitrage, price discrimination can only be a feature of monopolistic and oligopolistic markets, where market power can be exercised. Otherwise, the
moment the seller tries to sell the same good at different prices, the buyer at the lower price can arbitrage by selling to the consumer buying at the higher price but with a tiny discount. However, product heterogeneity, market frictions or high fixed costs (which make marginal-cost pricing unsustainable in the long run) can allow for some degree of differential pricing to different consumers, even in fully competitive retail or industrial markets. Price discrimination also occurs when the same price is charged to customers which have different supply costs.

### 21.8.1. Types of Price Discrimination

**a) First degree price discrimination**

In first degree price discrimination, price varies by customer's willingness or ability to pay. This arises from the fact that the value of goods is subjective. A customer with low price elasticity is less deterred by a higher price than a customer with high price elasticity of demand. This type of price discrimination is primarily theoretical because it requires the seller of a good or service to know the absolute maximum price that every consumer is willing to pay.

**b) Second degree price discrimination**

In second degree price discrimination, price varies according to quantity sold. Larger quantities are available at a lower unit price. This is particularly widespread in sales to industrial customers, where bulk buyers enjoy higher discounts.

**c) Third degree price discrimination**

In third degree price discrimination, price varies by attributes such as location or by customer segment, or in the most extreme case, by the individual customer's identity; where the attribute in question is used as a proxy for ability or willingness to pay.

The purpose of price discrimination is generally to capture the market's consumer surplus. This surplus arises because, in a market with a single clearing price, some customers (the very low price elasticity segment) would have been prepared to pay more than the single market price. Price discrimination transfers some of this surplus from the consumer to the producer/marketer. Strictly, a consumer surplus need not exist, for example where some below-cost selling is beneficial due to fixed costs or economies of scale. An example is a high-speed internet connection shared by two consumers in a single building; if one is willing to pay less than half the cost, and the other willing to make up the rest but not to pay the entire cost, then price discrimination is necessary for the purchase to take place.

It can be proved mathematically that a firm facing a downward sloping demand curve that is convex to the origin will always obtain higher revenues under price discrimination than under a single price strategy. This can also be shown diagrammatically.

In the Fig. 3(A), a single price (P) is available to all customers. The amount of revenue is represented by area P, A, Q, O. The consumer surplus is the area above line segment P, A but below the demand curve (D).

With price discrimination, (Fig. 3(B)), the demand curve is divided into two segments (D1 and D2). A higher price (P1) is charged to the low elasticity segment, and a lower price (P2) is charged to the high elasticity segment. The total revenue from the first segment is equal to the area P1, B, Q1, O. The total revenue from the second segment is equal to the area E, C, Q2, Q1. The sum of these areas will always be greater than the area without discrimination assuming the demand curve resembles a rectangular
hyperbola with unitary elasticity. The more prices that are introduced, the greater the sum of the revenue areas, and the more of the consumer surplus is captured by the producer.

Fig. 21.3 Sales revenue without and with Price Discrimination
LESSON -22

OLIGOPOLY

22.1. INTRODUCTION

While the concentration of an industry is important, it does not tell the whole story. Indeed, to explain the behavior of imperfect competitors, economists have developed a field called industrial organization. We can cover this vast area here. Instead, we will focus on three of most important cases of imperfect competition-collusive oligopoly, monopolistic competition, and small-number oligopoly.

In analyzing the determinants of concentration, economists have found that three major factors are at work in imperfectly competitive markets. These factors are economies of scale, barriers to entry, and strategic interaction. When the minimum efficient size of operation for a firm occurs at a sizable fraction of industry output, only a few firms can profitably survive and oligopoly is likely to result. When there are large economies of scale or government restrictions to entry, they will limit the number of competitors in an industry.

When only a few firms operate in a market, they will soon recognize their interdependence. Strategic interaction, which is a genuinely new feature of oligopoly that has inspired the field of game theory, occurs when each firm’s business depends upon the behavior of its rivals.

Why are economists particularly concerned about industries characterized by imperfect competition? The answer is that such industries behave in certain ways that are inimical to the public interest. For example, imperfect competition generally leads to prices that are above marginal costs. Sometimes, without the spur of competition, the quality of service deteriorates. Both high price and poor quality are undesirable outcomes.

22.2. OLIGOPOLY

The term oligopoly means “few sellers”. Few, in this context, can be a number as small as 2 or as large as 10 or 15 firms. The important feature of oligopoly is that each individual firm can affect the market price. In the airline industry, the decision of a single airline to lower fares can set off a price war which brings down the fares charged by all its competitors.

Oligopolistic industries are relatively common especially in the manufacturing, transportation, and communications sectors. For example, there are only a few car makers, even though the automobile industry sells many different models. The same is true in the market for household...
appliances; stores are filled with many different models of refrigerators and dishwashers, all made by a handful of companies. You might be surprised to know that the breakfast cereal industry is an oligopoly dominated by a few firms even though there seem to be endless varieties of cereals.

When studying oligopolies, it is important to recognize that imperfect competition is not the same as perfect competition. Indeed, some of the most vigorous rivalries in the economy occur in markets where there are but a few firms. Just look at the cutthroat competition in the airline industry where two or three airlines may fly a particular route but still engage in periodic fare wars.

How can we distinguish the rivalry of oligopolists from perfect competition? Rivalry encompasses a wide variety of behaviour to increase profits and market share. It includes advertising to shift out the demand curve, price cuts to attract business, and research to improve product quality or develop new products. Perfect competition says nothing about rivalry but simply means that no single firm in the industry can affect the market price.

In oligopoly costs turn up at a higher level of output relative to total industry demand. Coexistence of numerous perfect competitors is impossible, and oligopoly will emerge.

As a result of high prices, oligopolistic industries often have supernormal profits. The profitability of the highly concentrated tobacco and pharmaceutical industries has been the target of political attacks on numerous occasions. Careful studies show, however, that concentrated industries tend to have only slightly higher rates of profit than unconcentrated ones. This is a surprising finding, and it has especially perplexed critics of big business, who expected to find the biggest companies earning enormous profits.

Historically, one of the major defenses of imperfect competition has been that large firms are responsible for most of the research and develop (R & D) and innovation in a modern economy. There is certainly some truth in this idea, for highly concentrated industries sometimes have high
levels of R & D spending per dollar of sales as they try to achieve a technological edge over their rivals. At the same time, individuals and small firms have produced many of the greatest technological breakthroughs. We will review this important question in detail later in this chapter.

22.3. COLLUSIVE OLIGOPOLY

The degree of imperfect competition in a market is influenced not just by the number and size of firms but by their behavior. When only a few firms operate in a market, they see what their rivals are doing and react. For example, if there are two two airlines operating along the same route and one raises its fare, the other must decide whether to match the increase or to stay with the lower fare, undercutting its rival. Strategic interaction is a term that describes how each firm’s business strategy depends upon its rivals’ business behavior.

When there are only a small number of firms in a market, they have a choice between cooperative and non-cooperative behavior. Firms act non-cooperatively when they act on their own without any explicit or implicit agreement with other firms. That’s what produces price wars. Firms operate in a cooperative mode when they try to minimize competition. When firms in an oligopoly actively cooperate with each other, they engage in collusion. This term denotes a situation in which two or more firms jointly set their price or outputs, divide the market among themselves, or make other business decisions jointly.

During the early years of American capitalism, before the passage of effective antitrust laws, oligopolists often merged or formed a trust or cartel. A cartel is an organization of independent firms, producing similar products, that work together to raise prices and restrict output. Today, with only a few exceptions, it is strictly illegal in the United States and most other market economies for companies to collude by jointly setting prices or dividing markets.

Nonetheless, firms are often tempted to engage in tacit collusion, which occurs when they refrain from competition without explicit agreements. When firms tacitly collude, they often quote identical high prices, pushing up profits and decreasing the risk of doing business. A recent examination found that about 9 percent of major corporations have admitted to or been convicted of illegal price fixing. In recent years, makers of infant formula, scouring pads, and kosher Passover products have been investigated for price fixing, while private universities, art dealers, the airlines, and the telephone industry have been accused of collusive behavior.

The rewards of successful collusion can be great. Imagine a four-firm industry—call the firms A, B, C, and D—where all the rivals have tired of ruinous price wars. They tacitly agree to charge the same price and not undercut each other. The firms hope to form a collusive oligopoly by finding the price which maximizes their joint profits. Figure 4 illustrates oligopolist A’s demand curve, $D_A$, is drawn assuming that the other firm all follow A’s pricing policy and charge the same prices; each firm’s demand curve will have the same prices; each firm’s demand curve will have the same elasticity as the industry’s $DD$ curve. Firm A will get one-fourth of the shared market as long as all firms charge the same price.
The maximum-profit equilibrium for the collusive oligopolist is shown in fig 10-2 at point E, the intersection of the firm’s MC and MR curves. Here, the appropriate demand curve is $D_A$, just above point E. This price is identical to the monopoly price: it is well above marginal cost and earns the colluding oligopolists a handsome monopoly profit.

