

SECTION I

MICROECONOMICS

Economics—its Subject Matter

Nature has blessed the humans with abundant natural wealth to live on this earth. Humans would have been contented with what nature provided, had they been able to peg their wants (requirements) at a given level. But it is not so, man being born in this world is influenced by biological, physical and social needs, which keep him always busy in searching out the means to keep him satisfied. To fulfill his requirements arising out of various needs, he involves in an activity called economic activity. Conversely, man would have freed himself from economic activity, had there been no resource scarcity and also what humans want can be satisfied without limit. But neither of the possibilities being found because of the scarcity of resources imposed by the nature, humans always deeply engage in arriving at an equation, which balances their unlimited wants and limited means. By engaging themselves in the economic activity people aim at maximizing their satisfaction from their scarce resources. Thus, scarcity is the pivot for the economic activity of the people representing consuming and producing segments leading to the origination of a field of study called economics. The field of economics keeps on going as long as the human race exists on the earth with their toiling to satisfy their ever-new and ever-emerging wants and satisfying the same through their efforts. Thus, the field of economics constitutes wants, efforts and satisfaction. These also form the subject matter of economics. The subject matter when examined further reveals the participation of two different economic agents *viz.*, consumers and producers in the economic activity. Consumers, given their income levels would attempt to satisfy their wants which have been short-listed based on the degree of urgency from unlimited wants. In this process the consumers fulfill the goal of maximization of satisfaction by consuming the goods and services that can be purchased given the limitation of money. The other participants in the economic activity are the producers. They employ all the necessary factors of production (inputs) and bring out goods required by the consumers.

DIVISIONS OF ECONOMICS

Traditional Approach

Traditionally, the subject matter of economics can be studied under four divisions. These are consumption, production, exchange and distribution.

Consumption

It means the use of wealth to satisfy innumerable wants. It also means the destruction of utility. All the goods that are produced are consumed immediately or some time in future. Through the consumption activity, we use utilities hence consumption represents using up of utilities.

Production

It is an activity that helps to create utility. It simply means the addition of utilities. Hence production is defined as the creation of utility. Through the process of production one set of goods is transformed into the other. In the economic sense mere creation of utilities is not treated as production, and in fact the goods that are produced should have value too. In the production process, inputs or resources are transformed into products.

Exchange

The word exchange of goods implies transfer of goods from one person to the other. Exchange of goods takes place among groups of individuals, countries, markets, regions and so on. The exchange of goods leads to an increase in the welfare of the individuals through creation of higher utilities for goods and services.

Distribution

It refers to the sharing of wealth produced by the community among the agents of production. Proper distribution of wealth and resources leads to growth and economic welfare of the people in the nation.

MODERN APPROACH

Microeconomics and Macroeconomics

As against the traditional approach, modern approach treats microeconomics and macroeconomics as the two basic divisions of economics.

The term "microeconomics" has been derived from the Greek word "*MICROS*" meaning small. In other words micro means a millionth part. It is otherwise known as price theory. It focuses on price determination. Microeconomics fundamentally deals with economic behaviour of individual economic units such as consumers, resource owners and business firms. It is concerned with the flow of goods and services from business firms to consumers and also the flow of resources or their services from resource owners to business firms. Microeconomics covers theory of consumer behaviour, theory of value (product pricing and factor pricing) and theory of economic welfare. Microeconomics is somewhat abstract because it cannot include all the economic activities of real world.

The term macroeconomics has been derived from the Greek word "*MAKROS*" meaning large. Macroeconomics otherwise is called income theory. It treats the economic system as a whole, rather than treating the individual economic units of which it is composed. Macroeconomics is concerned with the value of the overall flow of goods and the value of the overall flow of resources. Thus, it covers, theory of income and employment, theory of money and prices, banking, theory of economic growth, macro theory of distribution, general equilibrium analysis, policy formulation and

analysis, etc. Thus, it is concerned with the study of aggregates.

Though distinction exists between microeconomics and macroeconomics, both are essential for a thorough understanding of the economy.

DEFINITIONS OF ECONOMICS

The word economics has been derived from the Greek word “*OIKONOMICAS*” with “*OIKOS*” meaning a household and “*NOMOS*” meaning management. It is understood that the beginning was made by the Greek Philosopher, Aristotle who in his book “*Economica*” focussed that the field of economics deals with household management. The economists in defining the term, economics followed several approaches and concepts. The concepts on which various definitions of economics given are 1) Wealth 2) Welfare 3) Scarcity and 4) Growth.

‘Wealth’ Definition of Economics

Adam Smith (1776) who is regarded as “*Father of Economics*” in his book, entitled “*Wealth of Nations*” defined economics as “*An enquiry into the nature and causes of the wealth of nations*”. J.S. Mill, another classical economist* defined economics as “*The practical science of production and distribution of wealth*”.

Here, the term, economics is defined as the field of science concerned with wealth. Wealth in this context refers to abundant supply of money or affluence. These definitions invited the criticism of Carlyl as he called economics as a ‘dismal science’.

‘Welfare’ Definition of Economics

Alfred Marshall came out with a new concept in the definition of economics towards the end of 19th century. He defined economics as “*A study of mankind in the ordinary business of life: it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of well-being*”.

This definition of economics has received the acceptance of a number of economists, as it considered that wealth was not the end itself but a means of achieving welfare, i.e., it is a source of attaining human welfare. However, the idea of Marshall was condemned by Lionel Robbins on the points that economics was treated as a social science rather than a human science; and the term “human science” is more apt on the ground that any individual either as a member of a society or in isolation does have economic problems. Secondly, emphasis on material requisites of well-being was objected, as demarcation was created between material and non-material activities, when both are equally important. Thirdly, his approach of economics is limited to the study of mankind in the ordinary business of life, leaving the human life in the extra-ordinary business of life such as famines, wars, etc., is another point of criticism.

‘Scarcity’ Definition of Economics

Lionel Robbins opposing the Marshall’s definition putforth the following definition based on the scarcity concept. “*Economics is the science which studies human behaviour as*

* Classical school: The economists who wrote on economics during the period 1750-1850, often known as the classical economists and who formulated a systematic body of economic principles for the first time. The principal members of the school were Adam Smith, Malthus, Ricardo, Nassau Senior, James Mill, John Stuart Mill and Bentham.

a relationship between ends and scarce means which have alternative uses" according to Robbins. In this definition 'ends' indicate human wants. 'Means' are the resources with which wants are fulfilled. Though the resources are scarce, they have numerous alternative uses. This definition examines as to how an individual either as a consumer or a producer or a businessman, *etc.*, shortlists the unlimited wants in the light of limited available resources. Indeed, this is an important aspect of human behaviour.

Robbin's definition is superior to 'wealth' and 'welfare' definitions because 'welfare' aspect is embodied in the definition and 'wealth' is represented as means which is always scarce. However, some limitations were pointed out with Robbin's definition. 'Scarcity' is not the problem always and 'abundance' also gives rise to problems, which was not recognized by Robbins. His definition treats economics as a positive science only without touching normative aspects of economics. It has not taken into account the growth aspect of the economy, the dynamic nature of adjustment, *etc.*

'Growth' Definition of Economics

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

Keynes defined economics as *"The study of the administration of scarce resources and of the determinants of employment and income"*.

IS ECONOMICS A SCIENCE OR AN ART?

By definition science is a systematized body of knowledge having an empirical correspondence. Analogous to science, an art is also systematized body of knowledge. It directs through a system of procedures to attain a given objective or goal. It tells us how to do a thing.

Treating economics as a science, a given theory is formed through conduct of experiments, recording observations, analysis of data recorded, drawing the conclusions and finally testing them. In economics also the same procedure is followed to present any principle or theory. Hence economics is as good as any science. Only the question is regarding precision. The scientific experiments are conducted under laboratory conditions, while economic theories are subjected to several causal factors that influence human behaviour. The situation of controlled experiments in economics is not a possibility, since it deals with human behaviour, which is unpredictable. This indicates the fact that the degree of precision of economics as a science is less, when compared with the pure sciences, but nonetheless economics is a science.

As an art, economics shows solutions to the problems. It helps us how to do a thing. The role of economics as an art can be found in any sphere of economic activity. For example, it advocates how to maximize the profits of a firm given the resource constraints. Given a problem, the field of economics guides us to solve the same. Thus, the field of economics has the attributes of science and art. Economics therefore is a science as well as an art.

ECONOMICS—A SOCIAL SCIENCE

Economics studies human beings as members of the society participating in the economic activities. It does not study humans as isolated individuals. He is interdependent. Thus economics is a social science.

ECONOMICS—POSITIVE SCIENCE OR NORMATIVE—SCIENCE

In economic theory, we make an effort to explain the nature of economic activity and predict the events in the economy as facts change. Such an effort helps us to know the environment in which we live and what part is related to others and what causes what. Economists differentiate between positive economics and normative economics. Positive economics is completely objective and is limited to the cause and effect relationship of economic activity. It is simply concerned with the way the economic relationships are present in different economic activities (what they are).

Normative economics studies the way that economic relations ought to be. Normative economics evaluates. Policy making, a conscious intervention in the economy for the welfare of the people is essentially a normative in character.

METHODS OF ECONOMIC INVESTIGATION

Every field of science follows certain methods to formulate the laws or principles. There are two methods followed in the scientific study of economics. They are: 1) Deductive method and 2) Inductive method.

Deductive Method

Economists belonging to classical school *viz.*, J.S. Mill and Bacon advocated this method. This method is called analytical or abstract or apriori method. Here the economists proceed from general to particular. It proceeds from certain fundamental assumptions or truths. Through this method theoretical abstractions are derived from the real world. We further analyse these abstractions and hypotheses with the data and finally make logical conclusions about the objectives of the research studies.

Inductive Method

This method is known as historical or empirical or posterior method. The economists belonging to historical school like Roscher, Frederick, *etc.*, advocated this method. In this method facts are generated through surveys. Here the investigator moves up from particular to general. It is a realistic method because, it is based on facts. We collect data from sample units and analyse the data and infer or draw conclusions relevant to the study. Here we give importance to the predictive power of models.

Though distinction does exist between deduction and induction methods both are needed for scientific investigation, as neither deduction nor induction alone is suffice to formulate and test theories, hypotheses and economic laws.

ECONOMIC LAWS

Economic laws are the principles that govern the actions of the individuals in their economic activities. Just like any law of science, economic laws too are conditional *i.e.*, applicable when certain conditions are fulfilled. What economists do is that they consider the basic factors into account while developing a theory, keeping other factors influencing the theory as constant. This implies that for developing a theory in economics some kind of abstraction is necessary. There is an important role for assumptions.

"Economic laws are statements of uniformities, which govern human behaviour concerning the utilization of limited resources for the achievement of unlimited ends (Robbins)".

Characteristics of Economic Laws

1. *Economic Laws are not the Governmental Laws:* The laws of Government are very stringent and any violation of these laws amounts to punishment. Economic laws, on the other hand, are applicable, only if certain conditions are satisfied.
2. *Economic Laws are Merely the Statements of Tendencies:* These are based on the tendencies of humans who behave in a particular way to a given phenomenon. This is the expected behaviour. This expected behaviour, however may not be found, for certain reasons. This leads to unpredictable character of economic laws. Certainty is one thing, which is not guaranteed with regard to economic laws.
3. *Economic Laws are Hypothetical:* These hold good under the assumption of a number of things. Economic laws are characterized by the phrase *ceteris paribus* (other factors are held constant).
4. *Economic Laws are Positive but not Normative:* They only describe the economic phenomenon but do not prescribe how it should be.
5. *Some Economic Laws are Axiomatic in Character:* It means that they are self-evident as that of law of diminishing marginal utility and generalizations drawn are universally valid.
6. *Economic Laws Lack Exactness of the Laws of Science:* This prompted Marshall to compare the economic laws to the laws of tides rather than the simple laws of gravitation.

Basic Concepts in Economics

Basic concepts in the field of economics are discussed below:

GOOD

Anything that satisfies a human want is called good. Goods are tangible and material outcome of production. *Examples:* Foodgrains, pulses, oilseeds, machinery, implements, seeds, fertilizers, cloth, book, pen, *etc.*

SERVICE

A service is any act or performance that one party can offer to another *i.e.*, essentially intangible and does not result in the ownership of any thing. Services are intangible, non-material, inseparable, variable and perishable. The services rendered by doctors, teachers, lawyers, engineers, labourers, *etc.*, are the examples.

CLASSIFICATION OF GOODS

Goods are categorized based on four criteria *viz.*, supply, transferability, consumption, and durability as given below:

Based on Supply

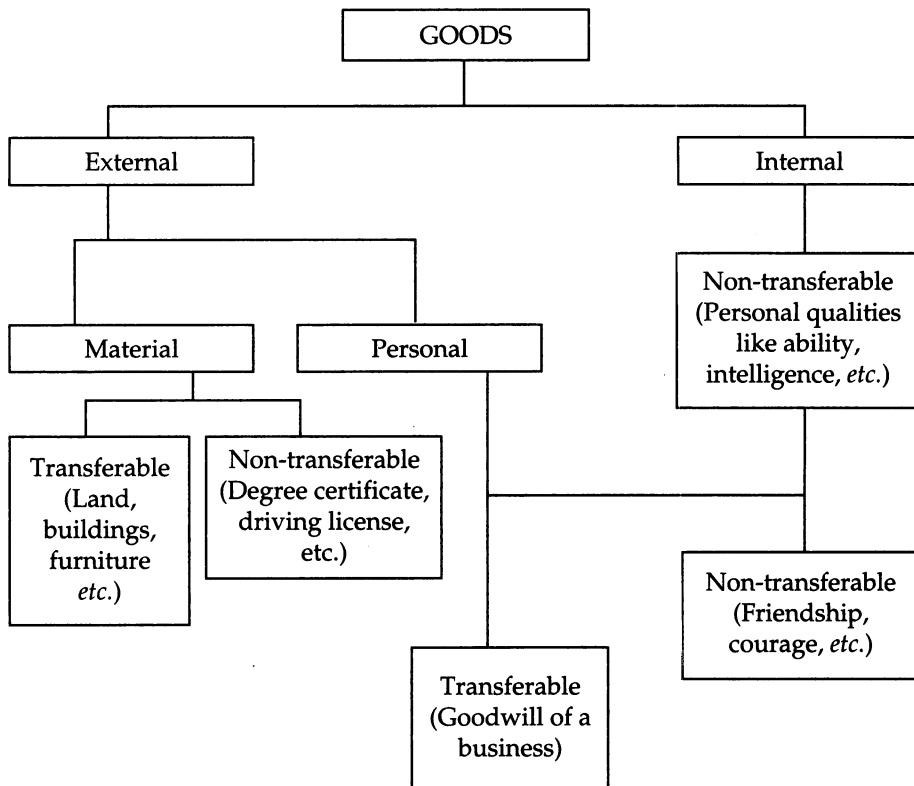
Based on supply, goods are classified into economic goods and free goods. Economic goods are those goods, which are produced through human efforts and are to be purchased at a given price. Supply is less than demand. They have value in use and value in exchange. Buildings, machinery, furniture and a host of other goods of our daily use are the economic goods. Free goods are the free gifts of nature. Their supply is more than demand and one can get to the extent they need. No efforts are needed to be put forth by humans to secure free goods. Since these are freely available in nature, no price needs to be paid. They have value in use but no value in exchange. Examples are, air, sunshine, rainfall, *etc.*

Though a clear distinction is made between free goods and economic goods based on their distinct characteristic features, the distinction between the two is lost under certain situations. Water, which is a free good near the canals and rivers for the consumers, becomes an economic good in the water scarcity places. Similarly, sand

which is a free good in riverbeds becomes an economic good in the places of house construction activities.

Based on Transferability

As given by Marshall, goods are classified as follows based on transferability.



Based on Consumption

Based on consumption, goods are classified into consumer goods and producer goods.

Consumer Goods

Consumer goods are those from which consumers directly derive the satisfaction using the goods. These are otherwise known as goods of first order in view of their ability to give direct satisfaction. Food, cosmetics, clothes, books, pens, *etc.*, are the examples of consumer goods.

Producer Goods

Producer goods are those that help to produce other goods. They can be used by consumers or producers or both, because it depends upon how the good is used. From the consumers' point of view they give satisfaction indirectly. The examples are

machines, factory buildings, raw material, *etc.* The chance of a producer good to become a consumer good is possible based on its usage. For instance, electricity when used at home, it becomes a consumer good and the same becomes a producer good when used in industry.

Based on Durability

Based on durability goods are classified into mono period goods and poly period goods (durable goods). Those goods which are used only once to satisfy a need are called mono period goods. They cease to exist once their use was over. *Examples:* All food items and productive resources like seeds, fertilizers, *etc.*

Durable goods are those goods, which are used time and again. They can be made use of several times. Here the relevant examples are, machinery, implements, buildings, *etc.*

UTILITY

In the process of economic activity, consumers exhibit their desire to possess a good and/or service. Desire for a good arises in view of the utility the consumers derive from the purchase of that particular good. If the consumers feel that they can not derive utility from the possession of a good, they pay least attention for the same. Utility therefore is the capacity of a good that satisfies a human want. In other words, utility is the want satisfying power of a good. Also it means the power of a commodity to satisfy a human want.

Kinds or Types of Utility

Utilities are classified into different kinds. A particular kind or type of utility for a commodity is found in a particular situation. The kinds of utilities are 1) Form utility 2) Place utility 3) Time utility and 4) Possession utility.

1. Form Utility

By changing the form of a good, greater utility is created. It does not mean that before change of form of good, there was no utility. It means that change in the form offers greater utility to the good. *Examples:* Processing of paddy into rice, wheat into flour, coffee seeds into coffee powder, butter into ghee, cotton into cloth, *etc.* The goods or commodities, which assume new forms thus will have certainly high utility and high value.

2. Place Utility

By virtue of its position in an area, the commodity will have different utilities. Such utility is called place utility. Spatial movement of the goods *i.e.*, moving a good from one place or market to another place or market increases its utility. Mostly the goods are transported from the places of production down to the places of consumption and also from the places of surplus production to the places of scarcity. For example, cement is transported from the places of production to the areas of consumption, similarly fertilizers are made available to the farmers by transporting them from the factories. Apples from Himachal Pradesh, the area of abundant production are transported to Southern and Western parts of the country (non-producing areas), thereby increasing the utility of apples. For scarce commodities in two different places depending upon

demand and supply, utilities vary. Similarly, at production centres and consumption centres, utilities change for different commodities. Production does not necessarily mean conversion of raw materials into products. It also implies creation of place utility, since goods are made available in the areas of scarcity.

3. Time Utility

Any time lag between production and consumption of commodities creates time utility. Through storage over time, greater utility is created for the products. Storage helps to create time utility. Agricultural production being season bound with consumption spreading throughout the year, the commodities need to be made available to the consumers as and when required. The storage helps us to perform this function. Agricultural commodities like paddy, wheat, oilseeds, pulses, *etc.*, are stored to make them available for the regular use of consumers throughout the year. In doing so, higher utility for commodity is imparted which we call, time utility.

4. Possession Utility

Commodities in the transaction process, change the hands from one person to another person. Commodities in the hands of producers have some utility and by the time they reach consumers through the traders their utility is increased. Such utility due to possession or transfer of ownership of the commodity is called, possession utility. For example, paddy in the hands of producers, *i.e.*, farmers are having less utility compared to that of consumer in the form of rice. Similarly any other commodities like fruits, vegetables, livestock products, *etc.*, would have higher utility when these goods change hands from farmers. Such a rise in the utility of commodities due to possession is called possession utility.

Characteristics of Utility

1. *Utility is Subjective:* Utility is not satisfaction by itself, it is subjective to the interest of an individual. It depends on the individual's frame of mind. Hence a given commodity need not bring the same utility to all the consumers. Utility varies from person to person. For example, non-vegetarian food to a vegetarian, alcohol to a teetotaler, motorcycle to a child, *etc.*, give zero utility. Utility varies with a regular smoker when compared with an occasional smoker and similarly for a regular non-vegetarian to an occasional non-vegetarian. Utilities derived by the occasional users of a good are greater than those of regular users.

2. *Utility Varies with Purpose:* Depending upon the purpose for which a commodity is used, utility of the same varies. For example, utility derived from water varies from its use as drinking water against its use as irrigation or for power generation or for industrial use, *etc.* Similarly, rice bran as cattle feed against using it for extracting oil and cotton for beds against cloth, *etc.*, have different utilities.

3. *Utility Varies with Time:* A particular commodity gives different utilities for the same person in different time periods. Cool drinks and ice-creams provide greater utility to the same individual in summer than in winter. Availability of tractor gives more utility to the same farmer during sowing season against off-season. The wine stored over time in scientific warehouses would have higher utilities and fetch higher price.

4. *Utility Varies with Ownership:* Ownership of a good creates far greater utility from a good than that when it is hired. For a farmer, land ownership brings higher

utility over leasing in the land. Similarly, owning farm machinery offers greater utility than hiring in, for a farmer.

5. *Utility Need not be Synonymous with Pleasure:* Utility derived from a commodity need not be associated always with pleasure for the consumer. Consuming items of our taste brings in the utility one expects. Similarly, buying an asset also gives the desired utility. These are all the pleasures enjoyed by the consumer from the goods. As against this, consumption of a good is a painful feeling for an individual though it possesses utility. For example, for a sick man, bitter medicines are difficult to swallow. Similarly, restricted dietary items on the health grounds are certainly not those which bring pleasure, though they possess utility.

6. *Utility does not Mean Satisfaction:* Utility is not satisfaction by itself. Utility is the quality of a good by virtue of which it gives satisfaction to an individual. The question of obtaining satisfaction from a good depends on the consumer's choice for the same.

VALUE

It is the capacity of a good to command other things in exchange. It is the rate of exchangeability. In reality, value can be used as value-in-use as well as value-in-exchange. Free goods have value-in-use and not value-in-exchange. Economic goods possess both value-in-use and value-in-exchange. But in economics always the term, value means value in exchange.

Attributes of Value: Following are the attributes, which make the goods possess value.

1. Goods must possess utility
2. Goods must be scarce; and
3. Goods must be transferable or marketable.

PRICE

When the value of a good is expressed in terms of money, it is called price. Price expresses value in terms of money.

WEALTH

In ordinary language wealth is synonymously used to mean riches. Wealthy man is the one who is blessed with riches. But in the economics, the term, wealth conveys a different meaning. Anything, which has value is wealth. When one says value, only economic goods possess value. Consequently economic goods represent wealth.

Wealth consists of all potentially exchangeable means of satisfying human wants needs (J.M. Keynes).

Characteristics of Wealth

1. *Wealth should Possess Utility:* Wealth must be capable of satisfying human wants.
2. *Wealth Must be Scarce:* Scarcity is the binding factor for exchange. Economic goods are exchangeable. Since wealth represents economic goods, it must be scarce.
3. *Wealth Must be Transferable:* Transferability implies changing the ownership of a good from one to another. It is nothing but exchangeability.
4. *Wealth Must be External to Person:* This quality of wealth enables for exchange.

Individual competencies do not represent wealth, for these form a source of wealth. Skill of a surgeon, architect, artist, *etc.*, are individual qualities which help them to earn wealth. These do not satisfy all the characteristics of wealth.