When oligopolists can collude to maximize their joint profits, taking into account their mutual interdependence, they will produce the monopoly output and price and earn the monopoly profit.

There is no single model describing the operation of an oligopolistic market. The variety and complexity of the models is because you can have two to 10 firms competing on the basis of price, quantity, technological innovations, marketing, advertising and reputation. Fortunately, there are a series of simplified models that attempt to describe market behavior under certain circumstances. Some of the better-known models are the dominant firm model and the kinked demand model.

22.4. PRICE LEADERSHIP OR DOMINANT FIRM MODEL

In some markets there is a single firm that controls a dominant share of the market and a group of smaller firms. The dominant firm sets prices which are simply taken by the smaller firms in determining their profit maximizing levels of production. This type of market is practically a monopoly and an attached perfectly competitive market in which price is set by the dominant firm rather than the market. The demand curve for the dominant firm is determined by subtracting the supply curves of all the small firms from the industry demand curve. After estimating its net demand curve (market demand less the supply curve of the small firms) the dominant firm maximizes profits by following the normal p-max rule of producing where marginal revenue equals marginal costs. The small firms maximize profits by acting as PC firms—equating price to marginal costs.
Notice first the total market demand curve for the industry as a whole. Then notice the marginal cost curve for the competitive fringe of firms. This is a model in which there is one firm which is dominant and then a fringe of small firms who are so small that they behave like perfectly competitive firms – they take the price that is given by the dominant firm (and then set $P = MC$ to profit maximize).

The basic story in this model is that the dominant firm leaves room for the competitive fringe (and therefore profit maximizes according to the “residual” demand curve. Since the fringe of firms behaves like perfect competitors, the sum of their marginal cost curves is essentially their supply curve. It represents the amount that these firms together will want to supply at any possible price.

Therefore, the residual demand curve is total demand minus this supply by the competitive fringe. This is exactly what the curve labeled $D_{DF}$ represents.

Our story is that the dominant firm profit maximizes using this residual demand curve. That means setting $MR = MC$ for this demand curve. This is exactly where $Q^*_{DF}$ comes from (it is the quantity at which $MR$ is just equal to $MC$ for the dominant firm. The dominant firm will charge the profit-maximizing price, which is $P^*$.

Once $P^*$ is established by the dominant firm, the competitive fringe (who are price takers) will just take this price and set $P^* = MC$. This gives us the profit-maximizing quantity $Q^*_{CF}$ for the competitive fringe.
22.5. KINKED DEMAND MODEL

In an oligopoly, firms operate under imperfect competition. With the fierce price competitiveness created by this sticky-upward demand curve, firms use non-price competition in order to accrue greater revenue and market share.

"Kinked" demand curves are similar to traditional demand curves, as they are downward-sloping. They are distinguished by a hypothesized convex bend with a discontinuity at the bend—"kink". Thus the first derivative at that point is undefined and leads to a jump discontinuity in the marginal revenue curve.

Classical economic theory assumes that a profit-maximizing producer with some market power (either due to oligopoly or monopolistic competition) will set marginal costs equal to marginal revenue. This idea can be envisioned graphically by the intersection of an upward-sloping marginal cost curve and a downward-sloping marginal revenue curve (because the more one sells, the lower the price must be, so the less a producer earns per unit). In classical theory, any change in the marginal cost structure (how much it costs to make each additional unit) or the marginal revenue structure (how much people will pay for each additional unit) will be immediately reflected in a new price and/or quantity sold of the item. This result does not occur
if a "kink" exists. Because of this jump discontinuity in the marginal revenue curve, marginal costs could change without necessarily changing the price or quantity.

The motivation behind this kink is the idea that in an oligopolistic or monopolistically competitive market, firms will not raise their prices because even a small price increase will lose many customers. This is because competitors will generally ignore price increases, with the hope of gaining a larger market share as a result of now having comparatively lower prices. However, even a large price decrease will gain only a few customers because such an action will begin a price war with other firms. The curve is therefore more price-elastic for price increases and less so for price decreases. Firms will often enter the industry in the long run.

Fig-22.4: Kinked Demand Curve
Lesson-23

Monopolistic Competition

23.1. INTRODUCTION

Monopolistic competition occurs when a large number of sellers produce differentiated products. This market structure resembles perfect competition in that there are many sellers, none of whom have a large share of the market. It differs from perfect competition in that the products sold by different firms are not identical. Differentiated products are ones whose important characteristics. Personal computers, for example, have differing characteristics such as speed, memory, hard disk, modem, size, and weight. Because computers are differentiated, they can sell at slightly different prices.

The classic case of monopolistic competition is the retail petrol market. You may go to the local Indian oil petrol pump, even though it charges slightly more, because it is on your way to work. But if the price at Indian oil raises more than a few rupees above the competition, you might switch to the Bhart oil station a short distance away.

This example illustrates the importance of location in product differentiation. It takes time to go to the bank or the grocery store, and the amount of time needed to reach different stores will affect our shopping choices. The whole price of a good includes not just its price but also the opportunity cost of search, travel time, and other non-price costs. Because prices of local goods are lower than those in faraway places, people generally tend to shop close to home or to work. This consideration also explains why large shopping complexes are so popular: they allow people to buy a wide variety of goods while economizing on shopping time. Today, shopping on the Internet is increasingly important because, even when shipping costs are added, the time required to buy the good online can be very low compared to getting in your car or walking to a shop.

Product quality is an increasingly important part of product differentiation today. Goods differ in their characteristics as well as their prices. Most personal computers can run the same software, and there are many manufactures. Yet the personal computer industry is a monopolistically competitive industry, because computers differ in speed, size, memory, repair services, and ancillaries like CDs, DVDs, Internet connections, and sound systems. Indeed, a whole batch of monopolistically competitive computer magazines is devoted to explaining the differences among the computers produced by the monopolistically competitive computer manufactures.

23.2. Monopolistic competition
Monopolistic competition resembles perfect competition in three ways: there are many buyers and sellers, entry and exit are easy, and firms take other firms’ prices as given. The distinction is that products are identical under perfect competition, while under monopolistic competition they are differentiated.

Monopolistic competition is very common – just scan the shelves at any supermarket and you’ll see a dizzying array of different brands of breakfast cereals, shampoos and frozen foods. Within each product group, products or services are different, but close enough to complete with each other. Here are some other examples of monopolistic competition: there may be several grocery stores in a neighborhood, each carrying the same goods but at different locations. Gas stations, too all see the same products, but they compete on the basis of location and brand name. The several hundred magazines on a newsstand rack are monopolistic competitors, as are the 50 or so competing brand of personal computers. The list is endless.

The important point is that product differentiation means each seller has some freedom to raise or lower prices, more so than in a perfectly competitive market. Product differentiation leads to a downward slope in each seller’s demand curve.

Figure might represent a monopolistically competitive fishing magazine which is in short-run equilibrium at G. the firm’s demand curve shows the relationship between sales and its price when other magazine prices are unchanged; its demand curve slopes downward since this magazine is a little different from everyone else’s because of its special focus. The profit-maximizing price is at G. because price at G is above average cost; the firm is making a handsome profit represented by area ABGC.
But our magazine has no monopoly on writers or news print or insights on fishing. Firms can enter the industry by hiring editor, having a bright new idea and logo, locating the printer, and hiring workers. Since the fishing magazine industry is profitable, entrepreneurs bring new fishing magazine into the market. With their introduction, the demand curve for the products of existing monopolistically competitive fishing magazine shifts leftwards as the new magazines nibble away at our magazine’s market.

The ultimate outcome is that fishing magazines will continue to enter the market until all economic profits (including the appropriate opportunity costs for owners’ time, talent, and contributed capital) have been beaten down to zero. Figure 2 shows the final long-run equilibrium for the typical seller. In equilibrium, the demand is reduced or shifted to the left until the new \(d’\) demand curve just touches (but never goes above) the firm’s AC curve. Point \(G’\) is a long-run equilibrium for the industry because profits are zero and no one is tempted to enter or forced to exit the industry.

The monopolistic competition model provides an important insight into American capitalism: the rate of profit will in the long run be zero in this kind of imperfectly competitive as firms enter with new differentiated products. In the long-run equilibrium for monopolistic competition, prices are above marginal costs but economic profits have been driven down to zero.

Some critics believe that monopolistic competition is inherently inefficient, even though profits are zero in the long run. They argue that monopolistic competition breeds an excessive number of new products and that eliminating unnecessary product differentiation could really cut costs and lower prices. To understand their reasoning, look back at the long-run equilibrium price at \(G’\) in fig 2. At that point, price is above marginal cost; hence, output is reduced below the ideal competitive level.