Types of Wealth: These are 1) Individual wealth 2) Social wealth 3) National wealth 4) Cosmopolitan wealth and 5) Negative wealth.

1. *Individual Wealth:* Individual wealth consists of all tangible and intangible possessions of the individuals, besides loans due to them. Land, buildings, vehicles, shares, bonds, deposits, commodities for sale, cash, *etc.*, are the tangible possessions. Goodwill of a business, copyrights, patents (non-material external goods), *etc.*, are intangible possessions. From the total value of all these possessions, loans owed to others are to be deducted to arrive at the individual wealth.
2. *Social wealth:* It is wealth, which is collectively used by all the people in a nation. Hence it is also termed as collective wealth or communal wealth. Common properties of the community like roads, railways, public parks, libraries, Government hospitals, Government colleges, *etc.*, represent the social wealth.
3. *National Wealth:* National wealth is an aggregate of all individuals' wealth and collective wealth of the country. To this amount the loans due to people and loans due to the Government from foreign countries should be added. From this amount so arrived at, the debts that the people and the Government owed to foreign countries should be deducted. Economists like Marshall feel the inclusion of free gift of nature like mountains, rivers, *etc.*, in national wealth.
4. *Cosmopolitan Wealth:* Here the wealth belongs to the world but not to one country. Rivers, oceans, forests, *etc.*, extending over the nations are the examples of cosmopolitan wealth. It is the sum total of wealth of all nations.
5. *Negative Wealth:* Negative wealth is the exclusive debts owed by the individuals and the nation.

Wealth and Welfare: A Comparison

Wealth and welfare apparently appear to carry the same meaning, but they are two different aspects having relationship. Wealth as defined earlier, is used in the sense of economic goods. Free goods have no place while representing wealth. Once we say economic goods the question of good and bad from social point of view is ignored. As long as they are economic goods, it hardly matters whether they are harmless or harmful. Therefore, economic goods represent both harmless and harmful goods. Wealth is a path for welfare, as most of our desires are satisfied by means of wealth.

Welfare is the well being of individual or community. It refers to the condition of mind. Here, any good whether it is free or economic, is counted as long as it causes well being of an individual or community. Both economic and free goods lead to welfare. Welfare is one, which is never associated with any unacceptable things. Welfare is subjective as it differs from individual to individual.

Consumer Behaviour and Demand

The theory of demand begins with the analysis of the behaviour of consumer, since the market demand is the summation of the individual consumers. Consumption decisions are made by individual or household groups. Consumer is assumed to be rational. Based on his income and the market prices of various goods and services, he plans spending of his income with the aim of attaining maximum possible utility or satisfaction.

HUMAN WANTS

Economic activity of the humans is directed towards the satisfaction of their wants. The fulfillment of human wants generally is considered as the goal of economic activity. Wants of different sections of the people in the society *i.e.*, wage earners, salaried class, businessmen, political leaders, *etc.*, may vary. Similarly importance attached by each group for a given want also varies.

Characteristics of Human Wants

1. *Wants are Unlimited:* Wants are continuously cropping up in the minds of the humans. If one want is satisfied, immediately another want emerges. They go on multiplying. There is no end to human desires, hence unlimited.
2. *Wants Recur:* If one want is satisfied at a point of time, the same want again repeats in the future. It can be satisfied for that moment only and it is again ready to be fulfilled. Wants like hunger, recreation, *etc.*, need to be satisfied time and again because of their recurrence.
3. *A given Want is Satiabile:* Though human wants are unlimited, a given want at particular point of time is completely satisfied. For example, for a man who is thirsty, adequate potable water completely satisfies his thirst.
4. *Wants are Complimentary:* Goods are required in pairs or groups to satisfy human wants. For example, bread and butter, tractor and driver, fertilizer and irrigation water, pen and paper, *etc.*, can serve as complimentary goods to satisfy human wants.
5. *Wants are Competitive:* Wants are unlimited but means to satisfy them are limited. Wants compete among themselves and hence given preference. This compels the

consumer to choose the most urgent wants keeping in view of the limited income, and

6. *Wants have Alternative means:* There is more than one way of satisfying a certain want. A given want can be satisfied with alternative goods. If a man is thirsty, he can be satisfied with water or cool drink or coconut water, *etc.* Similarly, hunger can be satisfied with rice or bread or fruits, *etc.* The desire to have entertainment may be satisfied by watching a movie in a cinema theatre or television.

Origin of Wants

The basic need of humans *i.e.*, food is the most obvious reason for the origination of wants. Two other desires which also arise from necessity are shelter and clothing. Both are essential for the humans to protect themselves from the vagaries of weather. Individual's habits and tastes give rise to demand for wide variety of goods. The customs of the society in which we live in, influence the origination of wants. Differences in age of the individuals, climate, education, social position, *etc.*, will give rise to a variety of wants. Finally the satisfaction of existing wants results in the generation of new wants. Thus as the economy develops, new wants may crop up adding to the existing wants.

Classifications of Wants

Wants are broadly divided into three categories *viz.*, necessities, comforts and luxuries.

1. Necessaries

Necessaries are those wants which must be satisfied. The goods which are used to satisfy basic needs of humans are called necessities. They are further classified into necessities of existence, necessities of efficiency and conventional necessities.

- a) *Necessaries of Existence:* These are the necessities which are essential for living. Human existence is not possible without fulfilling the necessities of existence. *Examples:* Food, water, clothes, shelter, *etc.*
- b) *Necessaries of Efficiency:* These are not as essential as those of necessities of existence, but at the same time essential in improving the efficiency of an individual. *Examples:* Nutritious diet, table and chair to a student, class rooms with good ventilation, *etc.*
- c) *Conventional Necessaries:* These are the necessities, which arise out of customs or habits. The customs prevailing in a society influence the individuals to follow them. *Examples:* Customs like celebration of functions and habits like smoking, drinking, gambling, *etc.*

2. Comforts

Comforts are those which fall between necessities and luxuries. Man is not satisfied with fulfilling necessities only. The comforts also increase the efficiency. *Examples:* Cushion chairs in a classroom, revolving chair in the saloons, fans in house/office, *etc.*

3. Luxuries

Luxuries are those which satisfy superfluous wants of individuals. These are neither essential for life nor increase the efficiency. Luxuries represent wasteful expenditure

of the individuals. Luxuries are further classified into harmless luxuries, harmful luxuries and defense luxuries. Harmless luxuries are those, the expenditure on which will not cause any harm to the individuals. For example, well furnished bungalow, expensive food habits, *etc.*, fall under harmless luxuries. Harmful luxuries on the other hand are injurious to the health of the users. *Examples: Alcohol, smoking, etc.*

Defence luxuries are those which protect the users during the period of crisis. Expenditure on gold ornaments, jewellery, *etc.* though appears to be luxurious, at the same time it would help the individuals during the periods of crisis.

Though demarcation is made among necessities, comforts and luxuries, in reality these are interchangeable. What is necessary for an individual may turn out to be a comfort for another person and luxury for someone else. Air travel is a luxury for a common man but an absolutely necessary for a busy business executive. Due to development of the economy the wants and desires may change over time. For example TV and telephone were once considered as luxuries, now because of their abundance and less price, we are using them as necessary goods. Changing consumerism is going to give a new dimension to the human wants.

LAW OF DIMINISHING MARGINAL UTILITY

Two techniques are used in the analysis of consumer's behaviour. *viz.*, (1) utility analysis or the Marshallian approach through which utility can be measured and (2) the indifference curve technique. The former approach is called '*cardinal approach*' and the later is called '*ordinal approach*'. The law of diminishing marginal utility, the law of equimarginal utility, consumer's surplus, *etc.*, fall under cardinal approach.

Having understood the concept of utility, an attempt is made here to examine a related law of utility *viz.*, the law of diminishing marginal utility. This law was initially formulated by German economist H.H. Gossen. The law says that more a commodity that an individual possesses, the less is the utility that is derived from it. More emphatically, the law is based on the observation that each successive unit of a commodity brings in lesser and lesser utility until the point of satiation is reached. After the point of satiation is reached, any further consumption results in disutility *i.e.*, the consumer derives negative satisfaction. More and more we have a thing, the less and less we want it. It is evident through this law that though some goods have greater utility than others, subsequent units of the same good, give diminishing satisfaction. Marshall defined the law as "*The additional benefit a person derives from a given increase of his stock of any thing diminishes with the growth of the stock he has*".

Assumptions of the Law

1. The units of commodity consumed in succession should be identical in size, colour, taste, freshness, maturity, *etc.* Homogeneity of the commodity is the basic requirement of the law.
2. Consumption of the units of the commodity should be continuous without interval, *i.e.*, there should not be any gap during the consumption process. The law becomes in-operative, if such a condition is violated.
3. During this particular activity, it is also assumed that tastes, preferences, incomes, *etc.*, remain unchanged.

Explanation of the Law

The law is explained through a table and also with the help of a graph. Before looking into the law, two concepts need to be understood *viz.*, marginal utility and total utility.

Marginal Utility: It is the additional utility derived by an individual, by the consumption of one more unit of the commodity.

Total Utility: It is the sum amount of satisfaction derived from the consumption of different units of the commodity.

The case of an individual consuming apples at a point of time and the related utilities are presented in Table 3.1.

TABLE 3.1 Utility Schedule for Apples.

Number of apples	Total utility	Marginal utility
0	0	—
1	20	20
2	36	16
3	48	12
4	56	8
5	60	4
6	60	0
7	56	-4
8	50	-6

As per the table, consumption of first apple gives a marginal utility of 20 units, while the second 16 units, the third 12 units and so on. The consumption of successive units of apples results in declining marginal utilities but remain positive till marginal utility became zero. Any further consumption of apples makes the marginal utility negative.

With regard to the total utility, it goes on increasing, right from the consumption of first unit till the point of satiety (maximum satisfaction) is reached. At this point, the total utility is maximum. This is attained at the 6th unit of the apple. Consumption of further units of apples results in declining total utility. The relation between marginal utility and total utility is that as the marginal utility is falling, total utility is increasing at a decreasing rate. When marginal utility is zero the total utility is maximum, and finally the negative marginal utility results in declining total utility.

The graphical representation of the law in Figure 3.1 indicates that marginal utility is falling throughout, while total utility is increasing at a decreasing rate till marginal utility becomes zero. Total utility starts falling, when marginal utility becomes negative.

Importance of the Law

It is the basic law on which various other laws like law of demand, law of substitution, *etc.*, rely upon. It is something like a pendant. Marshall has built up the theory of taxation and public expenditure by applying this law to money.

Exceptions to the Law

In spite of it being a basic law of economics, it has limitations in its application. This law does not apply for those persons with abnormal qualities *i.e.*, those who are

misers and those having drinking, gambling habits, etc. Similarly, this law does not apply for persons who enjoy their hobbies.

LAW OF EQUI-MARGINAL UTILITY

This law is also known as the law of substitution. *"The law implies that if a person has a thing which he can put to several uses, he will distribute it between those uses in such a way that it has the same marginal utility in all"* (Marshall). A consumer generally is confronted with the problem of buying from among several goods and services, given his limited income. He is left with the choice making, regarding purchase of commodities and their quantities so that the purchases that are decided upon ensure him maximum satisfaction. Here, the consumer aims at maximizing total utility by consuming possible goods and services given the income constraint. In this process the consumer substitutes the goods having greater utility for those which have lesser utility. This process is continued till the marginal utilities of the commodities purchased are equalized. Hence the name, the law of equimarginal utility.

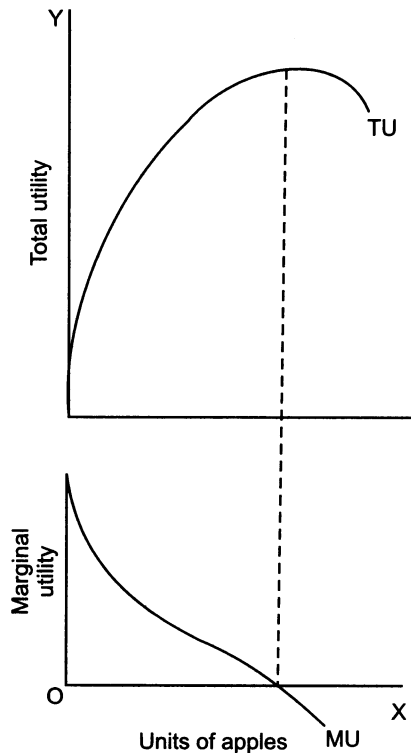


Figure 3.1 Diminishing Marginal Utility.

Assumptions

Before explaining the law, the following assumptions are made.

1. The consumer behaves rationally.
2. He has full knowledge about the commodities, their attributes, prices, etc., in the market.

3. Utility is measurable cardinally in terms of utils.
4. Commodities that are chosen are divisible and substitutable.

Explanation of the Law

Given the income constraint, the consumer makes prudent decisions in his purchases such that the allocation so made ensures him maximum satisfaction. Let us assume that the consumer has got Rs. 25 to spend. He has the options of spending this amount on three vegetables *viz.*, potato, tomato and ridge gourd. The marginal utilities that are derived from the consumption of these vegetables and the amounts of money spent are presented in Table 3.2. The marginal utilities are derived from the consumption of three vegetables by spending a unit of money (each unit of money is equal to Rs. 5). First unit of Rs. 5 on potato gives a marginal utility of 19 utils, second unit 16 utils, third 14 utils and so on. Now to maximize the satisfaction from the three vegetables the consumer has to spend Rs. 25 in such a way that the marginal utility of the last unit of money is equal in all uses. Given the marginal utilities derived from the three vegetables, the consumer has to spend first three units on tomato, one unit each on potato and ridgegourd respectively. The total utility through this combination would be 100 (22 + 21 + 20 + 19 + 18). No other combination of vegetables gives as high as 100 utils. Diagrammatic representation is shown in Figure 3.2.

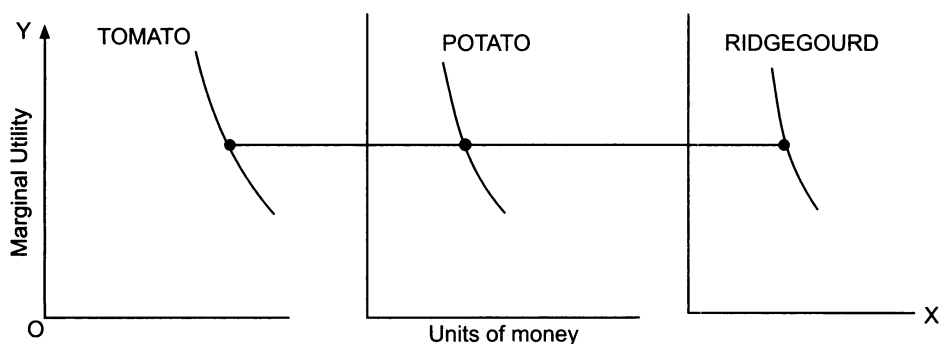


Figure 3.2 Equi-marginal utility.

TABLE 3.2 Equi-marginal Utility.

No. of units (Rs. 5 per unit)	Marginal utilities per unit of Rs. 5		
	Potato	Tomato	Ridge gourd
1	19	22	18*
2	16	21	17
3	14	20	15
4	10	16	12
5	5	14	11

This combination is going to hold good till some changes occur either in the prices or his income or his tastes. This law is also called as the principle of proportionality, as the consumer allocates his expenditure in such a way that the marginal utilities of the goods purchased would be in proportion to their prices. Consumer attaining equilibrium by spending his limited money is shown below:

$$\frac{\text{MU of X}}{\text{Price of X}} = \frac{\text{MU of Y}}{\text{Price of Y}} = \frac{\text{MU of Z}}{\text{Price of Z}} = K$$

Practical Importance of Law of Equi-marginal Utility

1. *Consumption:* A rational consumer follows this law, while planning his expenditure. He spends in such a way that marginal utility derived from each unit of money gives nearly equal utility in the various goods he purchases.
2. *Production:* A rational producer allocates his limited resources among various possible enterprises in such a way that the marginal value product derived from each unit of resource on various enterprises is the same.
3. *Marketing:* The consumer should keep in mind that marginal utility of the commodity and price of the commodities should be equal in purchasing the commodities from the markets. Thus this law guides the consumers to spend the given amount efficiently on different goods which provide utilities.
4. *Distribution:* The share of each factor of production is determined on the basis of marginal value productivity.
5. *Prices:* When the price of a commodity goes up in view of shortfall in supply, consumer prefers that commodity which is relatively less scarce. This preference of consumer brings down the price of the commodity.

Limitations of the Law

It needs a very careful scrutiny by the consumer regarding prices of various commodities and their substitutes. More often, the expenditure pattern is influenced by the habits, except in the case of very high priced goods for which certain amount of thinking goes before taking buying decisions. Another limitation for the operation of the law is indivisibility of certain goods which would not permit the equalization of marginal utilities. Further, it is possible that buying decisions are influenced by advertisement in which case rationality criterion may not be followed.

Limitations of the Cardinal Utility Approach

The cardinal approach of Marshall has been criticized by modern economists. Utility being a psychological phenomenon, it is not amenable to measurement by numbers, weights, etc. The marginal utility of money is taken to be constant by Marshall which is not the common experience of the consumer, as the marginal utility of money would be more when he is left with less and less money. Another shortcoming is that, it does not help to separate the income and substitution effects.

CONSUMER SURPLUS

The concept of consumer surplus was first introduced by Alfred Marshall and according to him, it is measured in monetary units and is equal to the difference between the amount of money that a consumer actually pays for buying certain quantity of commodity and the amount he would be willing to pay for the same quantity rather than go without it. When a consumer is prepared to buy a commodity, he always calculates the utility he is going to derive from its consumption. Every rational consumer compares the utility he derives from the consumption of a commodity, against the price he has to pay. If the utility is more than the price paid, he

prefers it and if it is *vice-versa*, he does not buy the same good. The surplus of utility he derives is consumer's surplus. In a nutshell, consumer's surplus is the difference between what the consumer is willing to pay and what he actually pays.

Assumptions of the Consumer Surplus

1. Marginal utility of money for the consumer is assumed to be the same throughout the process of exchange.
2. Commodity does not have substitutes
3. In the market at the given point of time there are no differences of income, tastes, preferences and fashions among the consumers, and
4. Each commodity is considered independent of others.

Explanation of the Consumer Surplus

In explaining the consumer's surplus, the law of diminishing marginal utility is recapitulated here. The particulars presented in Table 3.3 reveal that when a person prefers for purchase of mangoes at a price of Rs. 5 each, the marginal utility derived is equivalent to Rs. 20 from the first mango, Rs. 15 from the second mango, Rs. 10 from the third mango and Rs. 5 from the fourth mango, at which marginal utility and price are equal. Consumer will not go beyond the 4th mango because at this level the price of a mango is equal to marginal utility obtained by the consumer.

From the consumption of first three mangoes, the consumer enjoys a surplus utility of Rs. 30. This is the total consumer's surplus. There is no consumer's surplus for the fourth unit. The diagrammatic representation of consumer's surplus is shown in Figure 3.3.

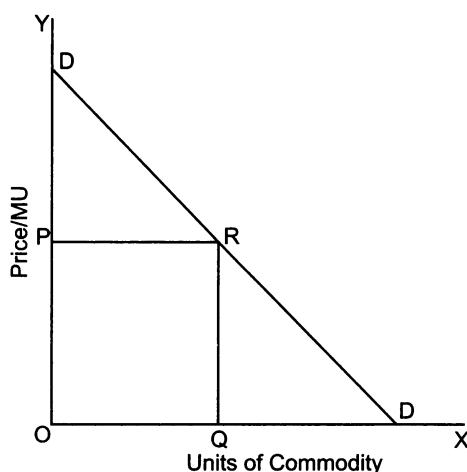


Figure 3.3 Consumer's surplus.

TABLE 3.3 Estimation of Consumer Surplus.

Units of mangoes	Marginal utility (price willing to pay)	Total utility	Market price (Rs.)	Consumer's surplus
1	20	20	5	15
2	15	35	5	10
3	10	45	5	5
4	5	50	5	0

Along X-axis units of commodity are measured and along Y-axis marginal utility in terms of money is measured, DD is the demand curve. At OP Price the number of mangoes purchased is OQ. At price OP, the total amount paid for OQ units of commodity (mango) is $OP \times OQ$ and in graph the area is represented as OQRP. But the actual amount the consumer is willing to pay for OQ units is OQRD. The consumer's surplus therefore is $OQRD - OQRP$ i.e., DRP. Increase in price causes a reduction in consumer's surplus, while a fall in price leads to an increase in consumer's surplus.

Difficulties in Measuring Consumer Surplus

1. A complete list of demand prices is not available. What we know as consumers is the knowledge of part of demand schedule and what we are prepared to pay for certain commodities is only the guess work.
2. For necessities of life and conventional necessities, the consumer's surplus is immeasurable and indefinite.
3. Variation in the incomes of the consumers also poses a problem. Whether one is rich or poor, he has to pay the same price for an unit of commodity. Naturally a person with low means has to make a greater sacrifice to buy a commodity. This situation of the consumers makes it difficult to measure the consumer's surplus.
4. Marginal utility of money changes. As we keep on spending the money on a commodity, we will be left with less and less of money. The marginal utility of each unit of money therefore increases, as we keep on spending money in succession. If we cannot consider this phenomenon, the estimation of consumer's surplus does not stand to rationality and reasoning and
5. The presence of substitutes always makes the consumer to go for X commodity instead of Y commodity, if its price rises. In the absence of substitutes, the utility of X commodity would have been much greater.

Importance of Consumer Surplus

1. *Conjunctural Importance:* When the people enjoy larger consumer's surplus, it does not indicate that they are better off. Thus it serves as an index of economic betterment.
2. *Useful to the Monopolist:* The monopolist can freely raise the prices of the goods if they bring in higher consumer's surplus, without any fear of foregoing the sales.
3. *Helps in Public Finance and Taxation:* More taxes can be imposed by the Government to get more revenue, on those goods for which consumer's surplus is high.
4. *Helps to Measure Benefits from International Trade:* In the international trade, those commodities which are cheaper in the foreign markets are imported. Before their imports the consumers were paying higher price. With the availability of imported goods which are cheaper, the consumers get surplus of satisfaction. Greater surplus indicates, larger benefits from international trade.

CONSUMER SURPLUS AND PRODUCER SURPLUS— ALGEBRAIC APPROACH

$$Q_d = 26 - 2p \quad (1.1)$$

$$Q_s = 6 + 2p \quad (1.2)$$

$$\bar{P} = \frac{26 + 6}{2 + 2} = \frac{32}{4} = 8$$

Here Q_d and Q_s denote demand and supply functions

$$\bar{Q}_d = 26 - 6 = 10; \quad \bar{Q}_s = -6 + 16 = 10$$

$\bar{P}$ is equilibrium price $\bar{Q}_d$ and $\bar{Q}_s$ are the equilibrium demand and equilibrium supply. The assumed P values given in Table 3.4 when substituted in equation (1.1) and (1.2) we get values of quantity demanded and quantity supplied. Using the values of demand and supply, the demand and supply curves are drawn to estimate consumer's surplus and producer's surplus (Figure 3.4).

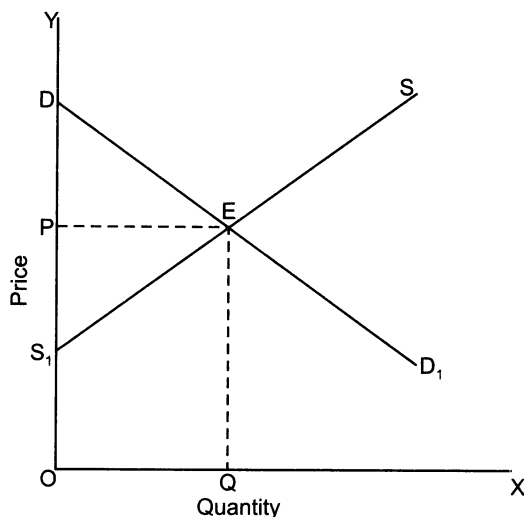


Figure 3.4 Consumer's surplus and producer's surplus.

TABLE 3.4 Demand and Supply and Price of Commodity.

Q_d	Q_s	P
20	0	3
14	6	6
10	10	8
6	14	10
0	20	13

We know from economic theory that consumer's surplus is the triangle area of $DE\bar{P}$ and producer's surplus is the area of triangle $S_1E\bar{P}$. This means consumer's surplus is the area under demand curve less rectangle area $O\bar{Q}E\bar{P}$.

Producer's surplus is the area above supply curve and below equilibrium price. Algebraically this is obtained by subtracting the area $O\bar{Q}ES_1$ from rectangle area $O\bar{Q}E\bar{P}$.

Now to work out producer's surplus and consumer's surplus we will have to follow the steps below:

1. Let us assume the demand and supply functions of a commodity as

$$Q_d = 26 - 2p \quad (1.1)$$

$$Q_s = -6 + 2p \quad (1.2)$$

2. The inverse demand and supply functions can be worked out as

$$P = -\frac{D}{2} + \frac{26}{2}$$

$$P = \frac{S}{2} + \frac{6}{2}$$

$$\text{For demand, } P = 13 - \frac{1}{2} D \quad (1.3)$$

$$\text{For supply, } P = 3 + \frac{1}{2} S \quad (1.4)$$

$$3. Q_d = Q_s \quad (1.5)$$

Equation (1.5) is market-clearing condition. Using this equation we can work out equilibrium price, equilibrium demand and equilibrium supply.

$$26 - 2P = -6 + 2P$$

$$\bar{P} = \frac{26 + 6}{2 + 2} = \frac{32}{4} = 8$$

Substitute $\bar{P} = 8$ in equation (1.1) and (1.2) we see equilibrium demand

$$= 26 - 2 \times 8 = 10; \text{ Equilibrium supply} = -6 + (2 \times 8) = 10$$

4. Work out consumer's surplus as shown below:

- We know that by taking definite integral of function with respect to real numbers (here D for demand and S for supply are the real numbers), we can find the area under demand and supply curve. We require to define ordinates of demand function and supply function. The ordinates of demand function are 0 and D i.e., 0 and 10. The ordinates of supply function are 0 and S i.e., 0 and 10.
- Now let us proceed to work out consumer's surplus at first. This is done by taking out definite integral of inverse demand function with respect to D and then subtracting rectangle area $OQEP$ from area under demand curve.

$$\begin{aligned} \text{C.S.} &= \int_0^{10} (13 - \frac{1}{2}D) dD - \bar{P} \cdot \bar{Q}_D \\ &= \left[13D - \frac{1}{2} \times \frac{1}{2} D^2 \right]_0^{10} - 8 \times 10 \\ &= [13(10) - \frac{1}{4}(10)^2] - 80 \\ &= 130 - 25 - 80 \\ &= \text{Rs. } 25 \end{aligned}$$

$\therefore$ The consumer's surplus is Rs. 25

Producer Surplus (P S): It is the difference between market price and minimum variable cost per unit of output.

This is worked out by taking definite integral of inverse supply function with ordinates 0 and 10 and this value is subtracted from rectangle area, $OQEP$ i.e.,

$$\bar{P} \times \bar{Q}$$

$$\begin{aligned} PS &= \bar{P} \bullet \bar{Q} - \int_0^{10} \left(3 + \frac{1}{2}S \right)^{ds} \\ &= 8 \times 10 - \left[\left(3 \times S + \frac{1}{2} \times \frac{1}{2} S^2 \right) \right]_0^{10} \\ &= 80 - \left[3 \times 10 + \frac{1}{4} (10)^2 \right] \\ &= 80 - [30 + 25] \\ &= 80 - 55 = \text{Rs. } 25 \end{aligned}$$

Thus we can find out the consumer surplus and producer surplus by using definite integral process with the given ordinates.

5. We now define economic surplus (ES) as

$$\begin{aligned} ES &= CS + PS \\ &= 25 + 25 \\ &= \text{Rs. } 50 \end{aligned}$$

INDIFFERENCE CURVE

It is assumed that the consumer is rational and attempts to maximize utility (the want satisfying quality in a good) from his spendable income. It is a fact that consumers make choice from among many goods so as to maximize satisfaction from their limited money income. In view of the limitations of cardinal utility approach, modern economists developed an alternative technique *viz.*, indifference curve technique to examine the consumer's behaviour.

The indifference curve analysis is based on the assumption of ordinal utility. It explains the behaviour of consumer in terms of his preferences or rankings for different combinations of two goods. Since the satisfaction derived from the consumption of various goods cannot be measured objectively, it is enough if the consumer indicates his preference for the various combinations of commodities.

An indifference curve is derived from an indifference schedule. A list of various combinations of two goods, arranged in such a way that the consumer is indifferent to the combinations preferring none of any other is called indifference schedule. An hypothetical indifference schedule is given in Table 3.5.

TABLE 3.5 Indifference Schedule.

Combinations	X	Y
A	1	20
B	2	15
C	3	11
D	4	8
E	5	6
F	6	5

In the above schedule, the consumer is indifferent whether he buys 'A' combination of 1 unit of X + 20 units of Y or 'D' combination of 4 units of X + 8 units of Y or any other combination. All the above combinations of X and Y commodities yield the same satisfaction.

If the various combinations are plotted on a graph and are joined by a line, it becomes indifference curve.

In Figure 3.5 the curve labelled I is an indifference curve. All combinations on the indifference curve are equally satisfactory to the consumer.

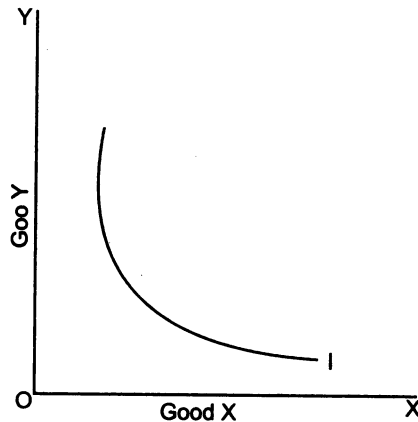


Figure 3.5 Indifference curve.

An indifference curve is the locus of the combinations of two goods that are equally satisfactory to a consumer, or to which, the consumer is indifferent.

A diagram showing a set of indifference curves is called indifference map Figure 3.6. An indifference map is graphic device that shows the taste of an individual consumer. The combinations of two goods that lie on a higher indifference curve always preferred to those that lie on a curve below it.

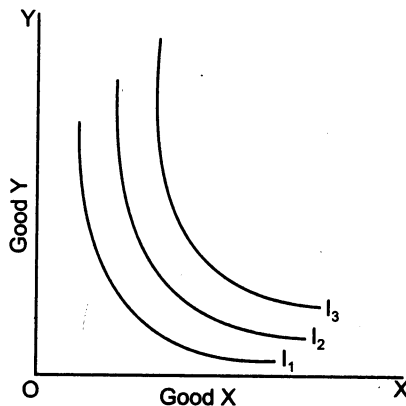


Figure 3.6 Indifference map.

Properties of Indifference Curves

1. *Convex to the Origin*: The absolute slope of an indifference curve declines as we move along the curve from left downwards to the right. This means that marginal rate of substitution of goods* is diminishing.
2. *Negatively Sloped*: An indifference curve has a negative slope which implies that if the quantity of one good increases, the quantity of other good must be decreased. This is to keep the consumer on the same level of satisfaction.
3. *Non-intersecting*: Indifference curves do not intersect with each other. If they intersect, then the point of intersection would imply two different levels of satisfaction.
4. An indifference curve that lies to the right of another denotes higher utility and combination of goods on higher indifference curve are preferred by the consumer.

The Budget Line

Consumer choices are made subject to income. Income acts as a constraint to maximize the satisfaction by the consumer. Suppose a consumer has Rs. 50 to spend on two goods X and Y. The price per unit of X and Y is Rs. 5 and Rs. 2 respectively. If the consumer spends his entire income on good X, he will purchase 10 units of X good. On the other hand, if he spends all his income on good Y, he will purchase 25 units of Y. These two possibilities of spending Rs. 50 are shown in Figure 3.7. The line connecting point A and B, denotes the budget line.

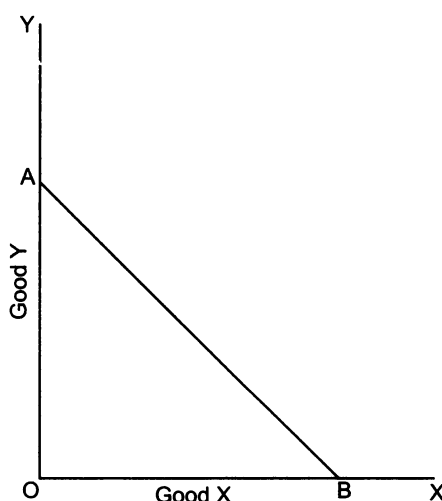


Figure 3.7 Budget line.

A budget line shows all possible combinations of two goods that could be purchased with a given amount of income.

Changes in prices of goods or money income, shift the budget line. Keeping the prices of goods constant, if the money income increases, the budget line shifts parallel to itself. Since the relative price ratio does not change, the slope of the budget line remains the same. The slope of the budget line indicates the price ratio of two goods.

* Marginal rate of substitution is the rate of exchangeability between the two goods which are equally preferred. It indicates the amount by which one good is reduced to gain another good by one unit. Marginal rate of substitution is negative and the sign is ignored.

Consumer's Equilibrium

Having known the consumer's preference as indicated by indifference map and the information on income and prices of goods as given by the budget line, now we can determine that combination of goods, which maximizes the satisfaction. The rational consumer wants to choose the highest indifference curve given the budget constraint.

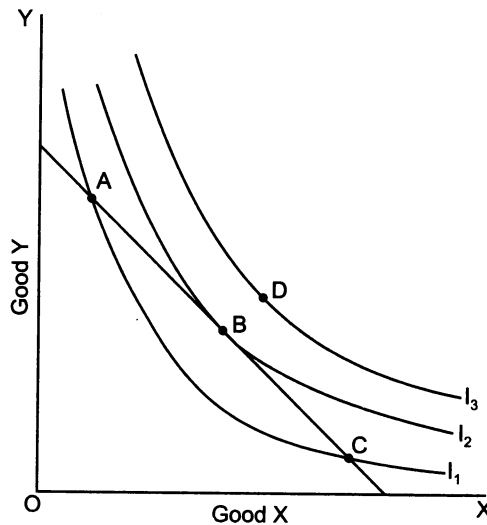


Figure 3.8 Consumer's equilibrium.

From Figure 3.8, we can observe that the optimal position of the consumer is at point B where the budget line is just tangent to the indifference curve I_2 . Combination D is preferred to B but is beyond budget limitation. Combinations A and C are on the budget line, but are inferior to combination B, because they are on lower indifference curve (I_1). Any indifference curve to the right of I_2 is beyond the reach of the consumer's income and any to the left of I_2 is less preferable than I_2 . Thus, the combination B indicated by the tangency of indifference curve I_2 and the budget line is the best combination of goods that the consumer can purchase. At the point of tangency, the slopes of indifference curve and the budget line are equal. Thus,

$$\frac{\Delta Y}{\Delta X} = \frac{P_x}{P_y}$$

DEMAND

Demand normally means the desire or willingness for a good. But in economics simple desire or willingness for a good alone may not represent demand. Apart from the desire or willingness, consumer should be able to buy the good. Demand is therefore an effective desire. Thus, desire and ability to buy are the key components of demand. More specifically demand is defined as a schedule that shows the amounts of a product or service the consumers are willing and able to purchase at each price in a set of possible prices during some specified time in a specified market. Consumers like to possess a particular commodity but without ability to pay, in which case

it is not a demand. Apart from these, two more requisites are essential, *viz.*, time and market, for demand is likely to vary over time and also among the markets. The conditions hence imposed are a specific time and a specific market to measure the demand. One condition that governs here is that all other factors, other than price influencing the demand remain the same. According to Bowden, demand means “propensity of the consumers to buy different quantities of a particular good at different unit prices”. It indicates how much the consumers would be buying when the price per unit of a commodity is changing.

Individual Demand Schedule

The various quantities of a commodity that a consumer would be willing to purchase at all possible prices in a given market at a given point in time, other things being equal is called individual demand. Individual demand schedule is merely a list of prices together with the quantities that will be purchased by a consumer. It is pairing of quantity and price relationship. An example of a demand schedule for a consumer is illustrated in Table 3.6. At Rs. 20, the consumer will purchase 0.25 kg, at Rs. 16, 0.50 kg and at Rs. 12, 0.75 kg and so on. As the price of the commodity decreases the quantity demanded will increase. Demand curve is a graphical representation of demand schedule (Figure 3.9). The demand curve will have a downward slope. DD is the demand curve.

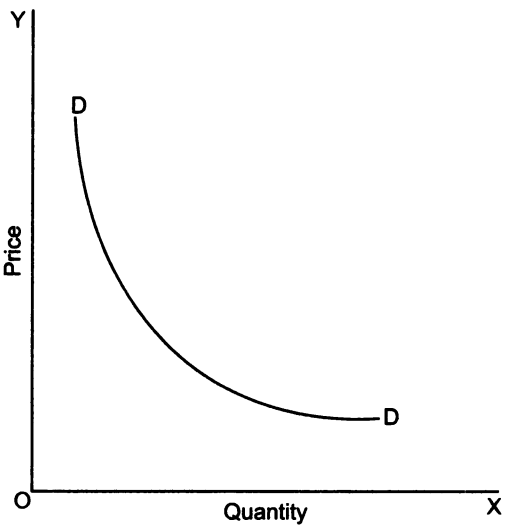


Figure 3.9 Demand curve.

TABLE 3.6 Hypothetical Demand Schedule for Tomatoes.

Price (in Rs./kg)	Quantity demanded per week (in kg)
20	0.25
16	0.50
12	0.75
8	1.00
4	1.25
2	1.50

Market Demand

Market demand is the sum of the demand of all the consumers in a market for a given commodity at a specific point of time. Assume that in a market there are only three consumers, *viz.*, A, B and C, with individual demand schedules as presented in Table 3.7. A look at the table indicates different pairs of quantity and price relationship.

TABLE 3.7 Market Demand Schedule for Tomatoes.

Price (Rs/kg)	Individual demand schedule/week (kg)			Market demand (A + B + C)
	A	B	C	
20	0.25	0.5	0	0.75
16	0.50	1.0	0	1.50
12	0.75	1.5	0	2.25
8	1.00	2.0	1	4.00
4	1.25	2.5	2	5.75
2	1.50	3.0	3	7.50

For example, consumer C is not willing to buy tomatoes for any price higher than Rs. 8 kg. Given the individual demand schedules, market demand schedule can be worked out at each price level as indicated in the last column of the table. It is horizontal summation of the demand of individual consumer at each unit price. The market demand at Rs. 20 kg is 0.75 kg, at Rs. 16, 1.5 kg and at Rs. 12 it is 2.25 kg and so on. The particulars in Table 1.7 are graphically depicted to represent the demand curve of consumers A, B and C and the entire market (Figure 3.10). The market demand curve for tomatoes is drawn based on the first and last columns of the table.

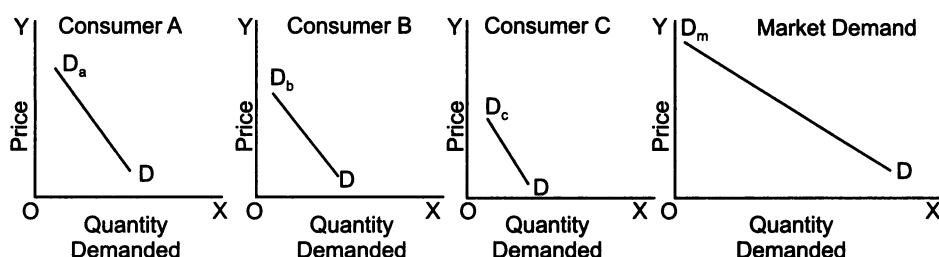


Figure 3.10 Market demand curve.

Autonomous Demand and Derived Demand

The goods, whose demand is not linked with the demand of other goods are supposed to have autonomous demand. Consumer goods are the examples here. The demand for certain goods is related with the demand for other goods, which is called derived demand. The demand for fertilizers, pesticides, *etc.*, is a derived demand, for it is linked with the demand for agricultural products. Thus the goods which are demanded for their own sake have autonomous demand, while the goods that are required to produce other goods have derived demand.

KINDS OF DEMAND

1. *Price Demand*: It refers to various quantities of a good or service that a consumer would be willing to purchase at all possible prices in a given market at a given point in time, *ceteris paribus*.
2. *Income Demand*: It refers to various quantities of a good or service that a consumer would be willing to purchase at different levels of income *ceteris paribus*.
3. *Cross Demand*: It refers to various quantities of a good or service that a consumer would be willing to purchase not due to changes in the price of the commodity under consideration, but due to changes in the price of related commodities.

LAW OF DEMAND

The law of demand explains the functional relationship between the quantity demanded of a commodity and its unit price, *i.e.*, a rise in the price of a commodity or service is followed by a reduction in the quantity demanded and a fall in the price is followed by an extension in demand, with other conditions remaining the same. Increased prices tend to contract demand and falling prices extend it. Demand varies inversely with the price, other things being equal. The tendency of the consumer is to buy more quantities of a commodity at a lower price than what he buys at a higher price.

Exceptions to the Law of Demand

Following are the exceptional cases, where, the law of demand does not hold good.

1. *Giffen Goods (Inferior Goods)*: This phenomenon which is explained below was given by Sir Robert Giffen. It was named after him as Giffen paradox. This phenomenon says that rise in price is followed by an extension of demand, while a fall in price is followed by a reduction in demand for the good. In the case of poor, who spends major portion of their income on an inferior commodity like bajra, are left with lesser amount to spend on other items. Suppose in a situation where the price of bajra rises, with the prices of other commodities and money income remaining the same, the rise in price of bajra makes him worse-off than before. Further, he cannot buy the same quantity as he was buying earlier with allotted money. He cannot afford to spend the same amount which he was earlier allotting, lest his family will be starved. Now he has to cut down the expenditure on other items not only to maintain but also to increase the quantity of bajra he bought per unit of time. On the other hand, if the price of bajra falls, the increased real income enables him to spend on superior foodgrains. This leads to a contraction of demand for bajra, even though there is a fall in its price.
2. *Prestigious Goods*: When the possession of a good brings in social distinction, consumer would go for the same even if its price is higher. An example to be cited here is the diamonds that the rich people purchase, as the possession of the same is prestigious to them.
3. *High Priced Commodities*: When the consumers view that those products which are superior are sold at higher prices, they do not mind to buy more of the same at higher prices.
4. *Fear of Shortage*: If the existing price is higher and it is expected to increase further, consumers would buy more of it even at higher price, fearing for the shortage.

Movement Along the Demand Curve

It refers to change in the quantity demanded due to change in price. It can be either extension or contraction of demand.

Extension of demand means buying more quantity of commodity at a lower price, while contraction of demand indicates buying less at a higher price. As given in Table 3.7 for consumer A, when the price of tomatoes falls from Rs. 20 kg to Rs. 16 kg the quantity demanded increased from 0.25 kg to 0.50 kg. It is a case of extension of demand. For the consumer A, when the price increased from Rs. 12 to 16 the quantity demanded decreased from 0.75 kg to 0.50 kg. It is case of contraction of demand. The terms extension and contraction refer to the movement on the same demand curve (Figure 3.11). The downward movement from A to B is extension, while the upward movement from B to A contraction. Extension and contraction of demand represent the "change in quantity demanded". This is purely a price resulted phenomenon of demand changes for a commodity, while other factors influencing demand are assumed to be at fixed level.

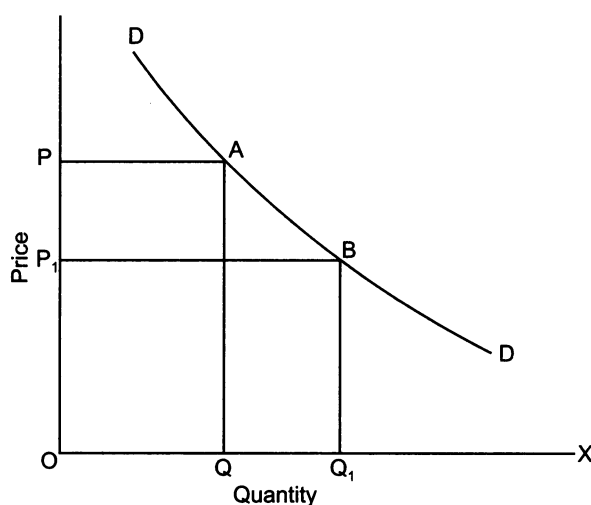


Figure 3.11 Movement along the demand curve.

Shifts in the Demand Curve

It refers to change in demand not due to change in price but due to change in the values of other variables influencing demand. It can increase or decrease in demand. As against extension and contraction of demand, increase and decrease in demand result in the shifting of the demand curve. Increase in demand means more demand at the same price or same demand at higher price. On the other hand, decrease in demand means less demand at the same price or same demand at lower price. This is shown in the Figure 3.12. When there is an increase in demand, the demand curve shifts upwards to the right side of the initial demand curve DD . D_1D_1 is the new demand curve representing increase in demand. At 'OP' price, the quantity demanded is OQ. Increase in demand indicates the purchase of same quantity of a commodity (OQ) at a higher price of OP_1 or purchase of OQ_1 quantity at the same price of OP. The decrease in demand is indicated by the shift of the demand curve towards left downwards to the initial demand curve. D_2D_2 is the demand curve representing decrease in demand. Decrease in demand

indicates purchase of the same quantity of a commodity (OQ) at a lower price of OP_2 or purchase of OQ_2 quantity at the same price of OP . Increase and decrease denote 'change in demand'.

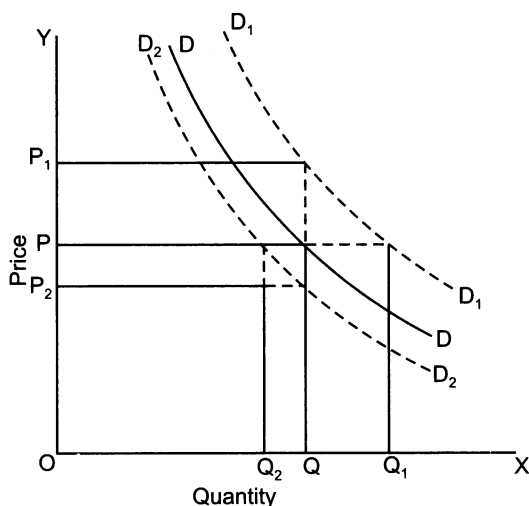


Figure 3.12 Shifts in the demand curve.