![Monopolistic Competition after Entry](image)

**Fig-23.2** Free entry of numerous monopolistic competitors wipes out profits
The economic critique of monopolistic competition has considerable appeal. It takes real ingenuity to demonstrate the gains of human welfare. The great variety of goods and services produced by a modern market economy, reducing the number of monopolistic competitors, while cutting costs, might well end up lowering consumer welfare because it would reduce the diversity of available products. Centrally planned socialist countries tried to standardize output to a small number of goods but their consumers became highly dissatisfied when they looked at the variety available in the market economies. People will pay a premium to be free to choose.

In imperfect competition, we turn back to markets in which only a few firms compete. Instead of focusing on collusion, consider the fascinating with each other. Strategic interaction is found in any market which has relatively few competitors. Like tennis player trying to outguess her opponent, each business must ask how its rivals will react to changes in key model of refrigerator, what will Whirlpool, its principal rival, do? If America Airlines lowers its transcontinental fares, how will United react?

Consider as an example the market for air shuttle service between New York and Washington, currently served by Delta and US Airways. This market is called the duopoly because it is served by two firms. Similar strategic interactions are found in many large industries: in television, in automobiles, even in economics textbooks. Unlike the simple approaches of monopoly and perfect competition, it turns out that there is no simple theory to explain how oligopolists behave. Different cost and demand structures, different industries, even different temperaments on the part of the firms’ managers will lead to different strategic interactions and to different pricing strategies. Sometimes, the best behaviour is to introduce some randomness into the response simply to keep the opposition off balance.

Competition among the few introduces a completely new feature into economic life: It forces firms to take into account competitors’ reactions to price and output derivations and brings strategic considerations into their markets.
LESSON-24

NATIONAL INCOME

24.1. INTRODUCTION

National income (NI) is the total market value of the final goods and services produced within a nation during a given year. It measures the diverse goods and services produced with its land, labour and capital resources. The NI is the most comprehensive measure of a nation’s total output of goods and service.

The question is Can the GDP give an overall picture of the state of the economy? In this chapter, we explain how economists measure NI and other major macroeconomic concepts.

Meaning of GDP

Gross Domestic Product (GDP) measures the total value of goods and services produced in a year. GDP is part of the national income and product accounts (or national accounts), which enable policymakers to determine whether the economy is contracting or expanding and whether a severe recession or inflation threatens. When economists want to determine the level of economic development of a country, they look at its GDP per capita.

NI equals the total production of consumption and investment goods, government purchase and net exports to other lands. It is the sum of the rupee values of consumption ($C$), gross investment ($I$), government purchases of goods and services ($G$) and net exports ($X$) produced within a nation during a given year.

In symbols:

NI is used for many purposes, but the most important one is to the measure the overall performance of an economy.

There are different ways of measuring NI and distinguishing real from nominal GDP. National income and product accounts are commonly used to measure GDP. The major components of GDP are extracted from Samuelson & Nordhaus book (2005)

The upper loop represents the final goods and services and flow of their spending each year is one of gross domestic product. The lower loop measure the annual flow of costs of output: the earnings that businesses pay out in wages, rent, interest, dividends and profits. The two measures of GDP must always be identical, which presented the circular flow of supply and demand.

Different measures of NI are

GDP, GNP, NDP and NNP

They are expressed at factor cost (FC) and market price (mp). Therefore there are measures of NI. It can be calculated by three approaches-product, expenditure and income approach.
LESSON-25

PERSONAL INCOME

25.1. INTRODUCTION

We can measure the GDP for a particular year using the actual market prices of that year; this gives us the nominal GDP or GDP at current prices. But we are usually more interested in determining what has happened to the real GDP, which is an index of the volume or quantity of goods and services produced. Real GDP is calculated by tracking the volume or quantity of production after removing the influence of changing prices or inflation. Hence, nominal GDP is calculated using changing prices, while real GDP represents the change in the volume of total output at constant price changes are removed.

The difference between the growth of nominal GDP and real GDP is the growth in the price of GDP, sometimes called the GDP deflator.

Now that we have an overview of the GNP both at product and income accounts in an open economy. The following Table 25.1 shows a set of accounts for both the product and the income sides. The structure of the table and the definitions of the terms in it will able to understanding the GDP and its components.

<table>
<thead>
<tr>
<th>Product Approach</th>
<th>Earning Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Components of gross domestic product:</strong></td>
<td><strong>Earning or costs as sources of gross domestic product:</strong></td>
</tr>
<tr>
<td>Consumption (C)</td>
<td>Compensation of labor (wages, salaries and supplements)</td>
</tr>
<tr>
<td>+ Gross private domestic investment (I)</td>
<td>+ Corporate profits</td>
</tr>
<tr>
<td>+ Government purchase (G)</td>
<td>+ Other property income (rent, interest, proprietors’ Income)</td>
</tr>
<tr>
<td>+ Net exports (X)</td>
<td>+ Depreciation</td>
</tr>
<tr>
<td><strong>Equals: Gross domestic product</strong></td>
<td><strong>Equals: Gross domestic product</strong></td>
</tr>
</tbody>
</table>

This table presents the major components of the two sides of the national accounts. The left side shows the components of the product approach (or upper loop); the symbol C, I, G and X are often used to represent these four items of GDP. The right side shows the components of the earnings or cost approach (or lower loop). Each approach will ultimately add up to exactly the same GDP.
We have graphically depicted GDP by second bar in Figure 25.1

(Note: By adding Factor Income from Abroad to NDP\(_{MP}\) and NDP\(_{FC}\) we get NNP\(_{MP}\) and NNP\(_{FC}\) (respectively).

25.2. NET NATIONAL PRODUCT (NNP)/ NATIONAL INCOME AT MARKET PRICES

The second important concept of national income is that of net national product (NNP). In the production of gross national product of a year, we consume or use up some fixed capital i.e., equipment, machinery etc. The capital goods, like machinery, wear out or fall in value as a result of its consumption or use in the production process. This consumption of fixed capital or fall in value of fixed capital due to wear and tear is called depreciation. When charges for depreciation are deducted from the gross national product we get national product. Clearly, it means the market value of all final goods and services after providing for depreciation. Therefore, it is also called ‘national income at market prices’. Therefore,

\[
\text{Net national Product} \quad \text{or} \quad \text{National income at Market Prices} \\
= \text{Gross National Product} - \text{Depreciation}
\]
25.3. NATIONAL INCOME (NI)/ NATIONAL INCOME AT FACTOR COST (NNP<sub>FC</sub>)

National Income at factor cost which is also simply called national income means the sum of all incomes earned by resource suppliers for their contribution of land, labour, capital and entrepreneurial ability which go into the year’s net production. In other words, national income (or national income at factor cost) shows how much it costs society in terms of economic resources to produce per net output. It is really the national income (or national income at factor cost) and net national product (national income at market prices) arises from the fact that indirect taxes and subsidies cause market prices of output to be different from the factor incomes resulting from it. Suppose, for instance, a metre of mill cloth sold for Rs. 200 includes Rs. 25 on account of the excise and the sales tax. In this case while the market price of the cloth is Rs. 200 a metre, the factors engaged in its production and distribution would receive Rs. 175 a metre. The value of cloth at factor cost would thus be equal to its value at market price less the indirect taxes on it. On the other hand, a subsidy causes the market price to be less than the factor cost. Suppose handloom cloth is subsidized at the rate of Rs. 10 per metre and it sells at Rs. 90 per metre. Then while the consumer pays Rs. 90 per metre, the factors engaged in the production and distribution of such cloth will receive Rs. 100 per metre (Rs. 90 + 10 = Rs. 100). The value of handloom cloth at factor cost would thus be equal to its market price plus the subsidies paid on it. It follows, therefore, that the national income (or national income at factor cost) is equal to net national product minus indirect taxes plus subsidies.

\[
\text{National Income at factor cost} = \text{Net National Product (National Income at Market Prices)} - \text{Indirect Taxes} + \text{Subsidies}
\]

Net of indirect taxes and subsidies is called Net Indirect Taxes. Therefore,

\[
\text{National Income} = \text{Net National Product} - \text{Net Indirect Taxes}
\]

25.4. PERSONAL INCOME (PI)

Personal Income is the sum of all incomes actually received by all individuals or households during a given year. National income, that is total incomes earned and personal income, that is, total incomes earned and personal income, that is, total incomes received must be different become some incomes which are earned such as social security contributions, corporate income taxes and undistributed corporate profits are not actually received by households, and conversely, some incomes which are received like transfer payments are not currently earned (examples of transfer payments are old-age pensions, unemployment compensation, relief payments, interest payments on the public debt, etc.) Obviously in moving from national income as indicator of income earned to personal income as an indicator of income actually received, we must subtract from national income those three types of income which are earned but not received and add those income which are received but currently not earned. Therefore,

25.5. DISPOSABLE INCOME (DI)

Even whole of the incomes which are actually received by the people are not available to them for consumption. This is because governments levy some personal taxes such as income tax, personal property taxes. Therefore, after a part of personal income is paid to government in the form of personal taxes like income tax, personal property taxes, etc., what remains of personal income is called disposable income. Therefore,

Disposable Income = Personal Income – Personal Taxes.