Factors Affecting Demand (Shift Factors)

The change in demand for a product is due to the factors other than the price factor of the same product. These are tastes and preferences, income of the consumer, prices of related commodities, *etc.*

1. **Tastes and Preferences:** These are influenced by fashions, population changes, advertisement, customs, habits, popularity, season, *etc.* Changing fashions in the men/women wear, ornaments, automobiles, *etc.*, will attract the people to buy them, so that they are fit to the changing fashion world. Changes in population also bring variations in their tastes and preferences. New generation will have something different attitudes in all walks of life, consequently new tastes emerge. Advertisement has become an important instrument of sales promotion/selling strategies of the manufactures. With the growing access to several mass media sources, people are beholden by their impact, consequently tastes and preferences are ever changing. Customs of the society enforce the people to change their life styles, as a result of which new preferences add to their long list of wants. People are habituated to certain aspects of life and develop new preferences. Popularity of a product attracts the new consumer towards it. This implies that we have new preferences for products. Popularity of the product is one, the influence of which cannot be avoided by the consumer. Season-bound requirements compel the people to have a new set of preferences each season. Thus, the changes in tastes and preferences make the consumer more satisfied than before.
2. **Income:** Changes in the income of the consumer leads to a shift in the demand curve. The proportion of income spent on food and other necessities decreases with increase in the income level of the consumers.
3. **Price of Other Related Goods:** The change in price of one good influences the consumption of other good, depending upon the relationship between the goods.

If two commodities are supposed to be substitutes such as meat and chicken, coffee, tea, *etc.*, the rise in price of one good results in increase in demand for the other good. There are certain goods which need to be used together *viz.*, bread and jam, bread and butter, *etc.*, which are called complements. Increase in price of one good brings down the demand for the other good. A rise in price of bread reduces the demand for butter.

4. *Habits*: Large number of smokers in a region influence the demand for tobacco and its products.
5. *Region*: In high altitude regions demand for wine, woollen clothing, meat, *etc.*, would be persistent.
6. *Season*: Demand for eggs decreases in summer season and increases in winter season.

ELASTICITY OF DEMAND

The law of demand says that demand varies inversely with the price, other things being equal. From the law of demand, we know the direction in which quantity and price are moving. What is not known is the extent by which quantity demanded is responsive to changes in price. This is the information, which is precisely needed by businessmen and policy-makers. Alfred Marshall developed the concept of elasticity of demand which measures the responsiveness of quantity demanded to changes in price. Elasticity of demand indicates the degree of relation between quantity demanded and price. In fact elasticity of demand is the rate at which quantity demanded changes because of change in price. To be more precise, elasticity of demand is defined as "*the relative change in the quantity demanded to the relative change in the price*".

Types of Elasticities of Demand

There are three types of elasticities of demand *viz.*, i) Price elasticity of demand, ii) Income elasticity of demand, and iii) Cross elasticity of demand

(i) Price Elasticity of Demand (E_d)

This shows the responsiveness of quantity demanded of a commodity, when price of that commodity changes, with other factors being constant.

$$\text{Price elasticity of demand } (E_d) = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \quad (\text{or})$$

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

$$= \frac{\frac{\text{Change in quantity}}{\text{Initial quantity}} \times 100}{\frac{\text{Change in price}}{\text{Initial price}} \times 100}$$

(ii) Income Elasticity of Demand (E_I)

It measures the responsiveness of demand due to changes in the income of the consumers in terms of percentage, when other factors influencing demand *viz.*, price of the commodity, price of substitutes, tastes, preferences, *etc.*, are kept at constant level.

$$\begin{aligned}\text{Income elasticity demand } (E_I) &= \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}} \\ &\quad \text{(or)} \\ &= \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in income}} \\ &= \frac{\frac{\text{Change in quantity}}{\text{Initial quantity}} \times 100}{\frac{\text{Change in income}}{\text{Initial income}} \times 100}\end{aligned}$$

Cross Elasticity of Demand (E_{xy})

Demand for one good (X) is also influenced by the price of other related good (Y). These may be substitutes or complements. It is the ratio of percentage change in quantity demanded of commodity (X) and percentage change in price of related commodity (Y).

$$\begin{aligned}\text{Cross elasticity of demand } (E_{xy}) &= \frac{\% \text{ change in quantity demanded of commodity (X)}}{\% \text{ change in price of related commodity (Y)}} \\ &\quad \text{(or)} \\ &= \frac{\text{Proportionate change in quantity demanded of commodity (X)}}{\text{Proportionate change in price of related commodity (Y)}} \\ &= \frac{\frac{\text{Change in quantity (X)}}{\text{Initial quantity (X)}} \times 100}{\frac{\text{Change in price (Y)}}{\text{Initial price (Y)}} \times 100}\end{aligned}$$

DEGREES OF ELASTICITY OF DEMAND

Based on the magnitudes of elasticity of demand, it can be categorized into five degrees, *viz.*, perfectly elastic demand, perfectly inelastic demand, relatively elastic demand, relatively inelastic demand, and unitary elastic demand.

Perfectly Elastic Demand

A slightest change in price of a commodity leads to an infinite change in quantity demanded. The demand in such a situation is said to be perfectly elastic. The demand is hypersensitive and the elasticity of demand is infinite. Here the demand curve will be a horizontal line parallel to X-axis (Figure 3.13). It is mostly a theoretical concept.

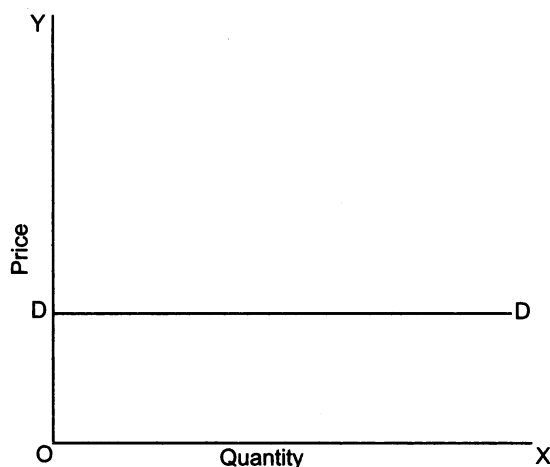


Figure 3.13 Perfectly elastic.

Perfectly Inelastic Demand

It is situation in which change in price of a commodity leaves the demand unaffected. The price of the commodity may increase or decrease, but the quantity demanded remains the same. The demand here is insensitive. Elasticity of demand is zero. The demand curve is vertical to X-axis (Figure 3.14). The case of perfectly inelastic demand is also a theoretical concept.

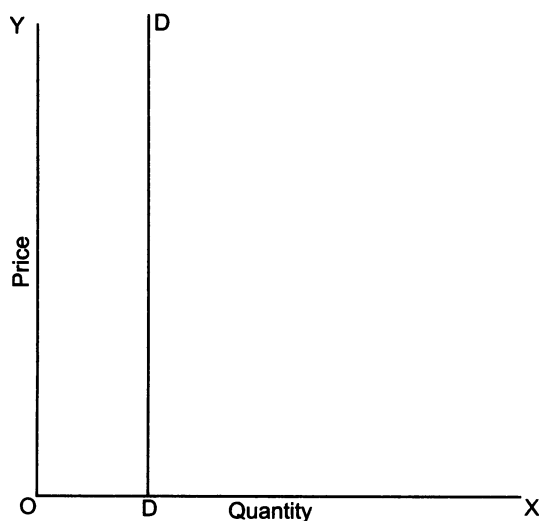


Figure 3.14 Perfectly inelastic.

Relatively Elastic Demand

It means that lesser proportionate change in the price of a commodity is followed by a larger proportionate change in the quantity demanded. A small proportionate fall in the price is accompanied by a larger proportionate increase in demand and *vice versa*. Elasticity of demand is greater than unity (Figure 3.15).

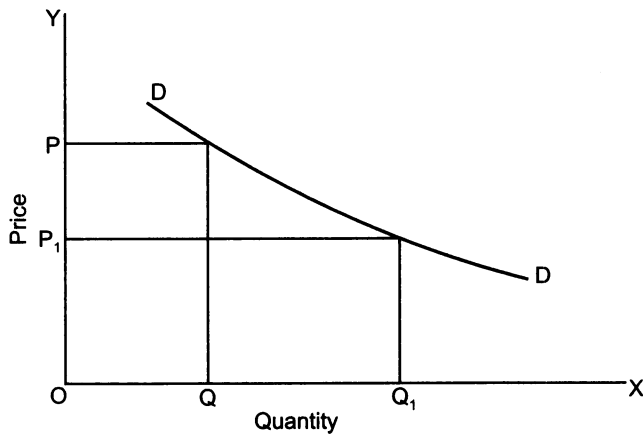


Figure 3.15 Relatively elastic.

Relatively Inelastic Demand

It means that large proportionate change in the price of a commodity is followed by a smaller proportionate change in the quantity demanded. This is to say that a large proportionate fall in the price is followed by a smaller proportionate increase in the quantity demanded and *vice versa*. Elasticity of demand is less than unity (Figure 3.16).

Unitary Elastic Demand

When a given proportionate change in price results in the same proportionate change in the quantity demanded of a commodity, the demand is said to be unitary elastic. A given proportionate fall in price is followed by the same proportionate increase in demand and *vice versa*. Elasticity of demand is one (Figure 3.17).

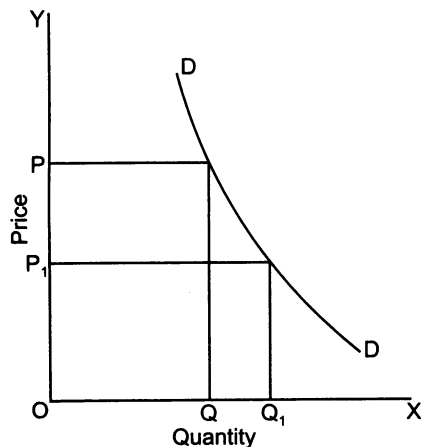


Figure 3.16 Relatively inelastic.

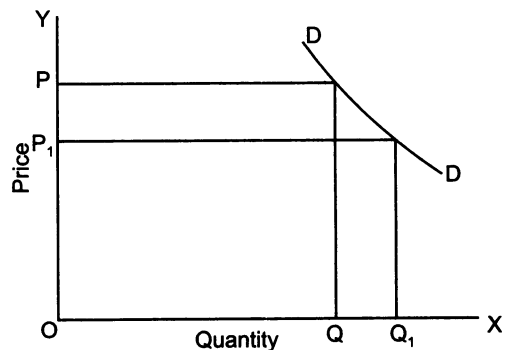


Figure 3.17 Unitary elastic.

Practical Importance of Elasticity of Demand

The importance of the elasticity of demand can be visualized from the points as given below:

1. *Determination of Wages*: The elasticity of demand for labour plays an important role in the determination of wages. If the demand for labour is elastic, any pressure put up by labour in the form of strikes to get higher wages would be unsuccessful. On the other hand, if the demand for labour happens to be inelastic, even a threat of strike would help the workers to get the approval of their employers in raising their wages.
2. *The Elasticity of Promotional Activity*: The producers are well convinced that the advertisement makes the demand for a product less elastic. Hence, they would not mind spending substantial amount of money on advertising. The price increase therefore will not reduce the sales.
3. *Determination of Monopoly Price*: The monopolist considers the nature of demand for his product before fixing the prices. If the demand is elastic, a lower price would help him to realize more profits. On the other hand, if the demand is inelastic, he is in a position to fix a higher price. The monopolist while practicing price discrimination also takes into account the elasticity of demand. He fixes a lower price for the product in the market in which the demand for the product is elastic and he charges a higher price for the same product in the market in which the demand is less elastic or inelastic.
4. *Undertaking the Public Utilities*: The Government itself runs some enterprises or industries in the interest of people, otherwise they are subjected to exploitation by the private people. In the case of electricity, the demand is inelastic and it is very essential item in the lives of humans. In the interest of the public, electricity boards are run by the Government to supply power at reasonable rates.
5. *Taxation*: The nature of demand for a good helps the Government, looking into the possibilities of raising the revenue. If the demand is less elastic for a good, by levying more indirect taxes on that good, the Government would get larger revenue.
6. *International Trade*: The country gains in the international trade by exporting those goods, for which the demand in the export market is less elastic and by importing those goods for which the demand is elastic. The less elastic nature of demand in the export market helps the nation to charge a higher price and pay less price for those goods which are imported, and
7. *Paradox of Poverty in Plenty*: A bumper crop instead of bringing prosperity to the farmers, ruin their economic position. It is a common phenomenon in agriculture. The inelastic demand for the products in the years of bumper harvest brings down the prices, consequent to which the farmers fail to realize prices of normal years.

METHODS OF MEASURING PRICE ELASTICITY

Following are the different methods of measuring price elasticity of demand.

1. Total Outlay or Expenditure Method

In this method we compare total expenditure of the consumer before and after change in price. The elasticity of demand is unity when the total expenditure remains unaltered even though, there is price change. The demand is said to be elastic when the total expenditure increases with fall in price and decreases with rise in price. Inelastic

demand is observed when the total amount spent on the commodity by the consumer increases with increase in price and decreases with fall in price. An hypothetical example of total expenditure method is shown in Table 3.8.

Between 1 and 2, the elasticity is greater than unity (relatively elastic) because the total expenditure increases with fall in price and decreases with rise in price. Between 3 and 4, the elasticity is unitary as the total outlay remains the same, though there is variation in the price. Between 5 and 6, the fall in price is followed by a fall in the total outlay and rise in the price is accompanied by an increase in total expenditure. Therefore, the elasticity is less than unity (relatively inelastic).

TABLE 3.8 Total Expenditure Method.

S. No.	Price (Rs./unit)	Quantity (units)	Total expenditure (Rs.)
1	5.00	6	30.00
2	4.50	10	45.00
3	4.00	15	60.00
4	3.00	20	60.00
5	2.00	25	50.00
6	1.00	30	30.00

2. Point Elasticity of Demand

It is a geometrical method for measuring elasticity at a point on the demand curve. Point method is used when price and quantity changes are extremely small. This method is applicable only when we possess information on the minutest changes in price and quantity. Measurement of point elasticity is shown in Figure 3.18.

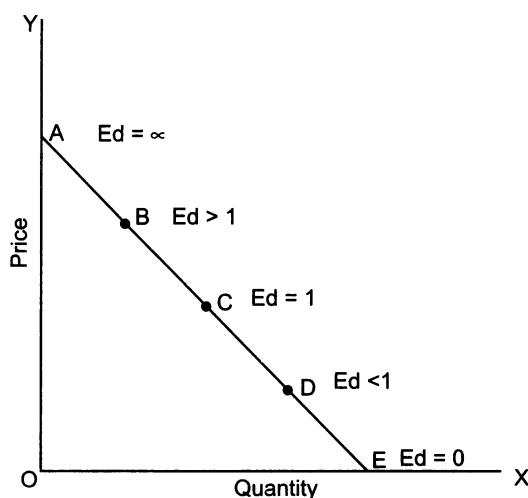


Figure 3.18 Point Elasticity of Demand.

A straight-line demand curve joining the two axes is considered to show the measurement of point elasticity. Elasticity at any point on the demand curve is the ratio of lower part of the straight line to the upper part. It is important to note that point elasticity of demand on straight line is different at every point. At any point to the right of mid point (C) the point elasticity is less than unity, at any point to the

left of mid point the point elasticity is more than unity, and at mid point (C) the elasticity is unity. At the point where the linear demand curve intersects Y-axis (A) the point elasticity is infinite, while at the point where the demand curve intersects X-axis (E), the point elasticity is zero.

3. Arc Elasticity of Demand

The price elasticity of demand measured between two distinct points on a demand curve is called arc elasticity of demand. This method uses the mid points between the old and new data in the case of price and quantity. It studies a portion of the demand curve between two points. An arc is a segment or a portion of a curved line. Arc elasticity is employed in order to compute price elasticity coefficient from the discrete data. The following formula is used to compute arc elasticity.

$$E_d = \frac{\frac{Q_1 - Q_2}{(Q_1 + Q_2)/2}}{\frac{P_1 - P_2}{(P_1 + P_2)/2}} = \frac{\Delta Q / (Q_1 + Q_2)}{\Delta P / (P_1 + P_2)}$$

Where,

Q_1 stands for the first quantity observed and Q_2 for second quantity. Similarly, P_1 is the first observed price and P_2 is the second price.

Factors Determining Elasticity of Demand

1. *Type of Goods*: The demand is inelastic or less elastic for necessities. It is obvious because the price changes do not influence the consumption of these goods. On the other hand, in respect of comforts and luxuries, the demand is elastic or relatively elastic.
2. *Goods Having Several Uses*: The demand for those goods which can be put to several uses is elastic. For example, electricity when it is cheap, it can be put to uses like cooking, apart from its regular use in production of industrial goods, transport, lighting, etc. In case it is dearer, its use is limited and demand automatically declines.
3. *Existence of Substitutes*: The demand for those commodities which have good substitutes is elastic. The price variations of such goods would have a bearing on the quantities demanded. If the price of groundnut oil increases, with the prices of other edible oils, say sunflower remaining constant, the consumers tend to shift to sunflower oil. Conversely a decrease in price of groundnut oil makes consumers to switch over back to groundnut oil.
4. *Possibilities of Postponement*: For such goods the purchase of which can be postponed by the consumers, the demand is elastic. The consumers prefer to buy the same when their prices are cheap. Televisions, cars, ornaments, etc., are the relevant examples here.
5. *Range of Prices*: When the price range of goods is very high or very low the demand is inelastic. The demand for goods like salt, matches, etc., with low price range, the demand is inelastic. Analogously for goods like diamonds, luxurious cars, etc., the demand is inelastic as consumers cannot afford to the changes in the price of such a high range.

Theory of Costs

Knowledge regarding various relationships existing between costs and output is necessary to comprehend the concepts of equilibrium conditions of different firms under different market situations. Here we require to know how the fixed cost (FC), variable cost (VC), total cost (TC), average fixed cost (AFC), average variable cost (AVC), average cost (AC), and marginal cost (MC) are related to different output levels of the firms under different levels of technology used by the firms. Here we have assumed that every business firm has a certain state of technology or know how *i.e.*, how they are producing various levels of outputs with the given prices of inputs and outputs. With data on those variables, we can understand the relationships between costs and output levels. Basically we require data on output, fixed costs, variable costs and the prices of inputs and outputs. From this data we finally derive all the seven cost concepts, *viz.*, TFC, TVC, TC, AFC, AVC, AC and MC. These cost concepts would have implications for output expansion of the firms and equilibrium position of the firms in different time periods. In the cost theory, economists use different names for cost concepts under different contexts. They are money costs or nominal costs, real costs, opportunity costs, economic costs, implicit costs, explicit costs, deflated costs, social costs, short run costs, long run costs, separable costs, *etc.*

Nominal Costs or Money Costs

These are usually expressed in money terms at current prices. Firms incur costs in producing different products. Every level of output is associated with a given level of costs under a given level of technology, prices and input levels at a particular point of time. Generally the cost of production refers to costs incurred per an unit of output produced by a firm under a given technology. Nominal costs of production refer to per unit cost of production of output at current market prices.

Real Costs

When the costs of inputs, and input services are expressed at constant prices they become real costs.

Opportunity Cost

Opportunity cost is the value of return sacrificed or foregone from the next best alternative activity. In farming farmers don't have to pay for their owned resources,

viz., family labour, owned bullock labour, owned machinery, owned seed, *etc.* But still in the cost analysis the value of these owned resources are considered on the basis of opportunity cost.

Economic Costs

These are divided into explicit cost and implicit costs. Explicit costs include payments made by the entrepreneurs for purchasing and hiring of inputs and input services. They are also called paid out costs or cash costs. Entrepreneurs do not pay for the use of owned resources. The value of such resources is called as implicit costs. Costs of self-owned and self-employed resources are known as implicit costs.

Deflated Costs

Costs if deflated by general price index are called deflated costs. By doing so the effect of inflation in an economy is taken out. *Example:* Real cost of commodities.

Social Costs

These are also called as externalities. Firms incur both implicit and explicit costs in the production of goods and services. Their sum constitutes total cost of production. These costs we name as private costs, but from the point of view of society, these firms will give rise to some additional costs to the society in the form of environmental degradation, water, air or noise pollution *etc.*, in the areas where goods are produced by the private firms. In the absence of well-drained system, irrigation projects bring problems to the command area of the project in the form of new diseases. Such costs are called social costs.

Separable Costs

Separable costs are the costs which can exclusively be attributed to production of output separately. Common costs are those which cannot be separated to the production of the output. So they are called joint costs. The costs are involved in the production of several products. *For example*, electricity generation, ground water use, *etc.*

Historical Costs and Replacement Costs

Historical costs are the costs involved in the purchase of durable goods like land, buildings, machinery, equipment, *etc.* Purchase price of the asset should be considered as price of the asset and hence it is considered as historical cost in analysis. Since the costs of the assets are apportioned in computation, they are called as historical costs. Replacement costs refer to the difference between the purchase price of the asset and the current price of the same asset. Suppose a tractor is purchased 10 years ago at a price of Rs. 1,50,000, but its present price is say Rs. 2,50,000, the difference of Rs. 1,00,000 is the replacement cost.

Establishment Costs

Construction of plant in any business activity entails some costs. Such construction costs are called establishment costs in the business analysis. They are also called first phase costs. The other costs *viz.*, licenses, site development expenditure for construction

of factory, purchase of equipment, furniture, expenditure on personnel, royalties for seeking product rights, cost of raising finance, costs of maintaining raw materials *etc.*, are also included in the establishment costs.

COST CONCEPTS

Knowledge regarding the cost functions is very much essential for optimal managerial decisions to be taken by the firm as well as the Government. In the short run, pricing and output decisions are based on short run cost curves, while in the long run, long run cost curves have crucial implications for development and growth of the firm and investment policies of the firm. Consideration of cost curves is essential and forms the basis for entry and exit of the firms in the industry. Profit maximizing rule is determined with the help of cost curves, cost functions and production functions. This rule is popularly known as marginal analysis at which $MC = MR$. The costs are also one of the major price determinants in all the market situations of the economy and in all the economic models which would explain the behaviour of the firms.

There are seven costs, which explain the behaviour of the firms in the production of requisite products.

Fixed Costs

Fixed costs remain the same irrespective of level of production. These costs remain invariant in the short run but in the long run there are no fixed costs as all the inputs can be varied. Fixed costs include cost items like taxes, insurance, cess, depreciation on machinery, implements, tools, buildings, salaries of personnel working in the firm, *etc.* These are also known as indirect costs, sunk costs and overhead costs. The summation of all these costs is called total fixed costs (TFC). TFC is a horizontal straight line parallel to X-axis (Figure 4.1).