Disposable Income can either be consumed or saved. Hence,

Disposable Income = Consumption + Saving.

How do we get personal income and disposable income from national income is illustrated in Figure 25.2.

25.6. MEASUREMENT OF NATIONAL INCOME

Since factor incomes arise from the production of goods and services, and since incomes are spent on goods and services produced, three alternative methods of measuring national income are possible.

25.6.1. Value Added Method
Economic Analysis

This is also called output method or production method. In this method the contribution of each enterprise to the generation of flow of goods and services is measured. Under this method, the economy is divided into different industrial sectors such as agriculture, fishing, mining, construction, manufacturing, trade and commerce, transport, communication and other services. Then the net value added at factor cost (NVAFC) by each productive enterprise as well as by each industry or sector is estimated. Measuring net value added at factor cost (NVAFC) by each industry requires first to find out the value of output. Value of output of an enterprise is found out by multiplying the physical output with market prices of the goods produced.

In order to arrive at the net value added at factor cost by an enterprise we have to subtract the following from the value of output of an enterprise:

1. Intermediate consumption which is the value of goods such as raw materials, fuels purchased from other firms

2. Consumption of fixed capital (i.e., depreciation)

3. Net indirect taxes

Summing up the net values added at factor cost (NVAFC) by all productive enterprises of an industry or sector gives us the net value added at factor cost of each industry or sector. We then add up net values added at factor cost by all industries or sectors to get net domestic product at factor cost (NDPFC). Lastly, to the net domestic product we add the net factor income from abroad to get net national product at factor cost (NNPFC) which is also called national income. Thus,

\[ NI \text{ or } NNP_{FC} = NDP_{FC} + \text{Net factor income from abroad} \]

This method of calculating national income can be used where there exists a census of production for the year. In many countries, the data of production of only important industries are known. Hence this method is employed along with other methods to arrive at the national income. The one great advantage of this method is that it reveals the relative importance of the different sectors of the economy by showing their respective contributions to the national income.

25.6.2. Precautions

The following precautions should be taken while measuring national income of a country through value added method.

The first important part of GDP is consumption or “personal consumption expenditures.” Consumption is by far the largest component of GDP, equaling about two-third of the total in recent years. Consumption expenditures are divided into three categories: durable goods such as automobiles, nondurable goods such as automobiles, nondurable goods such as food, and service such as medical care. The most rapidly growing sector is services.

Investment is an essential economic activity because it increases the capital stock available for future production. One of the most important points about national accounting is the identity between saving and investment. Under the accounting rules, measured saving is exactly equal to measured investment. This equality is an identity, which means that it must hold by definition.

In the simplest case assume for the moment that there is no government or foreign sector. Investment is that part of the national output which is not consumed. Saving is that part of national income which is not consumed. But since national income and output are equal, this means that saving equals investment. In symbol:

\[ I = \text{product-approach GDP minus } C \]
Economic Analysis

\( S = \text{earning-approach GDP minus } C \)

But the measures always give the same measure of GDP, so

\( I = S \) the identity between the measured saving and investment

That is the simplest case. On the saving side, total or national saving \((S^T)\) is composed of private saving by households and businesses \((S^P)\) along with government saving \((S^G)\). Government saving equals the government’s budget surplus or the difference between tax revenues and expenditures.

On the investment side, total or national investment \((I^T)\) starts with gross private domestic investment \((I)\) but also adds net foreign investment, which is approximately the same as net foreign investment, which is approximately the same as net export \((X)\). Hence, the complete saving investment identity is given by

\[
\text{National Investment} = \text{Private Investment} + \text{net exports} \\
= \text{private saving} + \text{government saving} = \text{national saving}
\]

For this discussion, we consider only private investment and therefore treat all government purchases as consumption. In most national accounts today, government purchases are divided between consumption and tangible investments. If we include government investment, then this amount will add to both national investment and the government surplus.

Or

\[
I^T = I + X = S^P + S^G = S^T
\]

National saving equals national investment by definition. The components of investment are private domestic investment and foreign investment (or net exports). The sources of saving are private saving (by households and businesses) and government saving (the government budget surplus). Private investment plus net exports equals private saving plus the budget surplus. These identities must hold always, whatever the state of the business cycle.
In the accounts, investment consists of the addition to the nation’s capital stock of buildings, equipment, software and inventories during a year. The national accounts include mainly tangible capital (such as buildings and computers) but omit most intangible capital (such as research-and-development or educational expenses). How does investment fit into the national accounts? If people are using part of society’s production possibilities for capital formation rather than for consumption, such outputs must be included in the upper-loop flow of GDP. Investments represent additions to the stock of durable capital goods that increase production possibilities in the future. Investments represent additions to the stock of durable capital goods that increase production possibilities in the future. Gross domestic product is the sum of all final products. Along with consumption goods and services, we must also include gross investment.

Measuring government’s contribution to national output is complicated because most government services are not sold on the marketplace. Rather, government purchases both consumption-type goods (like food for the military) and investment-type items (such as electricity or roads). In measuring government’s contribution to GDP, we simply add all these government’s contribution to GDP; we simply add all these government purchases to the flow of consumption, investment, and as well as net exports.

Hence, all the government payroll expenditures on its employees plus the costs of goods its buys from private industry (lasers, roads and airplanes) are included in this third category of flow of flow of products, called “government consumption expenditures and gross investment.” This category equals the contribution of central, state and local government to GDP.
Government *transfer payments* are government payments to individuals that are not made in exchange for goods and services supplied. Examples of government transfers include unemployment insurance, veterans’ benefits and old-age or disability payments. These payments meet important social purposes, but, since they are not purchases of current goods or services, they are omitted from GDP.

Thus if we receive a salary our salary from the government because we are the Scientists, our salary is a factor payment and would be included in GDP. If we receive a welfare payment because we are poor, that payment is not in return for a service but is a transfer payment and would be excluded from GDP.

One peculiar government transfer payment is the interest on the government debt. Interest is treated as a payment for debt incurred to pay for past wars or government programs and is not considered to be purchase of a current good or service. Government interest payments are considered transfers and are therefore omitted from GDP.

Finally, do not confuse the way the national accounts measure government spending on goods and services (G) with the official government budget.

The basic GDP accounts are of interest not only for themselves but also because of their importance for understanding how consumers and businesses behave. National Income (NI) represents the total incomes received by labour, capital and land. It is constructed by subtracting depreciation from GDP. National income equals total compensation of labor, rental income, net interest, income of proprietors and corporate profits.

The relationship between GDP and national income is shown in the first two bars of Figure 6-1. The left-hand bar shows GDP, while the second bar shows the subtractions required to obtain NI.

To get disposable income, you calculate the market and transfer incomes received by households and subtract personal taxes.
LESSON-26

METHODS USED FOR MEASURING OF NATIONAL INCOME

26.1. INTRODUCTION

Two methods are commonly used to measure National Product. Goods and services flow and earning flow. We can measure GDP in three entirely independent ways either as a flow of products or as a sum of earnings.

To demonstrate the different ways of measuring GDP, we begin by considering an oversimplified world in which there is no government, foreign trade, or investment or we can think in terms of closed economy. The product produced in an economy assume to be the only consumption goods, which are items that are purchased by households to satisfy their wants.

26.2. FLOW-OF-PRODUCT APPROACH

In the Flow-of-Product Approach, we include only final goods—goods ultimately bought and used by consumers. Households spend their incomes for these consumer goods, as shown in the upper loop of Figure 6-1. Add together all the consumption rupees spent on these final goods and services, we will arrive at this simplified economy’s total GDP. Thus, in our simple economy, we can easily calculate national income or product as the same of the annual flow of final goods and services for all other final goods. The gross domestic product is defined as the total money value of the flow of final products produced by the nation. National accountants use market prices as weights in valuing different commodities because market prices reflect the relative economic value of diverse goods and services. That is, the relative economic prices of different goods reflect how much consumers value their last (or marginal) units of consumption of these goods. Each year the public consumes a wide variety of final goods and services such as apples, computer software, and blue jeans; services such as health care and haircuts etc.

26.3. COST APPROACH

In the earning or cost approach, it flow all the costs of doing business; these costs include the wages paid to labour, the rents paid to land, the profit paid to capital, and so forth. But these business costs are also the earnings that households receive from firms. By measuring the annual flow of these earnings or incomes, statisticians will again arrive at the GDP.

Hence, a second way to calculate GDP is as the total of factor earning (wages, interest, rent and profits) that is the costs of producing society’s final products.

We have calculated GDP by the upper-loop flow-of—product approach and by the lower-loop earnings-flow approach. The surprise is that they are exactly the same.
We can see why the product and earnings approaches are identical by examining a simple barbershop economy. Say the barbers have no expenses other than labor. If they sell 10 haircuts at Rs. 8 each, GDP is Rs. 80. But the barbers’ earnings (in wages and profits) are also exactly Rs.80. Hence the GDP here is identical whether measured as flow of products (Rs.80 of haircuts) or as cost and income (Rs.80 of wages and profit).