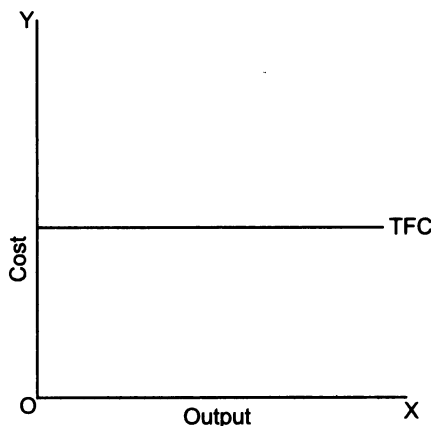


Figure 4.1 Total fixed costs.

Variable Costs

Variable costs as per definition vary with the level of output. These include costs of raw materials, labour, power, repairs, maintenance charges of machinery, *etc.* These are also known as working costs, operating costs, direct costs, prime costs, circulating

costs and running costs. These are second phase costs. The summation of these costs refer to total variable costs (TVC). Graphically TVC has inverse 'S' shape (Figure 4.2).

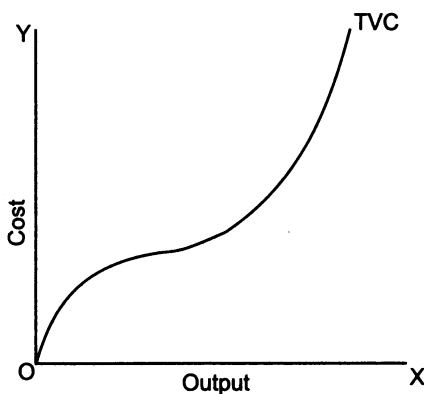


Figure 4.2 Total variable costs.

Total Costs

These include total fixed costs as well as total variable costs. Its shape is similar to that of TVC (Figure 4.3).

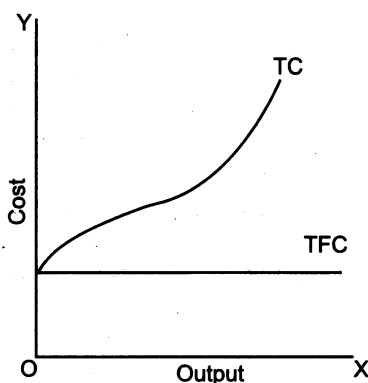


Figure 4.3 Total costs.

Average Variable Cost (AVC)

It is the amount spent on the variable inputs to produce an unit of output. Algebraically it is expressed as

$$AVC = \frac{\text{Total variable costs}}{\text{Output}} = \frac{TVC}{Q}$$

When a small amount of output is produced, cost of variable input per unit of output becomes very high. This is to say in other words, that productivity of variable input increases when greater amounts are used in the production of the commodities due to economies of scale. This causes AVC to have 'U' shape when it is graphed. This is shown in the Figure 4.4. When it is 'U' shaped it becomes reciprocal of average physical product curve.

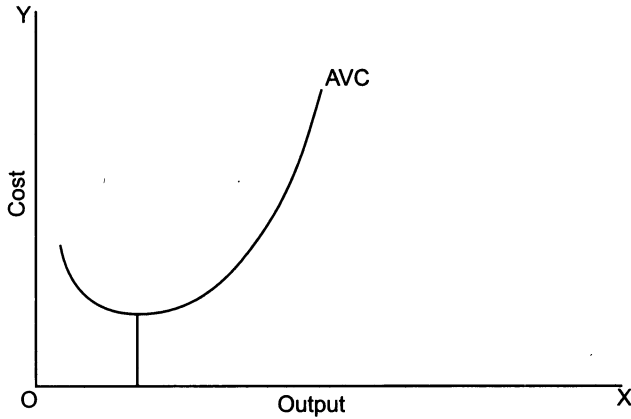


Figure 4.4 Average variable cost.

AVC falls to minimum level at the output level where APP is maximum. Thereafter due to production of greater amount of output, AVC rises again and becomes vertical at certain level of maximum output.

Average Fixed Cost (AFC)

It is the cost of fixed resources or inputs required for producing one unit of output and it is given by the formula as

$$AFC = \frac{\text{Total fixed costs}}{\text{Output}} = \frac{TFC}{Q}$$

AFC curve is declining with the increased output because TFC is constant. Due to this it is continuously falling up to its maximum output. It is having the shape of hyperbola (Figure 4.5).

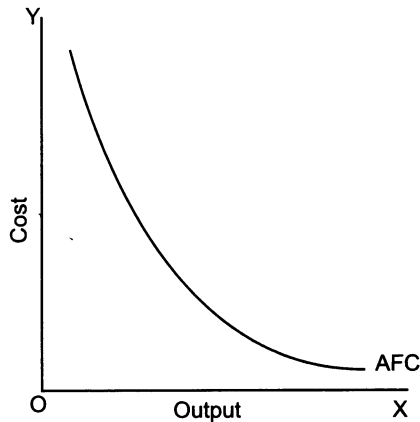


Figure 4.5 Average fixed cost.

Average Total Cost or Average Cost (ATC or AC)

When the total costs are divided by output, we get ATC (Figure 4.6).

$$ATC = \frac{\text{Total costs}}{\text{Output}} = \frac{TC}{Q} = \frac{TFC + TVC}{Q}$$

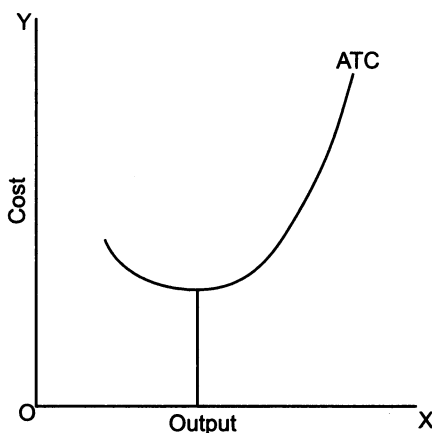


Figure 4.6 Average total cost.

Marginal Cost (MC)

As per the definition, it is the change in the total cost due to the change in output. Algebraically it is expressed as

$$\frac{\text{Change in total costs}}{\text{Change in output}} = \frac{\Delta TC}{\Delta Q} \text{ or } \frac{\Delta TVC}{\Delta Q}$$

Note that to compute MC, we can use TC or TVC because fixed costs cannot be changed. The only component of change in TC is TVC. The specific shape of MC curve is due to marginal product of the variable inputs. When MPP is maximum, MC is minimum. MC curve is declining when MPP curve is increasing; hence there is an inverse relationship between MPP and MC. When MPP is zero MC becomes vertical. MC curve intersects AVC and AC at their minimum points (Figure 4.7).

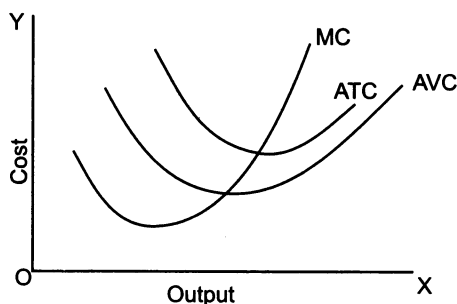


Figure 4.7 Average and marginal costs.

Supply

Supply means the quantity of a good or service offered by a producer for sale at different unit prices in a given market at a point of time. It is the willingness of the supplier to offer the goods for sale at different unit prices. More specifically, supply is defined as a schedule that shows the amounts of a product or service, sellers are willing to sell at each unit price in a set of possible prices during some specified period of time in a specified market. Meyers defined supply as *"a schedule of the amount of good that would be offered for sale at all possible prices at any one instance of time in which the condition of supply remains the same"*. Prof. Mc. Connel defined supply as *"a schedule which shows the various amounts of a product which a producer is willing to and able to produce and make available for sale in the market at each specific price in a set of possible prices during some given period"*.

Stock

Along with the concept of supply, another concept called stock needs to be explained. Supply is drawn from the stock of the commodity. Supply is the actual quantity that a seller is willing to sell at a particular price, while stock is the amount of output that exists in a market. Depending on the demand for a commodity stock is converted into supply. For perishable commodities stock and supply are the same. For durable commodities stock and supply are different.

Individual Supply Schedule

Supply schedule depicts the list of quantities–price relationships of a commodity in a market at a specific point of time by an individual seller. In other words, it reveals the mind of sellers in offering various quantities of a given commodity against corresponding prices. An example of supply schedule is presented in Table 5.1.

TABLE 5.1 Hypothetical Supply Schedule of a Commodity in a Market.

Price (Rs./Q)	Quantity supplied (Q)
300	30
325	40
350	50
375	60
400	70
425	80

It reveals that at price of Rs. 300 the quantity supplied by a seller is 30 Q at Rs. 325, 40 Q and so on. As the price per unit of the commodity rises, the quantity supplied is also increasing. As price increases, sellers are committed to increase their sales. When a supply schedule is plotted on a graph it becomes a supply curve (Figure 5.1). The supply curve will have a positive slope *i.e.*, it slopes upwards from left to right.

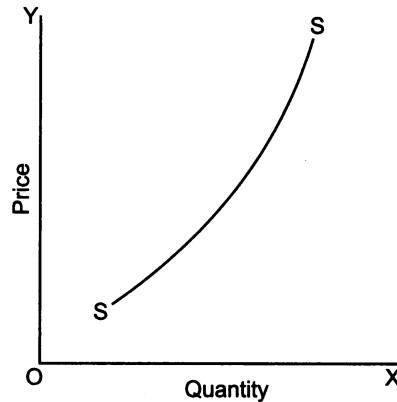


Figure 5.1 Supply curve.

Market Supply

It is the sum of the quantity of commodity that is brought into a market for sale by the sellers in a given market at a specific point of time. Assume that there are three sellers in a market *viz.*, A, B and C with individual supply schedules as shown in Table 5.2.

TABLE 5.2 Market Supply Schedule.

Price (in Rs./Q)	Individual seller's supply/week (Q)			Market supply (Q) = (A + B + C)
	A	B	C	
300	30	35	0	65
325	40	50	0	90
350	50	65	50	165
375	60	80	70	210
400	70	95	90	255
425	80	110	110	300

The price quantity relationship of the three sellers reveals that at Rs. 300 per quintal, seller 'A' is prepared to sell 30 Q, while seller 'B' 35 Q and seller 'C' is not prepared to sell at all at this particular price. The seller 'C' is not prepared to sell the commodity at any price less than Rs. 350/Q. Market supply is the sum total of output that is sold by the three sellers as presented in the last column of the table. Thus the market supply is 65, 90, 165 Q and so on. It is the lateral or horizontal summation of the supply of individual sellers at each unit price. The market supply curve is drawn based on the first and last columns of the table. The graphical presentation of market supply is found in Figure 5.2.

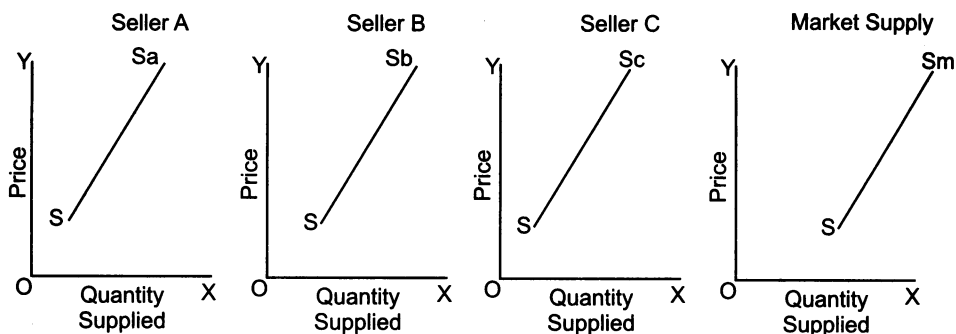


Figure 5.2 Market supply curve.

LAW OF SUPPLY

The law of supply indicates the functional relationship between the quantity supplied of a commodity and its unit price. The law signifies the positive relationship *i.e.*, as the price of a commodity rises its supply extends and as the price falls its supply contracts, with other things remaining the same. Producers normally tend to increase the supplies in the wake of rising prices and reduce the same when the prices are on the lower side. Supply varies directly with the price, *ceteris paribus*.

Extension and Contraction of Supply (Change in Quantity Supplied)

Extension and contraction of supply refer to the movement of product supply on the same supply curve. Extension of supply means offering more quantity for sale at a higher price, while contraction means offering less quantity at a lower price. As is seen from Table 5.2 that the quantity of commodity supplied by 'A' at Rs. 300 is 30 Q and it is 40 Q. when the price rose to Rs. 325. Here the quantity supplied has increased from 30 to 40 Q. It is the case of extension of supply, conversely if the price falls from Rs. 325 to Rs. 300, the quantity supplied too falls from 40 to 30 Q. It is the contraction of supply.

Graphically (Figure 5.3), when it is depicted, it shows that the upward movement from A to B is extension of supply and downward movement from B to A is contraction of supply.

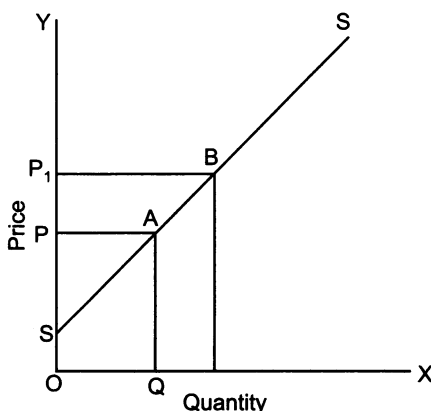


Figure 5.3 Extension and contraction of supply.

Increase and Decrease in Supply (Shift in Supply)

Increase in supply implies more supply at the same price and decrease in supply means less supply at the same price. The change in supply (increase and decrease in supply) results in a shift of the supply curve. An increase in supply results in the shift of the supply curve towards right side of the initial supply curve SS as shown in Figure 5.4. The new supply curve is S_1S_1 . On the other hand, a decrease in supply causes a shift of the supply curve towards the left side of the initial supply curve. The new supply curve thus formed is S_2S_2 . Originally OQ quantity is supplied at OP price. But due to changes in supply conditions at the same price OP , OQ_1 quantity of commodity is supplied indicating increase in supply. On the other hand, again influenced by changing supply conditions at the same price, OQ_2 is supplied. This is decrease in supply.

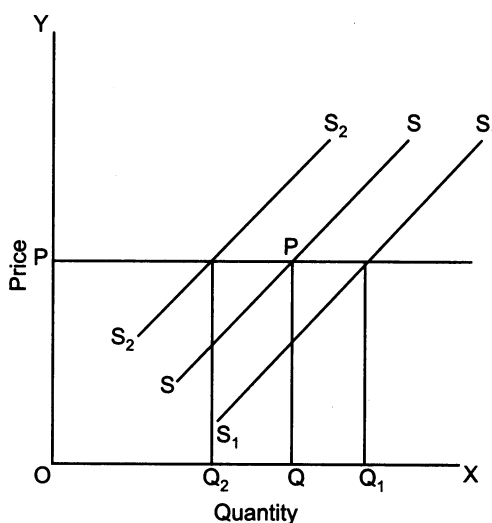


Figure 5.4 Increase and decrease in supply.

Factors Causing Changes in Supply (Shift Factors)

The factors that are responsible for changes in supply are discussed below:

1. *Changes in Technology*: Technological innovations *viz.*, new varieties of crops and their consequent increased yields per unit area, help to increase the supply of the commodity.
2. *Reduction in Resource Prices*: When the prices of input factors become cheaper than before, it encourages producers to use more of them in producing more output. Supply curve shifts towards the right side.
3. *Reduction in the Relative Prices of Other Products*: A reduction in relative prices of other related products compel the producers to increase the production of that particular commodity whose prices are relatively higher.
4. *Market Infrastructure*: When good communication and transport network increase, the supply of the commodity also increases.
5. *Number of Producers*: Changes that are found regarding number of producers producing a given commodity influence the supplies. More the number of producers, greater the supply and *vice versa*.

6. *Producers' Expectations about Future Prices:* Price expectations influence the sales strategies of the producers positively.

ELASTICITY OF SUPPLY

Elasticity of supply of a commodity is the responsiveness, or sensitiveness of supply to the changes in price. Supply is said to be elastic, if a small change in price causes considerable change in the quantity supplied. The supply is inelastic when a given change in price leads to little or less change or no change in the quantity supplied. In short, elasticity measures the adjustability of supply of a commodity to price.

Elasticity of supply (price elasticity of supply) is expressed as the ratio of percentage change in the quantity of good supplied and percentage change in price of the good *ceteris paribus*.

$$\text{Elasticity of supply (E}_s\text{)} = \frac{\text{Percentage change in quantity of good supplied}}{\text{Percentage change in price of good supplied}}$$

Algebraically elasticity of supply is expressed as

$$\frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100} = \frac{\Delta Q}{Q} \cdot \frac{P}{\Delta P} = \frac{\Delta Q}{\Delta P} \cdot \frac{P}{Q}$$

Degrees of Elasticity of Supply

There are five degrees of elasticity of supply. They are as follows:

Perfectly Elastic Supply

When the supply of commodity increases to infinite quantity or unlimited quantity, even though there is invisible rise or minute rise in the price, the elasticity of supply is said to be infinity ($E_s = \alpha$) (Figure 5.5)

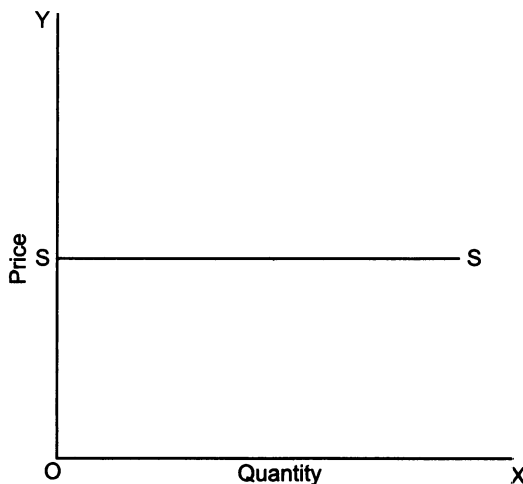


Figure 5.5 Perfectly elastic.

Perfectly Inelastic Supply

It means that the quantity supplied is not responsive to change in prices. Elasticity of supply in this case is zero ($E_s = 0$) (Figure 5.6).

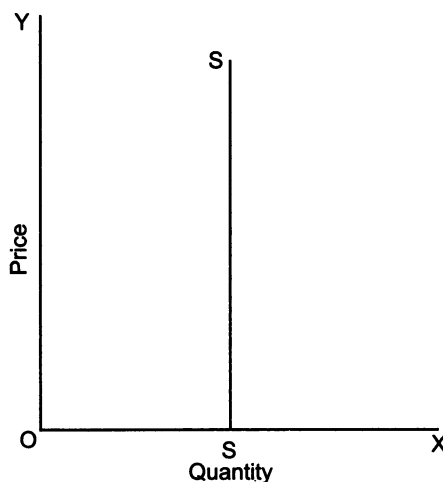


Figure 5.6 Perfectly inelastic.

Relatively Elastic Supply

Supply is referred as relatively elastic, when the percentage change in quantity supplied is more than the corresponding percentage change in price. It is also called elastic supply. Elasticity of supply is more than one ($E_s > 1$) (Figure 5.7).

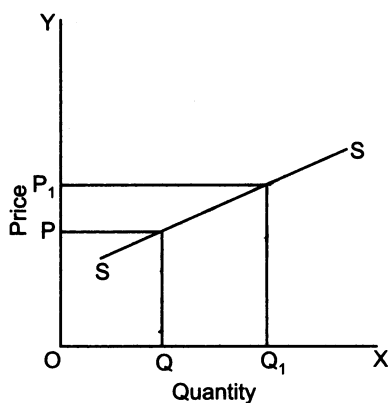


Figure 5.7 Relatively elastic.

Relatively Inelastic Supply

Supply is said to be relatively inelastic, when the percentage change in quantity supplied is less than the corresponding percentage change in price. In this case the elasticity of supply is less than one ($E_s < 1$) (Figure 5.8).

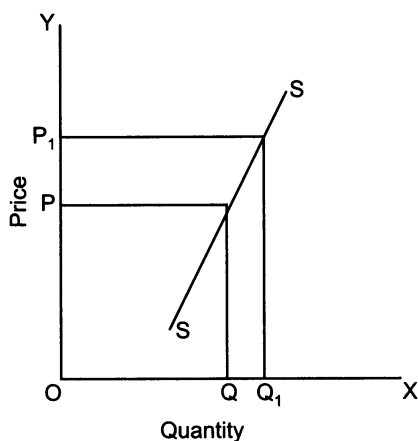


Figure 5.8 Relatively inelastic.

Unitary Elastic Supply

When percentage change in quantity supplied equals the percentage change in price, it is called unitary elastic supply. Here the elasticity of supply is equal to one ($E_s = 1$) (Figure 5.9).

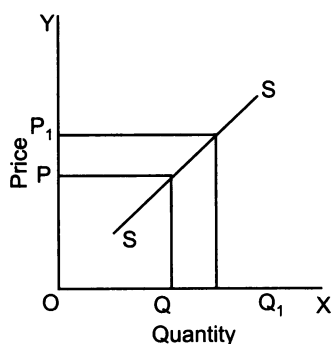


Figure 5.9 Unitary elastic.

Factors Influencing Elasticity of Supply

1. *Availability of Inputs of Production:* If the needed inputs are available as per the requirement, the supply is elastic. If any one of the factors is not available which is absolutely necessary, supply would be inelastic.
2. *Length of Time Period:* It is the period of time required to adjust the supplies to the changes in prices. The biological characteristics of the product dictate the changes of responsiveness.
3. *Diversification of Production Activity:* When the producer is engaged in production of a number of products and facilities exist for shifting of production from one product to the other, in such a case for each product the supply is elastic.
4. *Availability of Alternative Markets:* Suppose there exists several markets for the producer to sell the goods, a fall in price in one market would prompt him to shift his goods to other markets and a rise in price in one market induces him to shift his goods to that market. In such a case the supply is elastic.

5. *Flexibility in Starting and Winding up the Business:* If a particular production activity is quickly taken up and quickly wound up, the supply of the goods is elastic.

PRICE DETERMINATION

Having studied the demand and supply, we know that market demand curve is a horizontal summation of individual demand curves, and similarly horizontal summation of individual supply curves become market supply curve.

Price determination can be examined arithmetically, graphically and algebraically.

Arithmetic Approach

The information in Table 5.3 reveals that at Rs. 12, the quantities demanded and supplied are both equal *i.e.*, 80 Q. At this price, what the buyers are willing to purchase and what the sellers are willing to offer are the same. Therefore, Rs. 12 per unit is the equilibrium price and quantity amounting to 80 Q is the equilibrium output.

TABLE 5.3 Demand, Supply and the Equilibrium Price and Output.

Price/ unit (Rs)	Quantity demanded (Q)	Quantity supplied (Q)
14	60	120
13	70	100
12	80	80
11	90	60
10	100	40

Graphic Approach

The intersection of market demand curve (DD) and the market supply curve (SS) indicates the equality of quantity demanded by the consumers and that supplied by the producers Figure 5.11. This equality of quantity demanded and quantity supplied is called equilibrium quantity (OQ) and the price that occurs at this balancing point is called equilibrium price (OP). When such a condition prevails in a market, the market is said to be in equilibrium, because there are neither shortages nor surpluses of commodities (Figure 5.10).