In fact, the two approaches are identical because we have included “profit” in the lower loop along with other incomes. What exactly is profit? Profit is what remains from the sale of a product after you have paid the other factor costs—wages, interest and rents. It is the residual that adjusts automatically to make the lower loop’s costs or earnings exactly match the upper loop’s value of goods.

To sum up:

GDP, or gross domestic product, can be measured in two different ways

As the flow of final products—Product approach

1. As the total costs or earnings of inputs producing output—Income approach

2. Expenditure approach.

Because profit is a residual, both approaches will yield exactly the same total GDP.

In practice, economists draw on a wide array of sources, including surveys, income-tax returns, retail-sales statistics and employment data. The most important source of data is business accounts. An account for a firm or nation is a numerical record of all flows (outputs, costs, etc.) during a given period. We can show the relationship between business accounts and national accounts by constructing the accounts for an economy made up only of farms. The national accounts simply add together or aggregate the outputs and costs of the economy.

The nominal income refers to the actual amount which a person received in particular time of period may be in month or weekly which does not have the effect of inflation and which is fixed in any circumstances, for example if there is raise in the prices of the commodities it leads the prices to the inflation but there will be no effect on the nominal income holder as it is fixed, however in the real income scenario the inflation amount will affect the real income as it is to be deducted from the nominal income, hence

Real Income = Nominal income - Inflation,

Therefore we can say that real income is the good measure to know the actual purchasing power of the economy and good aggregate to calculate the national income.

26.4. CONCEPT OF INFLATION AND PRICE INDEX

The term "inflation" originally referred to increases in the amount of money in circulation, and some economists still use the word in this way. However, most economists today use the term "inflation" to refer to a rise in the price level. An increase in the money supply may be called
monetary inflation, to distinguish it from rising prices, which may also for clarity be called 'price inflation'. Economists generally agree that in the long run, inflation is caused by increases in the money supply. However, in the short and medium term, inflation is largely dependent on supply and demand pressures in the economy.

Other economic concepts related to inflation include:

Deflation – a fall in the general price level

Disinflation – a decrease in the rate of inflation

Hyperinflation – an out-of-control inflationary spiral

Stagflation – a combination of inflation, slow economic growth and high unemployment and

Reflation – an attempt to raise the general level of prices to counteract deflationary pressures.

Since there are many possible measures of the price level, there are many possible measures of price inflation. Most frequently, the term "inflation" refers to a rise in a broad price index representing the overall price level for goods and services in the economy. The Consumer Price Index (CPI), the Personal Consumption Expenditures Price Index (PCEPI) and the GDP deflator are some examples of broad price indices. However, "inflation" may also be used to describe a rising price level within a narrower set of assets, goods or services within the economy, such as commodities (including food, fuel, metals), financial assets (such as stocks, bonds and real estate), services (such as entertainment and health care), or labour.
LESSON-27

DIFFICULTIES IN MEASUREMENT OF NATIONAL INCOME

27.1. INTRODUCTION

We defined GDP as the total production of final goods and services. A final product is one that is produced and sold for consumption or investment. GDP excludes intermediate goods—goods that are used up to produce other goods. GDP therefore includes cheese but not milk and home computers but not computer chips.

For the flow-of-product calculation of GDP, excluding intermediate products poses no major complications. We simply include the bread and computers in GDP but avoid including the wheat and computer that went into the bread or the chips and plastic that went into the computers. If you look again at the upper loop in Figure 6-1, you will see that Cheese appear in the flow of products, but you will not find any milk on it.

What has happened to products like curd and whey? They are intermediate products and are simply cycling around inside the block. If they are not bought by consumers, they never show up as final products in GDP.
Upper-loop product approach to GDP will avoid including intermediate products. But when we use the lower-loop cost or earning approach? After all, when we gather income statements from the accounts of firms, won’t we pick up what grain merchants pay to wheat farmers, what bakers pay to grain merchants, and what grocers pay to bakers? Won’t this result in double counting or even triple counting of items going through several productive stages?

These are good questions, but there is an ingenious answer that resolves the problem. In making lower-loop earnings measurements, which include in GDP only a firm’s value added. **Value added** is the difference between a firm’s sales and its purchases of materials and services from other firms.
To avoid double counting of intermediate products, we calculate value added at each stage of production. This involves subtracting all the costs of materials and intermediate products bought from other businesses from total sales. Note that every black intermediate-product item both appears in column (1) and is subtracted in the next stage of production in column (2). How much would we overestimate GDP if we counted all receipts, not just value added? The overestimate would be 186 ` per loaf.

In other words, in calculating the GDP earnings or value added by a firm, we include all costs except for payments made to other business. Hence business costs in the form of wages, salaries, interest payment and dividends are included in value added, but purchases of wheat or steel or electricity are excluded from value added. Why are all the purchases from other firms excluded from value added to obtain GDP? Because those purchases will get properly counted in GDP in the values added by other firms.

Table 6-1 uses the stages of bread production to illustrate how careful adherence to the value-added approach enables us to subtract purchases of intermediate goods that show up in the income statements of farmers, millers, bakers, and grocers. The final calculation shows the desired quality between (1) final sales of bread and (2) total earnings, calculated as the sum of all values in all the different stages of bread production.

Value-added approach

To avoid double counting, we take care to include only final goods in GDP and to exclude the intermediate goods that are used up in making the final goods. By measuring the value added at each stage, taking care to subtract expenditures on the intermediate goods bought from other firms, the lower loop earnings approach properly avoids all double counting and records wages, interest, rent and profit exactly one time.
LESSON-28

IS GNP A GOOD MEASURE OF ECONOMIC WELL BEING?

28.1. INTRODUCTION

Advocates of the existing economic and social system often argue that market economies have produced a growth in real output because of the genius of free market. But GDP includes many questionable entries and omits many valuable economic activities.

Isn’t it true the GDP includes government production of bombs and missiles along with salaries paid to prison guards? Doesn’t an increase in crime boost sales of home alarms, which adds to the GDP? Doesn’t GDP fail to account for environmental degradation such as global warming?

In recent years, attempt to extend the boundaries of the traditional accounts by including important non market activities as well as correcting for harmful activities that are included as part of national output.

Many household activities valuable “nice-market” goods and services such as meals, laundering, and child-care services. Recent estimates of the value of unpaid household work indicate that it might be almost 50 percent as large as total market consumption. Perhaps the largest omission from the market accounts is the value of leisure time. Yet the value of leisure time is excluded from our official national statistics.

In addition to omitting activities, sometimes GDP omits some of the harmful side effects of economic activity. An important example is the omission of environmental damages. Our measure of output should not only add in the value of the electricity (which GDP does) but also subtract the environmental damage caused by the pollution (which GDP does not).

Considerable progress has been made in recent years in developing augmented national accounts, which are accounts designed to include both nonmarket and market activities. The general principle of augmented accounting is to include as much of economic activity as is feasible, whether or not that activity takes place in the market. Example of augmented accounts include estimates of the value of non-market investments in human capital, the value of unpaid home production, the value of forests, and the value of leisure time.

1. The national income and product accounts contain the major measures of income and product for a country. The gross domestic product (GDP) is the most comprehensive measure of a nation’s production of goods and services. It comprises the rupee value of consumption (C), gross private domestic investment (I), government purchases (G), and net exports (X) produced within a nation during a given year.

GDP = C+I+G+X
This will sometimes be simplified by combining private domestic investment and net exports into total gross national investment ($I^T = I + X$):

\[ GDP = C + I^T + G \]

2. The flow-of-cost approach uses factor earnings and carefully computes value added to eliminate double counting of intermediate products. And after summing up all (before-tax) wage, interest, rent, depreciation, and profit income, it adds to this total all indirect tax costs of business. GDP does not include transfer items such as interest on government bonds or welfare payments.

3. By use of a price index, we can “deflate” nominal GDP (GDP in current prices) to arrive at a more accurate measure of real GDP (GDP expressed in rupees of some base year’s purchasing power). Use of such a price index corrects for the “rubber yardstick” implied by changing levels of prices.

4. Net investment is positive when the nation is producing more capital goods than are currently being used up in the form of depreciation. Since depreciation is hard to estimate accurately, statisticians have more confidence in their measures of gross investment than in those of net investment.

5. National income and disposable income are two additional official measurements. Disposable income (DI) is what people actually have left—after all tax payments, corporate saving of undistributed profits and transfer adjustments have been made—to spend on consumption or to save.

6. Using the rules of the national accounts, measured saving must exactly equal measured investment. This is easily seen in a hypothetical economy with nothing but households. In a complete economy, *private saving and government surplus equal domestic investment plus net foreign investment*.

7. Gross domestic product and even net domestic product are imperfect measures of genuine economic welfare. In recent years, statisticians have started correcting for nonmarket measure such as unpaid work at home and environmental externalities.

Inflation occurs when the general level of prices is rising (and deflation occurs when it is falling). We measure the overall price level and rate of inflation using price indexes—weighted averages of the prices of thousands of individual products. The most important price index is the consumer price index (CPI), which traditionally measured the cost of a fixed market basket of consumer goods and services relative to the cost of that bundle during a particular base year. Recent studies indicate that the CPI trend has a major upward bias because of index-number problems and omission of new and improved goods, and the government has undertaken steps to correct some of this bias.
Mixed farming systems, in which crops and animals are integrated on the same farm, cover some 2.5 billion hectare of land globally. These farming systems produce 92 per cent of the global milk supply. Mixed farming systems are probably the most benign from the environmental perspective because they are, at least partially, closed systems. The waste products (crop residues) of one enterprise (crop production) can be used by another enterprise (animal production), which returns its own waste (manure) back to the first enterprise. As a way of diversifying the sources of income and employment for resource-poor farmers, mixed farming offers considerable potential for poverty alleviation in rural areas. Much of what is defined as farming systems research is nothing more than a series of studies on cropping patterns, which ignore the presence of livestock. Additionally, livestock research has tended to highlight component technologies and neglect social, economic and policy issues. Interventions have been applied widely, treating complex and diverse crop–livestock systems as a single production unit. To enhance productivity, the greater use of artificial fertilizers is reducing the use of animal excreta for supplying plant nutrients. This has major implications for the sustainability of cropping systems. On the Indo-Gangetic Plain, for example, the productivity of the rice–wheat systems is threatened because of the decline in soil organic matter content. The factors contributing to these overall changes include the growing human population pressures on arable land; the mechanisation of cultivation and rural transport; the increasing availability of crop residues and by-products; the growing market for meat and milk; and government interventions to promote animal production (Vaidyanathan, 1998). However, little is known about the relative contribution of these factors to the important regional variations that occur in animal densities; the ratios of work to milk animals, dairy cows to milk buffalo, large to small ruminants; and the extent of rain-fed to irrigated agriculture.

In Indian context, dairy has become more inclusive compared to crop production in the sense that has involved majority of the vulnerable segments of the society for livelihoods. Nearly two-thirds of farm households in India have been associated with livestock production, and 80 per cent of them have been small landholders (less than 2ha). About 54 and 16 percent of dairy animals are owned by the small and marginal farm households. Same group of farm households also poses maximum land holdings which clear reflects that how dairy animals and land was integrated in the Indian context. Similarly the households, who were basically landless, were also keeping about 13 percent of the dairy animals. It is also interesting to note that the distribution of dairy animals was far more even among the farm households than that of farm land suggesting that with efficient input and output support services, dairying can serve as a major economic activity for the small, marginal and landless farmers. About 36 percent households produces less than 500 liters milk, similarly another 27 percent between 500-1000 litres whereas only 15 percent households produce more than 2000 litres/annum and contribute 50 percent to the total milk production (59th NSSO, 2003).

In order to know major sources of household level income, we have used the NSSO 59th Situation Assessment Survey of Farmers (2002-03) unit level data. We have seen that there were four major
sources of income (receipts) like crop, off-farm, dairy farming and livestock farming (excluding dairy). Livestock keeping was the major sources of receipts for landless and marginal farmers. Landless farm earned about 43 percent of their income from livestock whereas about 41 percent income was solely from dairy. If we compare the non-livestock keeping farm households vs. livestock keeping farm households, then we observe that majority of the non-livestock keeping households depended mainly on off-farm source which were uncertain, time bound and volatile in nature. Thanks to MGNAREGA scheme which helped to maintain stability at household level income.

There has been an unprecedented growth in milk production, processing and marketing. Achieving further gain calls for innovative technology. New initiatives will lead to the emergence of modern dairying as a full-fledged agribusiness for enhancing human nutrition and generating mass employment, particularly in rural areas. More intensive dairying activities can raise the purchasing power of the less privileged sections of society. Scientific dairy farming is also helping develop a symbiotic relationship between the farmer and the industry. The future if India’s dairying will, no doubt, is a hi-tech one, although its base will continue to be in the hands of millions of small and marginal farmers as well as landless labourers.

The main reasons for the world focus on India are: one, low-cost economy; and. Two, continuing economic liberalization process initiated: low inflation rate; inexpensive labour; presence of the world’s third largest pool of technical manpower; the world’s largest democracy; a well-established independent judiciary free from government interference; and ease in communication due to widespread use of English by educated and professional class.
30.1. INTRODUCTION

India is the largest milk producing country in the world with milk production of 118 MMT (2010-2011). But from the productivity point of view, the productivity of Indian dairy cattle is very less and largely handled by unorganized sector. This chapter describes characteristics features of dairy sector of India.

30.2. MILK PRODUCTIVITY

The milk productivity of the animals in India has appeared low and there has been a high genetic variability in the economic traits of cows, so there is a vast scope for improvement of milk production and consequently increased marketable surplus of milk for processing. It is known that in the Indian context, the structure of milk production is largely based on low input and low-to-moderate output which fits into the resource endowments of small producers in terms of ownership of land, family endowment as also with common property resources. The farmers’ perception about input use and its outcome is usually traditional. However, certain regions of the country and certain segments of rural population, have taken up dairying progressively as a means of employment. The traditional farms of dairy enterprises have given way to commercial farms with escalation in average production, bringing in modernity in farm practices and use of dairy farm power and mechanization. In this context the commercial dairy farming, if practiced scientifically, is capable of giving a return on the investment to the tune of 20-25 per cent or more which only a few other occupations are able to do. Further, the cost of milk production can be reduced and dairy farming can be made more economical by integrating the fodder production, feed processing, production of milk and value added milk products and marketing into a chain under a single roof. The other factors responsible for promotion of commercial dairying are shrinkage of land holdings, the displacement of labour from crop farming as a result of mechanization, the introduction of high yielding crossbred cows, the easy accessibility of improved technologies and the fact that the cost of milk production in India is one of the lowest in the world. In view of these developments dairy with high yielding crossbred cows is receiving a lot of emphasis which has generated ample scope for developing commercial dairy farming.

India is one of those countries where cost of milk production at the farm-gate level is very low. Though it is of great comparative advantage, it is also important to note that India has a huge domestic market. The geographical location of India coupled with its neighboring countries being milk deficient, can help India to place herself in the potential milk export map of the world.

Another interesting characteristic of Indian dairy sector is that there is a symbiotic relationship exists between agriculture and dairy farming. The agriculture by products provide feed and fodder
for the cattle, whereas cattle provide necessary draught power for various agriculture operations, besides nutritional security and ready cash to farming families from sale of surplus milk.

30.3. HURDLES IN DAIRY FARMING

Despite India being the highest milk producer in the world, the productivity per animal is very low which is a result of poor genetic make-up, shortage of feed and fodder and inadequate health cover. Production of milk in Indian dairy sector has shown tremendous growth from 17 million tones (1950-51) to 112.5 million tones (2009-10). This transition from deficiency to sufficiency has been achieved by a series of policy interventions by the government.

There has been an unprecedented growth in milk production, processing and marketing. Achieving further gains call for innovative technology. New initiatives will lead to emergence of modern dairying as a full-fledged agribusiness for enhancing human nutrition and generating mass employment, particularly in rural areas. More intensive dairying activities can raise the purchasing power of the less privileged sections of society. Scientific dairy farming is also helping develop a symbiotic relationship between the farmer and the industry. The future of India’s dairying will, no doubt, is a hi-tech one, although its base will continue to be in the hands of millions of small and marginal farmers as well as landless labourers.

The quality of milk and its handling throughout the supply chain needs to be improved. This will cost a lot of money. But, it appears a sizeable segment of the market is willing to pay extra price for better quality milk and milk products. The answer appears to be simple: Investments in quality improvement can be charged to the high-end consumers through a higher price for better quality.

There is a need for intervention by the Government for providing financial assistance for improving quality of milk handled by non-organized sector/small-scale milk producers in rural areas scattered all over the country.

This is a good time for global dairy players to watch out for India. This is also a good time for the Indian dairy industry to look at the threats posed and the opportunities offered by rest of the world.

India has surely emerged as a competitive producer of milk and the Indian dairy industry as a modern cost-efficient player that can take on the world. These strengths cannot hide the weakness of poor quality milk coupled with a not very efficient public health enforcement structure. Globally this is a no-no situation.

It is clear that the rate of increase in milk production may not keep pace with the income increases. This may lead to imbalances particularly during drought years. That is the time a policy change may allow a ‘freer’ market. Watch out for the proverbial camel entering the tent

We cannot afford to forget them… The success for India’s dairy industry is not a story of the triumph of science and technology. There have been no miracles. The white Revolution was possible because we created structures that give our farmers control over the resources they create.