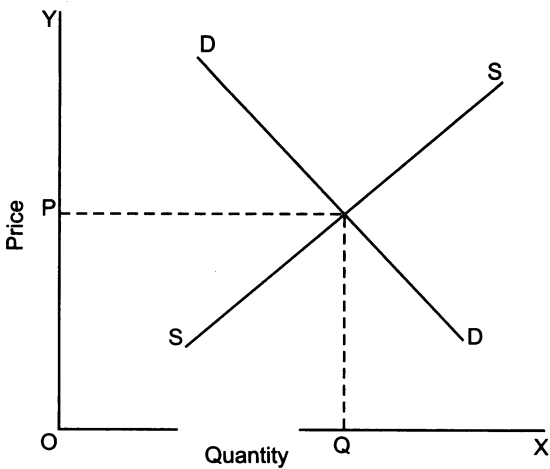


Figure 5.10 Determination of equilibrium price and quantity.

Market Disequilibrium

When the market equilibrium gets disturbed, it leads to market disequilibrium. This situation occurs when there is surplus or shortage of a commodity.

A Case of Surplus

As observed in Figure 5.11 at OP_1 price suppliers are prepared to sell OQ_2 quantity, while the consumers prefer to buy OQ_1 quantity only. Hence OP_1 price is not in equilibrium as quantity to the extent of $(OQ_2 - OQ_1)$ is available as surplus. Since there is a surplus, the market is in disequilibrium. Suppose if the seller wants to sell the surplus they have to oblige the pressure of consumers to reduce the price. When the same takes place *i.e.*, when price slides down to OP the consumers are prepared to purchase what all the suppliers offer for sale.

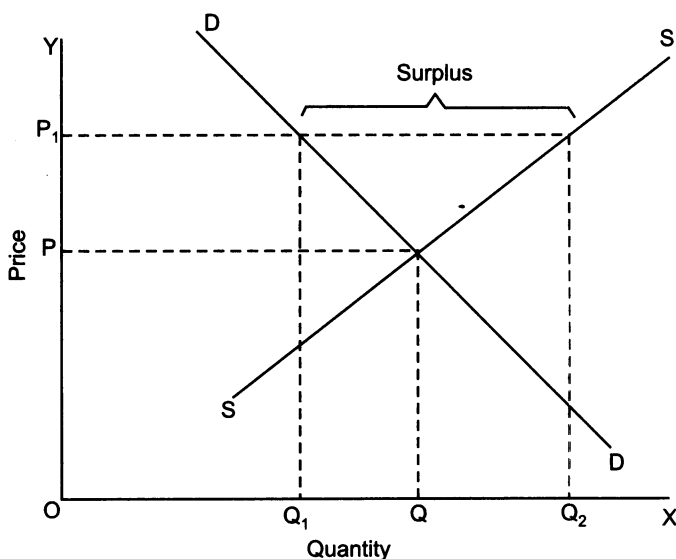


Figure 5.11 Market disequilibrium – A case of surplus.

A Case of Shortage

At price OP_1 , which is lower than the equilibrium price, the suppliers are prepared to sell smaller quantities depicted as OQ_1 in the Figure 5.12. The quantity demanded by the consumers on the other hand is OQ_2 quantity, which is higher than the quantity the sellers prefer to sell. The gap between OQ_1 and OQ_2 indicates the shortage of the commodity in the market. Since the quantity supplied is less than the demand in the market, the consumers are willing to get the quantity they required consequent to which the price rises up to OP , which is an equilibrium price. At this price OP , the quantity supplied by the suppliers equals the quantity that the consumers demand *i.e.*, OQ .

Algebraic Approach

From the data in Table 5.4 demand equation and supply equation are estimated to find out the equilibrium price and output.

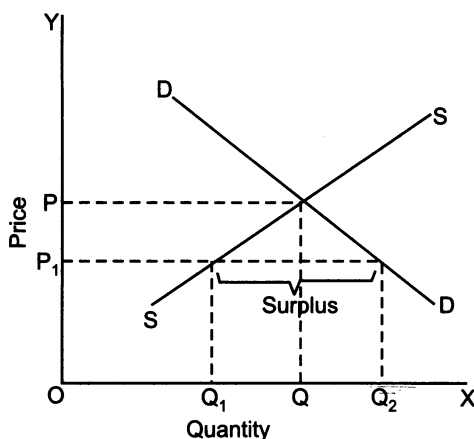


Figure 5.12 Market disequilibrium – A case of shortage.

TABLE 5.4 Estimation of Demand and Supply for Fish in the Market (Hypothetical Data).

Sl. No.	Price (Rs./kg)	Quantity demanded (kg)	Quantity supplied (kg)
1	15	2,100	895
2	17	2,050	929
3	20	2,005	943
4	22	1,858	1,056
5	23	1,725	1,160
6	25	1,652	1,328
7	28	1,542	1,530
8	29	1,476	1,861
9	30	1,357	2,055
10	31	1,264	2,213
11	34	1,185	2,542
12	35	1,066	2,715
13	36	955	1,864
14	38	876	3,100
Average	27.36	1,507.93	1,799.36

Correlation coefficient: -0.9906

The demand function is estimated using the data of the Table 5.4

$$\begin{aligned}
 Q_t^d &= 3037.75 - 55.92 P_t \\
 SE &= (63.07) \quad (2.33) \\
 t &= 48.16 \quad (25.03) \\
 R^2 &= 0.98 \quad R^{-2} = 0.98 \\
 F &= 626.52
 \end{aligned}$$

The supply function is estimated using the data shown above.

Correlation (r)= 0.9667

$$\begin{aligned}
 Q_t^s &= -1070.24 + 104.89 P_t \\
 SE &= (226.24) \quad (8.01)
 \end{aligned}$$

$$\begin{array}{rcl}
 t & & 4.73 \quad (13.09) \\
 R^2 & = & 0.93 \\
 R^{-2} & = & 0.98 \\
 F & = & 171.35
 \end{array}$$

Equilibrium price can be worked out using the equations

$$Q_t^d = 3,037.75 - 55.92 P_t \quad (1.6)$$

$$Q_t^s = -1,070.24 + 104.89 P_t \quad (1.7)$$

$$Q_t^d = Q_t^s \quad (1.8)$$

$$3,037.75 - 55.92 P_t = -1,070.24 + 104.89 P_t$$

$$= 3,037.75 + 1,070.24 = +104.89 P_t + 55.92 P_t$$

$$4,107.99 = 160.81 P_t$$

$$P_t = \text{Rs. } 25.54$$

$$P_t^* = \text{Rs. } 25.54$$

(equilibrium price)

Equation here P^* is equilibrium price, substitute $P = 25.54$ either in equation (1.6) or (1.7), we can get equilibrium quantity.

$$\text{Equilibrium Quantity} = 1,609.24 \text{ kg}$$

Production

Production means creation of value in the goods. Production activity helps in transforming a set of inputs into goods or services. It essentially means transforming of one set of goods into another. The output which comes out of production has greater utility over the inputs combined in the production process. The inputs that are used in production of goods may be provided by the nature and/or by other industries.

Characteristics of Modern Production

1. *Large Scale Production:* Production of goods and services on a large scale is essential in order to meet the increasing demand due to increased population, purchasing power, change in attitudes, etc. Besides, if production is carried out on large scale, the firm derives many benefits viz., economy of buying and selling, economy of transportation, cheap credit, better utilization of by-products, etc. This ultimately leads to supply of goods and services at reasonable prices to the consumers.
2. *Use of Machinery:* Production of goods and services can be augmented using either labour-intensive technology or capital-intensive technology depending upon the availability of labour and capital. Labour intensive technology involves more use of labour and less of capital, whereas capital-intensive technology employs more of capital and less of labour. In general, labour-intensive technology suits well in small scale and cottage industries. Since large scale production is the order of the day, production of goods and services on a large scale with in a short period of time is possible only through the use of specialized machinery.
3. *Immense Use of Capital:* Production without capital is impossible. More so large scale production, demands huge financial requirements. Since the availability of funds with individual entrepreneur is inadequate, borrowing becomes necessary to carry out the business. In this regard a good number of institutional agencies like State Financial Corporations, Industrial Development Bank of India, and also commercial banks are readily providing the needed credit.
4. *Division of Labour:* Production of an article is divided into a number of processes and sub-processes. Each process is carried out by a set of workers and this is known as division of labour, which is associated with increased efficiency.
5. *Competition and Combination:* Large scale production results in larger amount of output. In order to have a greater share of the market for their products, there will be intense rivalry among the firms. The resultant cut-throat competition may ruin the industry. Therefore, amalgamation of the competing firms is necessary in order to reduce competition, uncertainty and entry of new firms and increasing profits.

6. *Joint Stock Companies*: The most common type of business organization is joint stock companies. This type of business organization facilitates mobilization of larger finances, through the issue of public shares to carry on the production on a large scale.
7. *Localization of Industries*: Concentration of an industry in an area is known as localization of industries. This is due to the availability of raw material, labour, transportation, communication, marketing, *etc.* Cotton mills in Bombay, leather industry in Kanpur, jute mills in Kolkata, *etc.*, are the examples.
8. *Privatization*: Government or centrally held property is transferred to private ownership.
9. *Unemployment and Underemployment*: Extensive use of machinery replaces human labour leading to unemployment and underemployment.
10. *Price and Product Differentiation*: A product is differentiated if any significant basis exists for distinguishing the goods of one seller from those of another. The differentiation may be based on certain physical characteristics of the product, such as trademark, design, colour, *etc.*
11. *Advertisement*: It is an important marketing tool used to influence consumer preferences among different brands and products. Advertisement is an important selling cost. Advertise or perish is the modern slogan, for, the survival of the very business unit depends on its ability to popularize the product to the extent it can. Advertisement not only increases the demand for the product but also helps in the reallocation of resources.
12. *Speculation*: It is an act of buying and selling goods with the aim of making profits by correctly guessing uncertain price movements. Share market is a classical example of speculative business.
13. *Risk*: Modern production is characterized by high degree of risk and uncertainties due to changes in technology, economic environment, preferences of the consumers, *etc.*

FACTORS OF PRODUCTION

These mean the production resources required to produce a given product. Fraser defined factor of production as "*a group or class of original productive resources*". The factors of production have been traditionally classified as land, labour, capital and organization, the details of which are presented below:

LAND

According to Marshall, land means "*the materials and forces which nature gives freely for man's aid, in land and water, in air and light and heat*".

LABOUR

The term, labour has wide and diversified meaning in economics. It can be physical work or mental work that is done by a person with an aim of earning money. It includes the work done by farmers, workers, the services of teachers, doctors, actors, *etc.* In the words of Marshall, labour is defined as "*any exertion of mind or body undergone partly or wholly with a view to earn some good other than the pleasure derived directly from the work*". Any work that is done for pleasure does not come under labour.

Characteristics of Labour

1. *Labour is Inseparable from Labourer:* The worker has to sell his labour in person and he has to be physically present, while delivering the work. He cannot deliver the work in absentia. It varies from labourer to labourer depending on races, climate, physical and mental alertness of labourer.
2. *Labour is Perishable:* Labour cannot be preserved which means that labourer has no reserve price. He has to sell the work without really minding the wages, for, a day's work lost is a loss forever. In other words, it is a flow resource.
3. *Labour has Very Weak Bargaining Power:* Perishability of labour is a prime factor for the labourer, which rather forces him to accept whatever the wage that is offered. The weak bargaining power of the labourer is taken as an advantage by the employer.
4. *Lack of Free Mobility:* Compared to capital, labour is less mobile. No doubt labourers move from one place to another and from one occupation to another, but it is not a common feature. Thus, labour lacks horizontal and geographical mobility. This leads to a variation in wages among the occupations as well as spatially.
5. *Supply of Labour is Independent of Demand:* Supply of labour depends on the population in a country. Population is one factor which can neither be increased nor decreased overnight. The increase or decrease is a slow process and supply of labour is independent of demand.
6. *Supply of Labour Peculiarly Changes with the Wages:* Normally the seller of a good sells more when the price per unit of commodity is higher and *vice versa*. But regarding labour a fall in wages leads to an increased supply of labour. A fall in wages leads to a reduction of their incomes. So to make good this fall in income, family members who were not working earlier also work to supplement the family income.

Efficiency of Labour

According to economists efficiency of labour means "*the ability of labour by virtue of which it is productive*". It indicates the qualitative and quantitative performance of the labourer. No doubt, it is a relative term, but when one person puts up a better performance over others, we say that he is more efficient. All individuals are not equally efficient, because of several factors which are examined below:

1. *Racial and Hereditary Characters:* Some races are known for their physical and some are for their intellectual qualities. This emerges out of climate and natural environment. Pattans are well built and physically very strong. The Punjabies and Rajputs are hard working compared to other Indians.
2. *Literacy and Training:* Education brightens the outlook of labourers and builds up character. Training imparted to the labourers make them more efficient to do specialized works.
3. *Environment:* The working environment must be congenial for the labourers to put up an impressive performance. Environment refers to conditions in the work place in which the labourers have to work and the equipment and machinery which they handle. Better physical facilities, modern machinery and equipment encourage to get best out of them.
4. *Working Hours:* Long working hours retard the performance and the efficiency of labourers. The working hours should facilitate them to relax. Short working hours keep them fresh and help to rejuvenate their energies.

5. *Fair and Prompt Payment:* Wages influence the performance of labour. Fair and prompt payment of wages encourage them to put their heart and soul into the job.
6. *Capability of Organization:* Organisation has to plan to allocate the right people at right places for the right work. Assignment of work as per the capabilities of labour leads to expected output and maximum profits.
7. *Social and Political Factors:* Social securities for the labourers and concern of State towards their conditions will be quite encouraging to improve their efficiency.
8. *Personal Qualities:* Personal qualities like intelligence, alertness, honesty, health *etc.*, improve the efficiency of labourers.
9. *Incentives:* Incentives like extra payment, and some perquisites for a good performance encourage them to be more devoted to the work.

Division of Labour

In modern production activity, the production of a good is divided into several sub-processes, and each sub-process is entrusted to a group of workers. This is what division of labour implies.

Division of labour is meant to improve the efficiency of labourers. There are three different types of division of labour *viz.*, (1) Simple division of labour (2) Complex division of labour; and (3) Territorial division of labour

1. Simple Division of Labour

It is also known as occupational specialization. This means that people in a society undertake various occupations to make their livelihood. The choice of an occupation depends on the suitability of an individual in serving the society. That is how we have in a community, some are doctors, others are lawyers, some others are teachers and we have blacksmiths, goldsmiths and others craftsmen. They execute duties regularly and help the society to develop by helping themselves through their professions. Some professions like dry-cleaning, tailoring, *etc.*, have become of late very prosperous and lucrative professions. Hotelling and mechanical weaving have become giant industries, which were earlier to be taken up by only certain sections of the people as profession. From all these things we can conclude that division of labour is fast growing with full adoption of requisite technology and providing employment to millions of people.

2. Complex Division of Labour

It is assigning the work by task. The task here is a sub-process that is found in producing a commodity. Each group of people is given a task in which it is considered as specialists. For example, in making silk cloth, many sub-processes such as reeling, weaving, dyeing, *etc.*, are involved and for all these sub-processes we require sophisticated technology and trained people to run the silk industry. Similarly, in the manufacturing of tractors, electric motors, TVs, *etc.*, many sub-processes are involved.

3. Territorial Division of Labour

It refers to localization of industries. Certain areas or regions specialize in production of a commodity. The examples are textile mills in Bombay and Ahmedabad, silk sarees in Kanchi, jute mills in Kolkata, leather in Kanpur, *etc.*

Merits of Division of Labour

1. *Increases Productivity:* In the modern industrial system, division of labour is found to augment the labour productivity to a large extent. Besides, it helps to improve the productivity of other resources such capital and management in industry.
2. *Improvement in Dexterity:* Specializing in a particular activity and performing it continuously make the workers perfect. This perfection of work helps them to devise improved methods to perform the activity. In the production of goods and services, the entrepreneurs lay more emphasis on reduction of labour costs. In this process they devise many labour saving techniques such as providing adequate skill and necessary equipment to do the maximum with minimum time and cost.
3. *Saving of Time:* Since the worker is concentrating in only one activity there is a saving of time, which otherwise would have been wasted, had he been attending to several activities in the manufacturing of a commodity. To perform such specific activities, the workers can be well trained. To save the time, the workers are to be given enough expertise to perform a work. They should be given incentives like bonus to putforth maximum concentration on the allotted work.
4. *Saving in Tools and Implements:* As a worker has to perform a specific function, he needs only a particular type of implements. In construction of farm ponds, formation of bunds, digging of wells, etc., the labourers should be provided with suitable implements and machinery for turning out the work efficiently with minimum cost and time.
5. *Employment of Specialists:* In the populous country the demand for goods and services would be ever increasing. This leads to production of more goods and services. In response to this, entrepreneurs use more labour and technology intensively. The firm working for six hours earlier, would now work for more than 6 hours. Hence, 2 to 3 shifts have to be taken up by the firms to produce adequate goods for satisfying the increasing demand. Firms under such situations employ specialized labourers through intensification of work using requisite technology. Labourers are given adequate training to develop the requisite skills for executing the work efficiently.
6. *Large-scale Production:* Division of labour helps to produce goods on large scale. Further the goods can be produced at cheaper rates. For instance, we notice complex division of labour in cotton mills located at Coimbatore and Ahmedabad. The cloth making process is divided into many sub-processes and in each sub-process, the industry uses highly specialized workers for turning out the required work. Such process is basically meant for producing cloth on large scale with economies in the cost of manufacturing of required fabrics with various designs.

Demerits of Division of Labour

1. *Monotony:* The work which is performed again and again becomes monotonous for the workers. Interest is not sustained in the work. It becomes boring for the workers.
2. *Retards Human Development:* Continuous performance of the same work, narrows his overall outlook. Since his faculties are tuned to perform a set work, his overall growth is stunted.
3. *Lack of General Responsibility:* Since many people are involved in producing a good, no body takes the general responsibility in correcting a defect, if it occurs. Everybody thinks that it is not his duty. Thus the workers become careless and irresponsible.
4. *Problem of Distribution:* Several people involve in production of a product. Based on the contribution, they should get their due share of product which is not an

easy task. This complicates the problems of distribution. This means distribution of dividend/bonus should be done scrupulously for satisfying the labour working in various divisions.

THEORIES OF POPULATION

The theory of population is studied because the supply of labour depends upon population and its growth. Observing the abnormal growth of population and consequent fall in the standard of living, Thomas Malthus (1760-1834) an English Clergyman first studied population growth in various countries of Europe. Later he wrote a book entitled "An Essay on the Principles of Population" in 1798. His observations compelled him to foresee a gloomy future for the human race and hence emphasized the immediate need to keep the population growth under check. Now his theory is popularly known as Malthusian theory of population. To quote the theory in his own words "By nature human food increases in a slow arithmetic ratio, man himself increases in a quick geometric ratio unless want and vice stop him".

Propositions of Malthusian Theory: These are briefly presented below:

1. Population is necessarily limited by means of subsistence (food supply). According to Malthus in a country the size of population depends on its food production. Greater the food production, larger would be the size of population, which a country can support and smaller the food production then the country would be in a position to support smaller population only.
2. The power of population is infinitely greater than the power in the earth to produce subsistence for men. He further adds that population growth always overtakes food production, since agricultural production is constrained by the law of diminishing returns. This prevents the food production to grow as faster as that of population. As such, there is no limit to the growth of population.
3. Population increases in geometric progression, whereas food production increases in arithmetic progression. This means that population tends to grow in quick geometric progression *i.e.*, 1, 2, 4, 8, 16, 32, *etc.*, while, food production tends to grow in arithmetic progression *i.e.*, 1, 2, 3, 4, 5, 6, *etc.* This implies that population doubles in every 25 years.
4. Population always increases, when the means of subsistence increase, unless it is prevented by some powerful checks. When the food production of a nation increases, the tendency is that it encourages people to have more children and consequently it leads to large families. After certain time, the population would become excessive relative to the food production and the per capita availability of food decreases.
5. There are two types of checks, which can keep population on a level with the means of subsistence *viz.*, preventive checks and positive checks.
 - a) **Preventive Checks:** These are man-initiated checks to keep the population under control. They aim at decreasing the birth rate. These checks are: 1) celibacy 2) late marriage 3) moral restraints, *etc.*
 - b) **Positive Checks:** These are the checks caused by the nature when man fails to take control of the situation. These checks cause the reduction of excess population and thereby bring an equilibrium between demand and supply. We have

often the famines, epidemics, wars, floods, earthquakes, *etc.* These positive checks are also called as natural checks, since they are caused by nature.

Criticism of Malthusian Theory of Population

This theory was criticized by many economists on several grounds. Some of the important ones are presented below:

1. Presenting the mathematical precision for population growth and food production was objected because as these ratios are found to be unrealistic. There were no instances in the world, where this trend of population growth and food production recorded and the case of doubling of population in every 25 years.
2. Malthus did not foresee the scientific advances that are bound to come in agricultural production, even in the presence of operation of law of diminishing returns.
3. He did not consider total production of a nation but confined to agricultural production alone while presenting his theory. In fact it is total production of a country which gives the true picture of its economic position. Consider the example of Great Britain. It was not self-sufficient in agricultural production but it could make great progress through its industrial production. Less agricultural production cannot make the country to be called over-populous.
4. It was viewed that increase in population would cause greater demand for foodgrains, ignoring its contribution in the production of goods and services. Further it was criticised that increase in population in an over-populated country is a matter of serious concern, as it imposes heavy strain on the limited resources of the nation. In respect of an under populated country, increase in population is a welcome sign and it helps to raise economic growth and per capita income.
5. Malthus also failed to view that the education and civilization would transform the people to have small families. Hence, there would be no danger of over population.
6. Natural calamities which are infact the acts of nature are commonly found everywhere regardless of whether a particular country is over populated or under-populated. So, the statement that natural calamities would occur only in the over populated countries to reduce population is not true.

Optimum Theory of Population

Prof. Sidgwick gave the foundation of the optimum theory in his principles of political economy. It was later developed by Edwin Cannon. It is also called as the modern theory of population.

Definitions of Optimum Population

1. *It generally refers to that size of population which provides maximum income per head at a given amount of resources and technology.*
2. *Optimum population is that population which produces maximum economic welfare (Carr-Saunders).*
3. *Optimum population is that which gives the maximum income per head (Dalton).*
4. *Optimum population in a country ensures 1) best possible utilization of all resources; and 2) highest per capita income. More specifically, optimum population is the right size of population that is most desirable in a country consistent with its supply of resources.*

Under Population

If the population of a country is below optimum size *i.e.*, below what it ought to be, the country is said to be under-populated. In such a case the per capita income will not be the highest, as the population is insufficient to use the available resources (both natural and capital) of the country efficiently. The resources are left unharnessed to their optimum level.

Over Population

If the population of a country is in excess of optimum level, the country is said to be over populated. Since the resources are insufficient in relation to the population, the per capita income will not be the highest. Gainful employment is not available to people in view of the insufficiency of resources and requisite technology.

When we say optimum population, it is not fixed for all times. It keeps on changing with the development of technology and growth of capital.