There are aspects of the Indian dairy industry, which make it different from the rest of the world. It’s neither a high energy-using industry nor a capital-intensive one! In fact, in terms of feed etc it relies on residues and by-products. So, in that sense it is a highly eco-friendly industry that recycles materials rather than adding to ecological imbalance. It contributes very substantially to income
generation in rural areas. Growth of the industry, over the years, has meant that almost 22 percent of the income of rural people is now coming from livestock. It’s really the income accruing to that segment of population, which is lower down in the income-earning range.

In terms of structural change, the question arises: What is necessary for the dairy industry to cope with new challenges in future? One certainty in near future is that the organized sector to private sector, like the cooperate sector, would also have a larger role in the industry. In developing scenario, we expect that the integration of the producer with the organized sector will be an important component of the structural transformation!

Looking ahead, the diary industry has a very ambitious agenda, whose prime objectives are productivity enhancement, institutional and structural change, quality upgradation and making an impact on the global trade. It is not clear why a cooperate with weak processing or marketing capabilities should not consider alliances with other cooperative or companies that will pay a fair price for the milk it procures? It is only wrong if such alliances deprive farmers of benefits they deserve, or if it places that benefit at risk. Such relationships can be maintained as long as they serve their members, interests; when they cease to do so, the partnership can be ended. Do we not see this happening to cooperative all over the world?
LESSON-31

DAIRY DEVELOPMENT STRATEGY WITH SPECIAL EMPHASIS IN POST-INDEPENDENCE ERA

31.1. INTRODUCTION

Dairy development has been transformed from the earlier phase (1970-80) of slow growth rate of milk production and its utilization in the form of value-added in milk products to a high growth rate of milk production and value-added milk products. It was due to the higher allocations under ‘Operational Flood’ programme in the Fourth Five-Year Plan, which was considered as the turning phase from deficiency to sufficiency in the Indian dairy history. This programme aimed at replicating the Amul Model of Milk Cooperative, which essentially ensured a favourable price regime to milk producers and mode of disbursal of prices through a fair and transparent system. The impact of this programme was reflected in the annual growth rates of milk production; the growth rate increased from 2.80 per cent per annum in 1970s to 6.72 per cent per annum during 1980s but declined subsequently the growth rate is at 4.04.

If we look at the decadal growth process of different promising milk producing states of India, it clearly indicates that there are some states such as Andhra Pradesh, Gujarat, Orissa and Uttar Pradesh where consistent and systematic growth process was achieved during 1990s and 2000s, the growth process continued during the Eleventh Five Year Plan period also whereas in other states, the growth process was found to be inconsistent and volatile.

31.2. MILK & MILK PRODUCTS ORDER (MMPO)

When the dairy industry was delicensed, pursuant to the Government’s new economic policy in 1991, it was felt necessary to have a framework to facilitate the healthy growth of the dairy sector. Accordingly, the Government notified the Milk & Milk Products Order (MMPO) 1992 under section 3 of the Essential Commodities Act to maintain and increase the supply of quality milk and milk products. The MMPO has since been amended from time to time to make it more liberal and growth-oriented in keeping with the Government’s Policies. The MMPO was last amended on March 26, 2002 when the concept of milk shed was done away with.

The Order currently stipulates registration of all units handling more than 10,000 litres of milk per day or 500 MT of milk solids per annum. It also lays down conditions of hygiene and sanitation for dairy operations. Registered units are also required to file basic information regarding their functioning regularly so as to update the national database on the dairy industry. Table 31.1 shows the number of dairy plant registered under MMPO (1992) as on 31/312010.

Along with the opportunities to proper, the dairy sector is faced with responsibilities and challenges. During the last few years, liquid milk marketing by dairy cooperatives has been growing at around 4 per cent on a low base while their milk procurement has been growing between 7-9 per cent on a much higher base. Though dairy cooperatives are currently selling 80 per cent of their procurement as liquid milk, the gap between the milk procured and liquid milk marketed has been growing significantly. If the current trend continues, the dairy cooperatives would be selling lesser and lesser proportion of their cured milk in...
liquid form. Such a situation would subject the dairy cooperatives and consequently their members to high risk because most cooperatives do not have adequate professional expertise and marketing infrastructure to manufacture and market value added consumer milk products. Also, they may be unable to cope with the marketing complexities involved in successfully managing the sales of large volumes of commodities with fluctuating prices.
Table-31.1: **Dairy plants registered under MMPO (1992)**

(Capacity in '000 liters per day)

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By State Registering Authorities

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(Source: Dairy Division, DAH&DF, M/O Agriculture)
Traditional dairy products are part and parcel of the Indian way of life both in rural and urban areas. Their production in the organized and non-organized sector is increasing. However, product technology and equipment as well as lack of suitable packaging materials and system remain major stumbling blocks in the way of adoption of these products by the organized sector. In this scenario, technologies suiting small scale production by entrepreneurs will play a crucial role in channelizing the traditional products through the organized sector.

Under the WTO regime, the Indian milk and milk products are highly vulnerable to international competition. Our dairy industry’s success in the competitive global market greatly depends on the milk producer who needs to be encouraged to produce quality milk which can then be suitably transported and transformed into products meeting high international standards. To achieve this goal, the first pre-requisite is to create right infrastructure for satisfactory milk collection cold chain. This critical component needs to be developed to take care of hygiene, cleanliness and quality of milk that are essential parameters for extending shelf as soon as the milk comes out of the udder.

The world average for milk production amongst cattle is 2,038 kg per lactation. The highest yield is over 9,000 kg in Israel, followed by 7,038 kg in the USA, 5,462 kg in UK and 4,451 kg in Australia. At the other end is: China 1,541 kg, Pakistan 1,179 kg and India 987 kg. The productivity data are not comparable due to diversity in the systems and management practices followed in different countries.

Within India, milk yields vary widely. At one end are herds in institutional farms, reared under modern management, with lactation yield of around 3,000 kg. At the other end are village-reared dairy animals with lactation yield as low as 400 kg. The cause of this low productivity is gradual genetic deterioration and neglect of animals over centuries. Continuing droughts, chronic shortages of feed and fodder, and poor nutritive value of feeds have also contributed to lower productivity and poor fertility of dairy animals.

Lactation yield of around 3,000 kg. At the other end are village-reared dairy animals with lactation yield as low as 400 kg. The cause of this low productivity is gradual genetic deterioration and neglect of animals over centuries. Continuing droughts, chronic shortages of feed and fodder, and poor nutritive value of feeds have also contributed to lower productivity and poor fertility of dairy animals.

Stagnant until 1970, India’s milk production began to rise, crossing 30-million tonnes in 1980, 50 million tonnes in 1989, 75-million tonnes in 1998, and is projected to cross the 100-million-tonnes in 2007. Some 47 per cent of India’s milk production comes from northern India, with Utter Pradesh contributing 16 million tonnes-producing more milk than countries such as New Zealand, Australia, Ukraine, Turkey. The milk surplus states in India include Utter Pradesh, Punjab, Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, Madhya Pradesh, Haryana, Tamil Nadu and Karnataka.

The crossbred cow has emerged as an important dairy animal with its animal yield surpassing that of buffalo. About 10 per cent of all cows-in-milk are crossbreds. Their contribution is estimated at 20 per cent of the total milk production. The crossbred technology has further augmented the viability of the dairy units by increasing the milk production per animal. A major advantage is that crossbred cows continue to produce milk in summer month when the buffalo milk output drops by as much as 50 per cent. Though popular, crossbreeding has yet to spread wide. The first extensive, systematic and frozen semen-based crossbreeding programme was initiated in 1963 in Kerala under the bilateral Indo-Swiss Project (ISP). This project resulted in the population of crossbred cows exceeding that of non-descript cows in Kerala. The success of ISP led to similar projects in other parts of the country. States that have sizeable crossbred population include Maharashtra, Punjab, Tamil Nadu, Utter Pradesh and Karnataka.
Table 31.2: Growth of milk production and per capita availability of milk in India

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(Source: Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Govt of India)

(Source: http://www.nddb.org/statistics)

Milk Procurement

The operation Flood laid a strong infrastructure of village Dairy Cooperative Societies (DCS), District Milk Union and State Milk Federations thus establishing an efficient milk procurement network. Creating such an infrastructure has been a major challenge for the private sector. It is true that enjoining milk producers to the dairy plant is expensive but it ensures that the milk received at reception dock is of the right quality and quantity. Most private dairy companies used collection and commission agents to collect milk and transport it to their processing plants. Some large dairy plants have established village collection centres can increase and linked them to intermediary chilling centres. Those who trust in procuring good quality milk are finding that the investment in bulk milk coolers at collection centres can increase the capital cost but gives the good returns in the long run. The small milk producers, who are often not
organized, are unable to obtain a reasonable share of the prevailing market price for their milk. Even the farmers who are members of dairy cooperatives do not get remunerative price for their milk if their cooperative is not professionally managed.

**Dairy as an Industry**

Until now India managed its dairy Industry will because it had to deal with shortage. It has today attained fair level of self-sufficiency. Would India face an age of milk surplus? Would India need to manage these surpluses and create the required processing capacities? A recent Rabobank study has projected the need for additional processing capacity of 86,866 tonnes/day by 2015 and 40,437 tonnes/day by 2010 requiring an investment of Rs 217 billion until 2010 plus Rs 101 billion in the period 2010-15. The bulk of this investment is expected by the private sector.

Will the private sector dominate the dairy sector handling around 20 per cent of India’s total milk production in 2011? Would the cooperative dairy sector consolidate and focus on quality of milk and milk products, but handle 10 per cent of the milk produced?

To extend its reach, the private dairy sector would need to set up rural milk procurement network similar to the cooperatives and reduce its dependence on intermediary milk collectors and transporters.

As per the livestock census, the cattle population declined from 198 million in 1997 to 185 million in 2003. The number of non-descript indigenous cows has declined by 10 per cent from 178 to 160 million. The number of crossbred cattle population has increased by 20 per cent from 20 million to 24.6 million, and the number of buffaloes has increased by 10 per cent from 89 million to 98 million.

Farm size is likely to consolidate. Will the number of commercial dairy farms having larger use hi-tech milking systems and technology to produce clean and wholesome milk.

The tree-fold challenge before the Indian dairy Industry would be to focus on; quality, product development and global marketing. The industry would have to pay more attention to HRD, R&D in milk product, equipment technology and exports.

Prevalence of heavy subsidies in the farm sector of developed countries and thereby, the probability of dumping dairy commodities in the domestic market have been major concern for less developed trade partners from the beginning of competitive multilateralism. Though antidumping measures and time-bound phasing out of subsidies are approved by all the Uruguay Round signatories, it is yet to convince that the inherent lacunae are eliminated and the trade environment has become transparent. For instance, in the case of manufactured goods, import of parts or components of the final product for assembly can still be made subject to the normal duties/tariffs. Probable reason for this has been that anti-dumping duties do not provide for anti-circumvention measures. Similarly in case of agricultural commodities, the subsidy levels in developed countries are maintained more or less the same by making suitable alteration in their terminologies. The significance of this in the context of less developed countries for their market competitiveness and foreign exchange earnings is quite alarming, since exports of agricultural commodities is one of the major source of their essential foreign exchange. Further this has the potential to collapse the dominating domestic economy sector. In this context however, the WTO a Agreement called for a fair comparison between export price and normal value in calculating the dumping margins of the commodities concerned. It further specifies that the administrative cost and profit shall be based on the actual data to determine the cost of production of the company/country alleged to be dumping.

Hence, enforcement of WTO agreements, prima facie, seems to be the most significant component for ensuring a transparent multilateral trade in agricultural and dairy commodities. The feasibility of enforcing
such a provision however, depends on the bargaining power of individual country or country groups in the world trade body.
Lesson-32

Dairy Development and Operation Flood Programme

32.1. INTRODUCTION

The purpose of operation flood (OF) programme is to replicate Anand pattern co-operatives throughout India. It was proposed that the state governments could use their own funds in their own way to develop dairying activities in their own way, but the additional funds available under operation flood was to be used for replacing Anand Pattern Co-operatives.

32.2. FORMULATION OF OPERATION FLOOD PROGRAMME

By 1968, National Dairy Development Board (NDDB) had formulated first phase OF. This was aimed to capture commanding share of the milk market for public dairies in the four metropolitan cities of Bombay, Madras, Calcutta and Delhi. Modern processing dairies were to be established in rural areas with high milk fat for recombination. These modern processing dairies of rural areas (milk shed) were required to supply liquid milk to metro cities. The rural dairies also helped balance seasonal fluctuations in milk production through the separation of milk fat and other solids in the surplus seasons and their storage to be used in lean season.

NDDB was successful in obtaining Indian Government approval to accept the project and FAO-WFP (Food and Agricultural Organizations – World Food Programme) to fund it through a special mode wherein the WFP was to donate 42,000 tons of butter oil and 1.26 lakh tons of skimmed milk powder over a period of five years. These donated items were to be recombined and sold through the existing dairy system at current prices. It was envisaged that it will generate 954 million over the life of the project. The funds obtained through sale of commodities during the project was to be utilized for pursuing various of activities. Indian Dairy Corporative (IDC) was created in 1970 to handle the gifted commodities which was later on merged with NDDB.
### Table 32.1: Operation flood at a glance

<table>
<thead>
<tr>
<th>Parameters</th>
<th>1971</th>
<th>Phase – I</th>
<th>Phase – II</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1981</td>
<td>1985</td>
<td>1996</td>
</tr>
<tr>
<td>No. of Milk Sheds</td>
<td>5</td>
<td>39</td>
<td>136</td>
<td>170</td>
</tr>
<tr>
<td>No. of DSC (<em>000</em>)</td>
<td>1.6</td>
<td>13.3</td>
<td>34.5</td>
<td>70.0</td>
</tr>
<tr>
<td>No. of Farmer Members (Lakh)</td>
<td>2.8</td>
<td>17.5</td>
<td>36.3</td>
<td>90.0</td>
</tr>
<tr>
<td>Av milk Procurement (lkpd)</td>
<td>5.2</td>
<td>25.6</td>
<td>57.8</td>
<td>115.0</td>
</tr>
<tr>
<td>Peak milk procurement (lkpd)</td>
<td>6.5</td>
<td>34.0</td>
<td>79.0</td>
<td>140.0</td>
</tr>
<tr>
<td><strong>Processing Capacity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural dairies (LLPD)</td>
<td>6.8</td>
<td>35.9</td>
<td>87.8</td>
<td>193.7</td>
</tr>
<tr>
<td>Metro dairies (LLPD)</td>
<td>10.0</td>
<td>29.0</td>
<td>35.0</td>
<td>72.40</td>
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<tr>
<td><strong>Milk Marketing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metro Dairies (LLPD)</td>
<td>NA</td>
<td>21.8</td>
<td>29.5</td>
<td>38.0</td>
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<tr>
<td>Other Cities and towns (LLPD)</td>
<td>0.9</td>
<td>6.1</td>
<td>20.6</td>
<td>62.0</td>
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<tr>
<td>Total Marketing (LLPD)</td>
<td>NA</td>
<td>27.9</td>
<td>50.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Milk powder production (*000 tonnes / yr)</td>
<td>22.4</td>
<td>76.5</td>
<td>102.0</td>
<td>195.0</td>
</tr>
<tr>
<td>Milk drying capacity (tonnes / day)</td>
<td>NA</td>
<td>261.0</td>
<td>507.5</td>
<td>974</td>
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<tr>
<td><strong>Technical Inputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>No. of AI Centres (*000)</td>
<td>NA</td>
<td>4.9</td>
<td>7.5</td>
<td>16.5</td>
</tr>
<tr>
<td>No. of AI done (lakh)</td>
<td>NA</td>
<td>8.2</td>
<td>13.3</td>
<td>39.5</td>
</tr>
<tr>
<td>Cattle feed capacity (*000 tonnes / day)</td>
<td>NA</td>
<td>1.7</td>
<td>3.3</td>
<td>5.0</td>
</tr>
<tr>
<td>Investment (Rs. Crores)</td>
<td>NA</td>
<td>116.54</td>
<td>277.17</td>
<td>1303.10</td>
</tr>
</tbody>
</table>
32.3. Impact of Operation Flood (OF)

1. Wide Coverage: After its inception in 1970, the OF programme was extended to 170 milk sheds, covering around 65,469 dairy co-operatives with 8.4 million milk producers.

2. Production Capacity: The total handling capacity of all the rural dairy factories established under OF was 16.0 million liters of milk for day, milk powder manufacturing facility of nearly 786 tons per day.

3. Participation of Small Farmers:
The focus of Programme was on small farmers. From all the farm families covered under OF, 21 percent had no land, 66 percent were small and marginal farmers owning less than four hectares of land over 70 percent of families had only two milch animals or less, while only 10 percent of families owned more than two milch animals. Thus, looking to the coverage pattern of families which clearly indicate dominance of small milk producers, it can be said that of has been a development programme aimed at less privileged rural class for improving their socio economic status.

32.4. OBJECTIVES OF OF

1. Managing milk procurement through economically viable village dairy co-operatives in the milk sheds at remunerative prices.

2. Providing good marketing of rurally produced milk and dairy products by

(a) Establishing rural dairy plants to process all the milk supplied by milk producers and ensure adequate supply of milk to consumers throughout the year.

(b) Facilitate regional and seasonal balance of milk supply and demand by developing a basic transportation and storage network.
Economic Analysis

(c) Increasing the capacities of city milk plants and establishing new plants.

3. Increasing the share of modern of dairies in the main urban milk markets.

In conclusion it would be best to characterize of as a targeted, focused, development programme. The target is to link milk production to its marketing through modern processing. The focus is on good potential milk sheds and farmers with relatively small production based.
REFERENCES


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