In Figure 6.1 population is measured on X-axis and output per capita on Y-axis. It is observed that output per capita increases with every increase in population till OQ is reached. At this level of population (optimum population) the per capita output is the highest and is equal to QP. Any further increase of population beyond the OQ leads to reduction of output per capita. If the actual population of a country is less than optimum population (OQ), it is under populated and if it is more it is over populated.

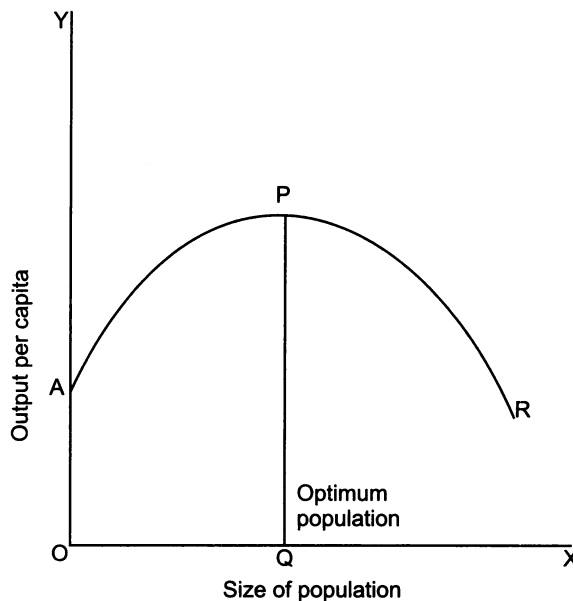


Figure 6.1 Under, over and optimum population.

Dalton's Formula for Maladjustment

Dalton's maladjustment means the extent of deviation of population from optimum size of population. To measure maladjustment, Dalton gave the following formula.

$$M = \frac{A - O}{O}$$

Where,

M = Maladjustment

A = Actual population

O = Optimum population

A positive 'M' indicates that the country is over-populated.

A negative 'M' indicates that the country is under-populated.

A zero value of 'M' indicates that the actual population is equivalent to optimum population.

Malthusian Theory of Population Vs Optimum Theory of Population

1. Malthusian theory is based on the relationship between food production and the size of population, while modern theory is based on the relationship between total production of a country and the size of population.
2. Malthusian theory is more a pessimistic theory, while optimum theory is an optimistic one.
3. Malthusian theory has a limitation in its application as it is applicable to over populated countries only, whereas the optimum theory is applicable universally.

Population Control Policy

In the countries where population is large we observe slow pace of economic development and growth. Capital and other requisite resources would be overexploited by the increasing population. As a result economic growth and development in the country retards. The problems like scarcities, hunger, malnutrition, diseases *etc.*, will become aggravated. Populous countries have to face stiff competition from more developed countries (MDCs) for resources like land, water, power, *etc.* Sometimes harsh living conditions of the population lead to very high birth rate and death rate. The problems of peace, poverty, epidemics and endemics in the country cause environmental degradation, pollution *etc.*, in the country. Urbanization would become worse sometimes causing the problems unsolvable and persistent.

The following practices should be given wide publicity for implementing population control policy effectively in the country.

1. The Government should encourage the couples to defer their marriages. Typical marriage ages for example, are 24 to 28 years for women and 26 to 30 years for men.
2. Married couples should be encouraged to follow the family planning techniques for avoiding immediate conception through incentives. They should be motivated to sign the pledges with the Government to have one child for each family as is being done at present in China. To make this policy successful, the married couples should be given incentive like bonus, additional annual increments, large sum of old-age pension, free medical care, free school education for their children, *etc.* There should also be provision to recover the incentives from the couples who violate the pledge.

3. The parents with two children should be strictly sterilized. Newly married couples should be given free and accessible contraceptives.

Population Growth and Policy in the World

At the beginning of the Christian era *i.e.*, in the year AD1, the world population was about 250 million and the population was growing at the rate of 0.04 per cent per year. Later, the world population was increasing at the rate of 2 per cent and crossed 4 billion (400 crores). This means the population of the world was doubling in every 35 years. Now in the year 1999, the world population is nearly equal to 6 billions (600 crores), of this India constitutes 100 crores *i.e.*, 1 billion. This indicates that $1/6^{\text{th}}$ of population (16.67 per cent) live in India. Another trend of the population growth to be noted cautiously is that every year, 7.8 crore people are being added to the existing population in the world. As a matter of fact, we see the higher growth rate of population in under developed countries and developing countries.

Effects of Population Growth on Economic Development

Additional national output would be obtained as long as the marginal value product (MVP) of the persons is positive. But when MVP of the person is lower than average product of the person, further addition of persons would simply reduce the welfare of average citizen resulting in lower standard of living. We also know that the market for goods and services expands resulting in increased demand for goods and services, further, large scale farming becomes possible which eventually adds to the productivity of the persons in the economy. Due to all these obvious reasons, the per capita output increases up to certain time, as population increases. But over time if the population in continuously growing then a point would be finally reached where capital and natural resources are fully utilized.

The Malthusian Dilemma¹

It may be fairly pronounced, that considering the present average state of the earth the means of subsistence, under circumstances the most favourable to human industry, could not possibly made to increase faster than in arithmetical ratio².

In two centuries, since Malthus brought out his theory of population, food production as well as population, have followed the path of geometric pattern. However, hunger though was not eliminated totally, in the course of these two centuries it was less widespread in the past few decades. Since the year 1650, the growth of population was slow and rapid growth which is seen at present, is a recent phenomenon and it is what Malthus meant a geometric rise in population growth.

In the light of geometric expansion of population, had there been no similar growth in food production the catastrophe which Malthus predicted would have been a reality. The factors which contributed to increased food production within a century following Malthus prediction, are bringing new lands under agriculture, increased irrigation facilities, use of high yielding varieties, chemical fertilizers, shifting land to food crops from fodder crops, *etc.*

¹ Hunry B. Arthur and Gail L. Cramer, "Brighter forecast for the world's food supply". Harvard Business Review, May-June 1976.

² Thomas R. Malthus, The Principle of Population, 1878 Ed. London: Reeves and Turner, London, pp. 5-6.

In one sense *i.e.*, population growth, Malthus was right in his prediction, but the improvements in world food production averted prediction of Malthus on food front. Though the global birth rate has fallen in the past 20 years and the world's food production has overtaken the population growth, we cannot be complacent that adequate supplies will be attained in future also *i.e.*, we are not exactly sure how far into the future the situation continues. For the present, the dilemma persists.

CAPITAL

Capital is not an original factor like land, but it is the result of man-made efforts. Man makes the capital goods to produce other goods and services. For example, machinery, raw material, transport equipment, dams, *etc.*, are considered as capital goods.

Definitions

1. Capital is produced means of production.
2. According to Karl Marx, capital is '*crystallized labour*'. This is indicated in his book, '*Das Kapital*'.

All capital is necessarily wealth but all wealth is not necessarily capital. Money when used for the purchase of capital goods, then only it becomes capital. For instance, residential buildings are the wealth of the individuals, but these are not considered as capital.

Characteristics of Capital

1. Capital is not a free gift of nature. It is the result of man-made efforts. Machinery, implements, *etc.*, are considered as capital goods.
2. Capital is productive, as it helps in enhancing the overall productivity of all the resources employed in the production process. Invested capital also fetches interest for its productive capacity. Farm machinery when used with skilled labourers enhances the productivity of land. Irrigation dam is considered as the capital good and with its water, we can bring out complementary effect on the productivity of other resources such as fertilizers, seeds, *etc.*
3. It is also prospective as its accumulation rewards income in future. Savings and investment in the economy leads to growth and development of the economy due to accumulation of capital over time. This leads to a rise in nation's income and consequently individuals income.
4. Capital is highly mobile as it possesses the characteristic of territorial mobility. For example, capital goods like tractor can be taken to different places of work and can be used for a variety of works.
5. Capital is supply elastic as its supply can be altered according to the need. Based on demand, supply of the capital goods can be changed.

Classification of Capital

Capital is classified based on several criteria the details of which are presented in Figure 6.2.

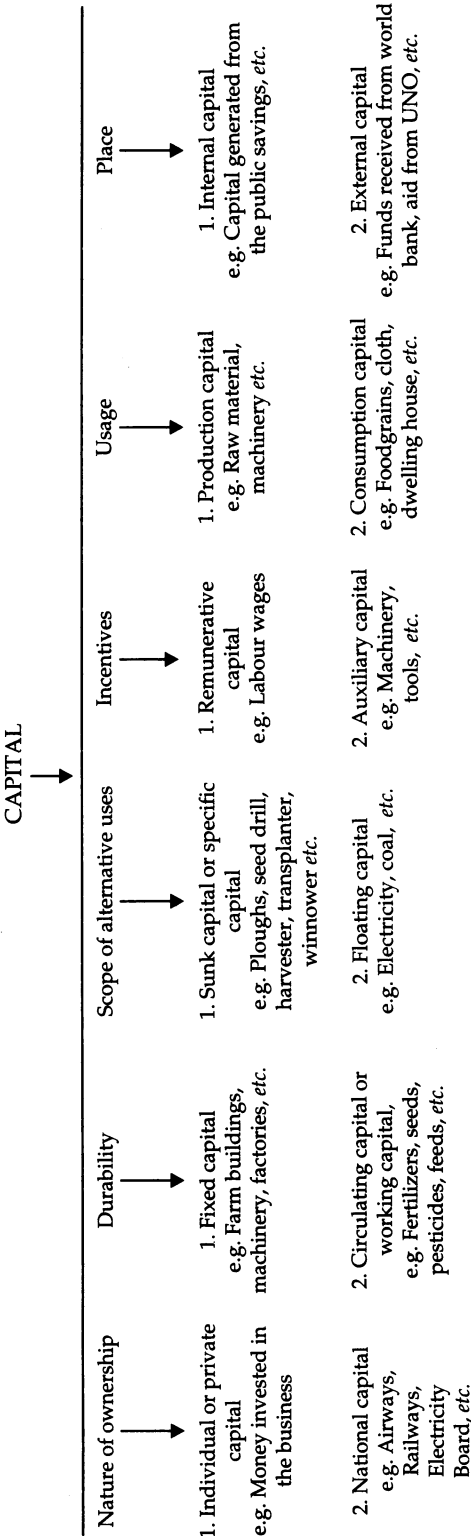


Figure 6.2 Classification of capital.

1. Based on Nature of Ownership

Individual Capital or Private Capital: These are the assets which are owned by individuals that give service and/or income. *Example:* Money that is invested by the individuals in the business.

National Capital: It is the capital that is owned by the community. *Examples:* Airways, Railways, etc.

2. Based on Durability

Fixed Capital: It is the capital which is used time and again in the production of other goods. *Examples:* Machinery, tools, etc.

Circulating Capital or Working Capital: It is the capital that is used once and exhausts after a single use. *Examples:* Fertilizers, seeds, feeds, etc.

3. Based on the Scope of Alternative Uses

Sunk Capital or Specific Capital: These are the capital goods, the use of which is confined to a specific purpose. *Examples:* Plough, seed drill, harvester, transplanter, winnower, etc.

Floating capital: It is the capital good that can be used for different purposes at any time. *Examples:* Electricity, coal, etc.

4. Based on Incentives

Remunerative Capital: The capital when used for the payment of wages in the production process, is called remunerative capital. *Examples:* Liquid money or cash, foodgrains, etc.

Auxiliary Capital: It represents the various capital goods that help the labourers in the production process. *Examples:* Machinery, tools, etc.

5. Based on Usage

Production Capital: These are the capital goods which help the labourers directly in the production activity. *Examples:* Machinery, tools, etc.

Consumption Capital: These are the goods which are consumed by the labourers. These indirectly assist in the process of production. *Examples:* Foodgrains, cloth, money used for consumption, etc.

6. Based on Place

Internal Capital: The capital that is generated from the domestic savings of the public in a nation. *Examples:* Public parks, public roads, etc.

External Capital: This is the capital generated from the external source. *Examples:* Funds received from World Bank, aid from UNO, etc.

ORGANIZATION

In any business activity, there is always a person who guides and controls its function. He also coordinates and regulates all the factors which are employed in the business activity. Apart from monitoring it, he takes the responsibility of the outcome. We call such a person, an entrepreneur (organizer) and the business activity which he is

doing is called an enterprise or organization. The performance of an organization depends upon the capabilities of the organizer or entrepreneur. Through proper allocation of resources, the entrepreneur would be in a position to maximize productivity of the resources that are used. Hence, the success or failure of enterprise depends on the role of the entrepreneur in any business activity. Following are the prime functions of an entrepreneur.

Functions of Entrepreneur

1. *Identification and Initiation:* Entrepreneur is the person who identifies a particular business activity and initiates the idea of commencing the business. At this stage the nature of enterprise to be started is decided by the entrepreneur. He has to venture and assume full risk for maximizing profits from his chosen business enterprise.
2. *Location of the Enterprise:* The place where the business unit is proposed to be set up is finalized by the entrepreneur. He considers both absolute and relative advantage of enterprise in choosing a particular place.
3. *Organizing:* At the outset arrangements are made to raise the required finance to commence the business. Later, the work is divided into various functions, *viz.*, production, financing, marketing, *etc.* This division of functions allows for increasing the efficiency of the individuals. Once the divisions are made, the concerned persons are given adequate authority to enable them to perform their functions efficiently. Delegation of authority to a person makes him more responsible and scrupulous. Authority and responsibility always go together.
4. *Supervision:* It is overseeing the work of the subordinates so as to ensure the desired results. Supervision includes whether the persons and their subordinates are keeping time schedules, whether the work is performed as per the requirements, and also helping them in solving their problems.
5. *Introduction of Innovation:* The entrepreneur is always on the look out for bringing innovations. It may be in terms of bringing out a variety of products, introduction of new methods of production, improving the existing method of production, making inroads into new markets, *etc.*
6. *Risk Taking:* The entrepreneur is quite prepared to accept the outcome of all his actions. In the business he may get substantial profit from organization or at times unexpectedly he may incur loss as well. He accepts them with poise, because he is responsible for all the happenings. All entrepreneurs, infact should have risk bearing ability.

FORMS OF BUSINESS ORGANIZATION

A business activity can be organized in different ways. In practice we come across business organization owned and run by a single person or group of persons. The ownership patterns of business when looked into, reveal five distinct forms *viz.*, 1) Individual organization or single proprietorship or sole trader concern organization or the sole proprietorship; 2) Partnership; 3) Joint stock company; 4) Co-operative organization; and 5) Sate enterprise.

The selection of each form of business organization by the entrepreneurs is influenced by several factors *viz.*, 1) type of business unit contemplated; 2) the care with which an enterprise can be run; 3) owned funds available with the entrepreneur; 4) total capital requirements; 5) possibilities of securing borrowed capital; 6) the risk and

liability aspects which the entrepreneur has to assume; 7) tax aspects of different forms of business organization; 8) Organizational, managerial and controlling aspects, *etc.*

Individual Enterprise or Single Proprietorship or Sole Trader or the Sole Proprietorship

The individual enterprise is the most common form of business organization. Many small business enterprises belong to this form. These enterprises are owned and operated by a single person, who takes all the responsibilities of outcome of the business. These enterprises are found to be small with a few exceptions here and there. This is more or less a family proprietorship with all the family members participating in the business affairs. As far as the size of the business is concerned, it is left to the desire of the entrepreneur keeping in view of the resources at his disposal.

Merits

The owner of the business enjoys absolute freedom without the interference of anybody in the business. The firms are called by the name of the entrepreneurs and some times by the name of Gods. The owner or proprietor enjoys all the profits received from the business. Capital requirements are less. Capital is supplied from the owner's funds (equity funds) and often times there is not much distinction between personal and business assets. This type of business is more flexible allowing changes in various business decisions like investment, sales, diversifying the business activities, expanding size of the business, *etc.* In this form of business organization, there is the possibility of direct contact with the customers, so that the entrepreneur gets continuous feedback. The entrepreneur controls the entire business, unless and otherwise delegated to somebody else. This type of business is very easy to start and easy to terminate.

Demerits

Since proprietor's funds are by far the sole source of funds, there would be limited amount of capital for the business to expand. Though funds from institutional agencies are available, the amount is restricted in view of the limited securities. Unlimited liability is the negative factor of this type of business. This means that in the event of failure of the business, creditors (lenders) are empowered to exercise every right to attach not only the assets of the business, but also the personal property of owners to make good the unpaid debts. Since the power is concentrated in the hands of a single owner of the business, there is no scope for those employees of the firm who are well trained and motivated to contribute their knowledge to the business growth. This leaves a situation of discontentment among the employees, the attitude of which will not contribute to the growth of the business. Besides, employees always will have a lurking fear that their fate depends upon the skill of one individual. The continuity of the business is also questioned, as the death of owner brings the business to a grinding halt.

PARTNERSHIP

It is an association of two or more individuals who join together as co-owners to share profits or losses in agreed proportions. Partnership comes into existence based

on the goals of the co-owners. To safeguard the business interests of the partners, normally a written partnership agreement is made covering various dimensions of business *viz.*, capital contribution, managerial responsibilities, sharing of profit and losses, withdrawal from the business, termination of the business, *etc.*

There are two kinds of partnership, *viz.*, general partnership and the limited partnership. General partnership is the most common in partnership dealings. Every partner, irrespective of the percentage of capital contributed to the business, has equal say in the management of business. Each partner has equal rights and liabilities. In limited partnership, any number of limited partners are allowed, but there should be at least one general partner. Liability of each member is limited to the extent of investment made only. Profits are also distributed among the partners according to the contribution of capital in the business.

There are different kinds of partner, *viz.*, active partner, sleeping partner, nominal partner, secret partner, *etc.* Active partner is one who is actively involved in running the business. He performs various roles like manager, organizer and adviser of business. A sleeping partner is one who contributes capital, shares profits and takes the responsibilities of losses of the business, but he does not participate in running the business. Normally persons having capital but who do not find time in the business affairs, prefer to be sleeping partners. Nominal partner is one who joins a business but does not contribute capital. He just lends his name for the business and on his virtues the business prospers. But he is identified as a partner by the third party. In the event of loss of a business, he is liable to the third party. This is because third party thinks him as partner. Secret partner is one whose name is kept secret. His name is not disclosed to outsiders. He is liable for the losses, if any. He differs from sleeping partner in the matter that he takes part in running the business.

Merits

The basic advantage of partnership is generation of greater financial resources coupled with diversified managerial talents. Partners pool their resources to attract larger capital to invest in the business. It can command greater amount of credit from the institutional agencies in view of its large equity capital. Management element is also strengthened as partners possess varied managerial skills. Simplicity of the business is also another feature, for it is easy to dissolve as compared to a joint stock company. It also enjoys the freedom from Government control. Risk of the business is shared by the partners and hence relatively it has less business risk.

Demerits

Unlimited liability is the major disadvantage of partnership. All the partners are responsible for the loss arising from the partnership business. The partners stand to lose their personal assets in the event of liquidation. As against the individual enterprise, the ownership is divided in partnership business. Every partner has equal right in the business activities. Partnership has a limited size of business and uncertain life. Partnership may vertically split due to disagreement on a particular decision. The retirement, death of a partner, bankruptcy *etc.*, may bring termination of the business according to law. Besides dishonest member may spoil the business with his dishonesty activities and make other partners to be responsible of his actions. It is not that much easy to find qualified and agreeable partners for managing the business on partnership. Since the decisions are taken by the consensus of all the partners, more often it is difficult to convince all the partners on certain decisions.

JOINT STOCK COMPANY

The drawbacks of individual enterprise and partnership business gave rise to the organization of another form called joint stock company. More specifically the discouraging aspects of unlimited liability closely followed by limitation of funds in the above forms were taken care of by joint stock company. Joint stock company has the limited liability and the involvement of large number of persons. This helps it to have adequate capital. Limited liability implies that in the event of loss for the company, shareholder is responsible to the extent of his shares only.

A joint stock company is a corporate body owned by a large number of shareholders and managed by a Board of Directors elected by the shareholders. According to Prof. L.H. Hany "A joint stock company is a voluntary association of individuals for profit, having a capital divided into transferable shares, the ownership of which is the condition of membership". In India the first Companies Act was passed in 1850 and limited liability was incorporated in 1857. Broadly there are two types of joint stock companies. These are 1) Joint stock private limited company and 2) Joint stock public limited company. To start a joint stock company, two documents, *viz.*, *memorandum of association* and *articles of association* are to be submitted to the registrar of joint stock companies. *Memorandum of association* contains the name of the company, the location of the head office, its aims, share capital particulars, kind and value of shares and declaration of limited liability. Rules and regulations for the establishment of joint stock company are incorporated in the *articles of association*.

Joint Stock Private Limited Company

The minimum number of members is two but the number cannot exceed 50. There is no need for the private limited company to call for a statutory meeting. Similarly, the company need not submit its annual balance sheet to the registrar of joint stock companies. The transfer of share is generally restricted by articles. It cannot issue prospectus inviting the public to subscribe to the share capital. The word 'Pvt. Ltd' must be used with the name of the company.

Joint Stock Public Limited Company

The business can be started with seven persons and there is no maximum limit for members. The business shall commence only after getting the certificate of incorporation from the registrar of joint stock companies. The public limited company must issue a prospectus inviting the public to contribute to the share capital. A statutory meeting must be held within a prescribed period and its annual balance sheet must be submitted to the registrar of joint stock companies. The main sources of finance for the company are through shares and borrowings. The shares are freely transferable. A shareholder can sell his shares at any time he prefers. The company will not return the shares to the shareholder till it winds up the business, but shareholders can easily sell their shares through stock exchange. The common types of shares are: 1) ordinary shares 2) preference shares; and 3) deferred shares. Ordinary shares are those for which no special privilege is given. Ordinary shareholders get dividend from the net profits of the company. Preference shares are those which carry a certain fixed dividend from the net profits. This dividend is paid to the preference shareholders before dividend is paid to other kind of shareholders. At the time of liquidation of the company after paying outside creditors, preference share capital is returned. Ordinary shareholders will be paid only when preference share capital is paid in full. Deferred

shareholders receive dividend, after payment of dividend to ordinary and preference shareholders.

Apart from selling shares the company raises required capital by floating debentures. A debenture is a document under the company's seal which provides for the payment of a principal sum and interest there on at regular intervals, which is usually secured by a fixed or floating charge on the company's property or undertaking and which acknowledges a loan to the company. Debentures are not shares but are just like promissory notes from which funds are raised. It is a form of loan and debenture holders (creditors) are paid interest as promised whether the company gets profits or not.

Merits

1. *Large-scale Resource Mobilization:* It facilitates mobilization of large scale resources. Large sum of capital can be raised from large number of shareholders. There is no limit as far as the number of shareholders is considered in a public company. If more funds are required the number of shareholders can be increased.
2. *Efficient Management:* The elected board of directors and expert managers provide the needed business expertise. The efficient management of the joint stock company provides the needed impetus for business growth.
3. *Limited Liability:* Limited liability encourages many individuals to invest in shares.
4. *Less Risk for the Shareholder:* Because of limited liability even in the event of company incurring losses, the loss for the shareholder is only the face value of the share. Hence there is less risk for the shareholder.
5. *Perpetual Existence:* It is an organization with perpetual succession. The shareholders keep on changing from time to time. But the business of the company is not affected. The death or insolvency of any shareholder does not affect the existence of the company.
6. *Democratic Management:* The directors are elected by the shareholders, hence there is no scope for the continuation of undesirable directors. Moreover, every individual whomsoever wants to become a shareholder, he is welcome and shareholders come from all walks of life and places.
7. *Social Benefits:* The savings of the people which are otherwise scattered are well mobilized by companies and productively invested. Thus the society gains from the investment activities in the form of getting the goods and services they need.
8. *Economies of Scale:* Since the companies are large-scale organizations, they enjoy economies of scale and produce goods at lower costs and receive more profits.

Demerits

1. *Concentration of Economic Powers:* The owners of the company are shareholders but management is done by different individuals. The administration is concentrated in a few hands. The shareholders, who are scattered all over, cannot influence the management. They are either powerless or not interested to act as per their desires.
2. *Fraudulent Management:* The management of the company exhibits vested interests and shows little concern for the shareholders.
3. *Delays in Decision-making:* Decisions cannot be taken quickly and they are to be taken in the meeting of board of directors or general body. It is not very easy to convene the meetings and they are time-consuming. These delays may cause further delays and result in deferred decisions.

4. *Excessive State Regulation:* The companies are governed by a number of rules of the Government. It is in fact compulsory, because huge public funds are invested in the companies. Since non-compliance leads to penalties, companies have to give a lot of attention for these rules. Consequently, the main objective of the company is likely to be diverted.
5. *Evils of Factory System:* The evils of factory system like insanitation, pollution, congestion, etc., are attributed to joint stock companies.
6. *Problems in Formation of Companies:* As a matter of fact a number of stages are involved in the promotion of a company by Government. Getting right persons in sufficient number for the company is a difficult proposition. A number of legal formalities are to be followed at the time of registration apart from the risks in promotion of the company.

CO-OPERATIVE ORGANIZATION

The term, co-operation implies the self help made effective through mutual help. The philosophy behind co-operative movement embodies in a slogan called "*all for each and each for all*". The basic objective of co-operation is protecting weaker sections of the society so that they fulfill their needs. Various types of co-operative societies are: 1) Consumers' co-operatives 2) Producers' co-operatives and 3) Credit co-operatives

Consumers' Co-operatives

These are present in rural and urban areas. Members in an area contribute capital to form into a society. Any person, regardless of caste, creed or religion can become a member of the society. The society is run by the elected executive members. The society undertakes bulk purchases of consumer goods and sells to the members. In this process the middlemen are eliminated. Non-members are also allowed to buy the goods but they are charged extra price. The society makes small profits to cover the administrative costs. The surplus of profits are distributed among the members as dividends. A certain percentage of profits is kept aside as reserve fund for contingencies and growth of the co-operatives.

Producers' Co-operatives

These are the associations of producers which help them in procuring inputs and in marketing their produce. These societies are formed with a sole aim of improving the economic conditions of producers. The society supplies the raw materials to these members who produce the goods. The society takes the responsibility of selling the goods. The members as workers are paid wages for their services. Part of the profits is retained as reserve fund and the balance is distributed among members. *Examples:* Weavers' societies, co-operative farming societies, etc.

Credit Co-operatives

Credit co-operatives are established to protect the small farmers and other weaker sections. Here, through these co-operatives, weaker sections of the society are protected from the clutches of moneylenders, who charge exorbitant rates of interest. Credit co-operatives are categorized into two. 1) Rural Credit Co-operative Societies and 2) Urban Credit Co-operative Societies

1. Rural credit co-operatives can be formed with atleast 10 members. Individuals join as members by contributing to the share capital in the form of shares. The societies receive loans from State Co-operative Bank, and these are advanced to the members as short term loans. These societies keep up a margin while advancing loan to meet the administrative costs. The area of coverage of these societies is confined to one or two villages.
2. Urban co-operative credit societies are meant to advance loans to small traders, artisans and employees receiving small incomes. The members are provided short term loans. Liability is limited. Urban co-operatives raise their capital from Governmental agencies and members.

Merits

1. Membership is open to every person. None can prevent any person willing to join the societies.
2. Management of the co-operatives is democratic. The members among themselves elect the board of management. Every member has equal right in electing the members irrespective of the number of shares.
3. The co-operatives purchase goods from producers directly and sell them to consumers directly. In this process the middlemen are eliminated.
4. The motto of co-operatives is service, but not profits. Co-operatives aim at spreading the virtues of discipline, integrity, honesty, mutual help, fairness in dealings, etc.

Demerits

1. They suffer from timely and capital inadequacies. Societies aim at the betterment of weaker sections and the shares raised from them are of small magnitude. This limitation stands in the way of initiating a large scale enterprise.
2. Since there is no bar in entering into a society for anybody, the members are drawn from different sections of the society. This creates lack of understanding among the members. The members as a result do not take much interest and leaves everything to paid workers.
3. The transactions of the society are in cash and no credit sales are allowed. Since the members come from poorer sections of the society, they cannot always transact business with cash. Credit facilities which are found with private traders attract them to buy their requirements.
4. Societies function under the regulation of the Government. Government even nominate members to the management committee. In nominating the members of political parties take a major role and the business atmosphere suffers.

STATE OR PUBLIC ENTERPRISE

State enterprise is an undertaking, owned and controlled by the local or State or central Government. Entire investment or major part of the investment is done by the Government. The major considerations for the States to undertake the business are heavy investment requirements, need to protect weaker sections against economically strong, and when private traders are hesitant to venture into the enterprise. State enterprises are found in manufacturing, trading and service activities. These enterprises are managed by the Government. The Government programmes are implemented through State enterprises.

Merits

1. Industrial development is possible through State enterprises. Private sector does not show much concern for initiating projects requiring huge capital and long gestation periods.
2. Planned and balanced growth is possible through the entry of Government. Private enterprises show their preference for establishing industries in developed areas. Government is prepared to establish industries even in underdeveloped areas which ensure balanced growth in all spheres of activities.
3. Government takes over the sick units, and run them as State enterprises in the interest of the nation.
4. The profits obtained by the State concern are ploughed back into the business for further expansion and diversification and also for the welfare of the community in general.
5. Government enterprises encourage socialistic pattern of society which reduce economic disparities.
6. There is an attraction for the aspiring qualified individuals to join the Government service. It commands superior talents.
7. The employees feel greatly secured in Government service.

Demerits

1. The proposed projects by the Government are plagued by undue delays. This is due to the complicated procedural formalities coupled with non-release of funds in time. These delays make the planned estimates go topsy-turvy, consequently the expected benefits would not be forthcoming timely.
2. Another demerit of public concern is high overhead costs. These arise out of large amounts of expenditure on unproductive items coupled with high investment on amenities for employees even before the profit is earned.
3. State enterprises when compared to private enterprises are not managed efficiently resulting in losses.
4. The security of the job of an employee in a State organization makes him not to bother too much to deliver the goods, for he gets his pay regularly.
5. Manpower planning is a lacuna in State enterprises and they employ persons disproportionate to their needs. This results in overstaffing leading to inefficiency and lethargy.
6. Redtapism is prevalent in State enterprises.
7. These are by far service oriented rather than profit oriented.

Comparison of Co-operative Organization and Joint Stock Company.

Particulars	Co-operative organization	Joint stock company
1. Membership	A co-operative society can be formed with ten persons and there is no maximum limit for the members. Members are known to each other, because the members come from a particular area.	A private limited company requires a minimum of two members and the maximum number cannot exceed fifty. A public limited company can be started with seven members and there is no maximum limit. The shareholders are not known

		to one another because they are widely scattered all over the country.
2. Main objective	The main objective of a co-operative society is to meet the requirements of the members.	The main aim of a joint stock company is to earn more profits.
3. Voting rights	Voting is based on one man, one vote.	Voting rights are based on one share, one vote.
4. Members involvement	Members take whole-hearted interest in the affairs of the society	Shareholders are indifferent in the functioning of the joint stock company.
5. Transfer of shares	A member cannot transfer his share to anybody else, all that he can do is to withdraw his share with prior intimation.	A shareholder can sell his shares. There is no provision to withdraw the shares. At the time of liquidation only the share money is returned to the shareholders.
6. Distribution of profits	Profits are distributed according to the share capital	Profits are distributed among shareholders as dividends.

Market Structure

The firm's price and output decisions are made in a given market. The term market is used in different ways. Market can be viewed as the context within which voluntary exchanges among buyers and sellers take place. The most common method of classifying markets is on the basis of number of sellers and buyers and the homogeneity or degree of differentiation of the product.

The term competition always specifies the presence in a specific market of two or more sellers and two or more buyers of a definite commodity, each seller acting independently of every other seller and each buyer acting independently of every other buyer. Perfect competition is a market in which every firm is too small to affect the market price. Alternatively, a market is said to be perfectly competitive when there are many sellers (and buyers) transacting a homogeneous product.

In real world, business people use the word competition similar to that of rivalry. In economic theory, perfect competition means no rivalry among the sellers. The perfectly competitive market is characterized by a complete absence of rivalry among the firms (sellers).

Imperfect competition is a market in which a firm can appreciably affect the market price of the product. It implies that in imperfect competition the individual sellers have some degree of control over the price of the products. Imperfect competition does not mean that a seller has absolute control over the price of its good. It is important to note that the word imperfect does not reflect upon the morals or ethics of businessmen. In imperfect competition intense rivalry exists among the firms.

Classification of Market Structure

Market structure	Number of firms or producers or sellers	Degree of product differentiation	Firm's degree of control over price	Part of economy where prevalent
I. Perfect-competition	Many sellers	Homogeneous product	No control over price	Farm commodities
II. Imperfect competition				
a. Monopolistic competition	Many sellers	Differentiated product	Some control over price	Retail trade

* Clair Wilcox: The nature of competition and monopoly an American Society, TNEC, Monograph 2, 1941.

b. Pure oligopoly	Few sellers	Homogeneous product	Some control over price	Steel, chemicals, etc.
c. Differentiated oligopoly	Few sellers	Differentiated product	Some control over price	Automobiles, computers, etc.
d. Monopoly	One seller	Product with no close substitutes	Considerable control over price	Railways, posts, electricity, etc.

Monopsony is a market structure in which there is only one buyer instead of one seller.

Oligopsony is a market structure in which there are only few buyers.

Bilateral monopoly is a market structure in which a single seller faces a single buyer.

PERFECT COMPETITION

Perfect competition is a market structure in which there are many sellers and buyers transacting a homogenous product.

Characteristics

The following are the characteristics of perfectly competitive market.

1. *Large Number of Buyers and Sellers:* The perfectly competitive market is characterised by the presence of large number of buyers and sellers. Though a firm (seller) is large, but its supply is only a small part of the total quantity offered for sale in the market. Similarly, each buyer's demands is relatively small to the market demand. Since no seller or buyer is large to influence the market price, they take the market price as a given parameter beyond their control. The economic agents (sellers and buyers) are the price takers and quantity adjusters. There is no rivalry among buyers and sellers. The demand curve of a firm in the perfectly competitive market is infinitely elastic implying that the firm can sell any amount of output at the prevailing market price.
2. *Homogenous Product:* The commodity transacted in the perfectly competitive market is identical. There is no way to differentiate the goods produced by the different firms. The buyers have no preference of the commodity supplied by sellers and the sellers have no preference among the buyers.
3. *Free Entry or Exit of Firms:* There is no barrier on the entry or exist of firms from the industry. A firm can leave the industry if it cannot withstand losses.
4. *No Government Regulation:* Government does not place any restriction on price, output, entry of firms, etc. There is no Government intervention in the market.
5. *Perfect Mobility of Resources:* The factors of production can move from one firm to another. Workers can move from one job to another and from one place to another. The owners of man made and natural resources are free to use them in those economic activities where they get higher returns. There exists perfect competition in the markets of factors of production.
6. *Perfect Knowledge:* It is assumed that all economic agents (sellers and buyers) have complete knowledge of the conditions prevailing in the market. Both buyers and sellers are aware of the nature of product and prevailing market price. Therefore, no buyer will offer a price higher than the prevailing one and no seller is willing

to sell the product at the price, lower than the prevailing one. As a result, single price for the product prevails in the market.

The concept of pure competition is distinguished from that of perfect competition. The pure competition relaxes the assumptions of perfect mobility of resources and perfect knowledge. The first four characteristics are common to both perfect competition and pure competition. Markets for various farm commodities can be cited as an example for perfect competition.

Output Decisions of the Firm–Short Run Equilibrium

The interaction of demand and supply curves determines the market equilibrium price and output. In a perfectly competitive market, given the market price, an individual firm can sell any quantity it wishes at the prevailing price. Short run is the planning period during which the rate of output can be changed by intensive use of existing plant. The number of firms in the market is fixed in the short run, since the time period is not long enough to allow any entry or exit from the market. Therefore, in the short run, the decision problems facing a firm is choosing the optimum output using the existing plant. The total curves approach and the marginal and average curves approach are used in the choice of profit maximizing level of output.

Optimal Output Decision–Total Curves Approach

A firm is in equilibrium when it has no tendency to change its level of output *i.e.*, the firm needs neither expansion nor contraction. In equilibrium, the firm maximizes its profits. The profit, by definition is the difference between total revenue (TR) and the total cost (TC). The perfectly competitive firm is in equilibrium when it produces the output that maximizes the difference between total revenue and total costs.

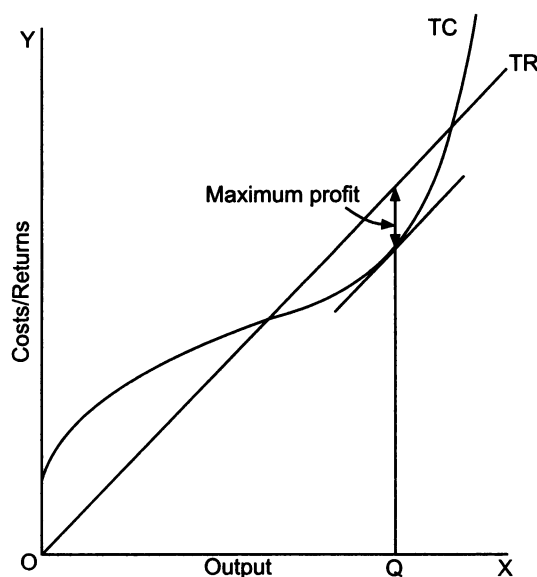


Figure 7.1 Determination of profit maximizing output in the short run, total curves approach.

In Figure 7.1 the total revenue curve and total cost curve of a perfectly competitive firm are shown. The total revenue curve is a straight line with positive slope passing through origin indicating that the price is constant for all levels of output, since price is given for a firm in the perfect competition. If the firm produces nothing, TR will be zero. The profit maximizing or optimal output is determined where the vertical distance between TR and TC curves is greatest. The profit maximizing output is OQ units per period.

At outputs, smaller or larger than OQ, the profits earned by the firm will be reduced. Thus the firm has no intentions to change its output, and the equilibrium is a stable one.

Marginal Curves Approach

A firm in the perfect competition can sell any amount of goods without affecting the price. Therefore, the demand or average revenue curve (AR curve) is a horizontal line at the height of the market price. Under perfect competition, any additional output can be sold at the given market price and hence the marginal revenue is also equal to the price. Accordingly in perfect competition, $MR = AR = \text{Price}$ (Figure 7.2).

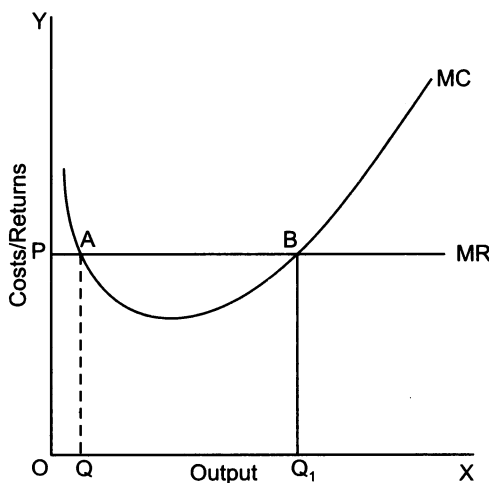


Figure 7.2 Determination of profit maximizing output in the short run, marginal curve approach.

The firm is in equilibrium at the level of output where MC curve intersects MR curve. If the firm's output is less than Q_1 , marginal revenue exceeds the marginal cost and output must be expanded. On the other hand, if the current output is more than the Q_1 , marginal revenue is less than marginal cost *i.e.*, each additional unit of output costs more than the revenue received from its sale. Therefore output must be reduced. By comparing MR and MC, the firm can make a decision about the expansion, retention or reduction of output. The profit-maximizing firm should

1. Increase its output when $MR > MC$
2. Reduce its output when $MR < MC$
3. Maintain the output when $MR = MC$. Here profits are maximized.

Thus the first condition for the equilibrium of the firm is the equality between MR and MC. However, this condition is not sufficient, since it may be fulfilled and yet

the firm may not be in equilibrium. In Figure 7.2 it is observed that the condition $MR = MC$ is fulfilled at point A, but the firm is not in equilibrium, because profit is maximized at a greater level of output. The firm can earn more profits by producing beyond Q since $MR > MC$. The second condition for equilibrium requires that MC curve must cut the MR curve from below and after the point of equilibrium, it must be above MR curve. This means that the slope of the MC curve must be greater than the MR curve. At point B, the slope of MC is positive, while the slope of MR curve is zero at all levels of output. Thus at point B both the conditions for equilibrium are satisfied *i.e.*, $MC = MR$ and slope of $MC >$ slope of MR . Then the profit maximizing output is Q_1 at which $MR = MC$ as indicated by point B.

Output Decisions in the Short Run

Though the firm is in short run equilibrium, it does not necessarily imply that it earns excess profits. Whether the firm earns excess profits or not depends on the level of average total cost (ATC) at the short run equilibrium. The firm's average and marginal cost curves are shown in Figure 7.3.

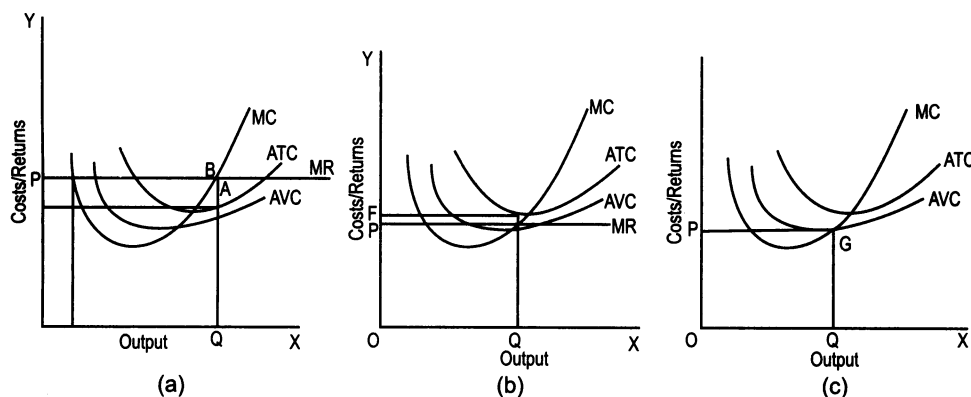


Figure 7.3 Output decisions in the short run.

Assume that the price is Rs. P per unit. The horizontal line, demand = $AR = MC$ shows the firm's demand, average and marginal revenue curves. ATC, AVC and MC curves show the firm's costs. Given these revenue and cost curves, the output that maximizes the profit of the firm is Q_1 at which $MR = MC$. At this level of output, the firm earns profit of AB rupees per unit and the total profit is equal to the area CPBA (Figure 7.3a). The price at equilibrium is above the ATC and therefore the firm earns excess profits. If the firm produces more than Q_1 level of output, MC exceeds MR and the profit will be decreased. On the other hand, if it produces less than Q_1 level of output, MR exceeds the MC and the total Profit will be reduced.

If the price is below the ATC the firm incurs losses (PFDE) (Figure 7.3b). In the short run, the firm will continue to produce only if it covers variable costs. If the firm fails to cover the variable costs, it will close down the operations to minimize losses. The point at which the firm covers its variable costs is called the closing down point, as indicated by the point G in (Figure 7.3c). If the price is below minimum AVC the strategy of the firm is to produce none *i.e.*, shut down the operations.

Short Run Equilibrium Under Perfect Competition

Numerical example

$$\text{Demand equation, } Q_d = f(P) \quad (1.9)$$

$$D = a - b P$$

$$\text{Supply equation, } Q_s = f(P) \quad (1.10)$$

$$S = C + d P$$

Horizontal summation of all the firms gives the market supply for the commodity.

Equation (1.9) and (1.10) give demand and supply functions for a commodity. Short run market equilibrium then would be defined by market clearing condition which is specified in equation (1.11)

$$a - bP = C + dP \quad (1.11)$$

Let the demand function be given as

$$\hat{Q}_d = 170 - 20 P$$

$$\hat{Q}_s = 50 + 10 P$$

$$170 - 20 P = 50 + 10 P$$

$$170 - 50 = 10 P + 20 P$$

$$120 = 30 P$$

$$P^* = 120/30 = 4$$

P^* = Equilibrium price

Substituting $P = 4$ in equations (1.9) and (1.10)

$$\text{Demand} = 170 - 20 (4) = 90$$

$$\text{Supply} = 50 + 10 (4) = 90$$

Then the equilibrium quantity is 90 units. The above estimated demand and supply equations are sensitive to the actions of buyers and sellers.

Equilibrium of the Firm in Short Run Through Cost Function Approach

In imperfect competition the firm has 'U' shaped average cost curve and 'U' shaped marginal cost curve. These cost curves include normal returns to capital and investment and earning economic profit to the firms.

Let the estimated total cost function be

$$\hat{TC} = 25 + 1.5Q + 0.01Q^2 \quad (1.12)$$

$$\frac{dTC}{dQ} = MC = 1.5 + 0.02Q$$

Profit of the firm will be maximized when the price per unit of output (Rs. 10) is equal to MC

$$10 = 1.5 + 0.02Q$$

$$Q = \frac{8.5}{0.02} = 425$$

Economic profit of the firm = TR-TC

$$10 \times 425 = PQ - TC$$

$$= 25 + 1.5Q + 0.02Q^2$$

$$4,250 = 25 + 1.5(425) + 0.02(425)^2$$

$$TC = 5 + 1.1 Q + 0.005Q^2$$

$$MC = 0 + 1.1 + 0.01Q$$

$$P = MC$$

$$10 = 1.1 + 0.01Q$$

$$Q^* = \frac{10-1.1}{0.01} = 890$$

$$\pi = TR - TC$$

$$= PQ - 5 + 1.1 (890) + 0.005 (890)^2$$

$$= 8,900 - 5 + 979 + 3,960.5$$

$$= 8,900 - 4,944.5$$

$$\pi = \text{Rs. } 3,955.5$$

This is the economic profit of the firm under perfect competition in short run.

Profit Maximization in Terms of Cost Function Under Perfect Competition for the Firms

Profit of the firm is defined as the difference of the amount between total returns and total costs. Algebraically it is expressed in equation (1.13) as profit function.

$$\begin{aligned} \pi &= TR - TC \\ &= P(Q) - C(Q) \end{aligned} \quad (1.13)$$

where,

P = Price/unit of output

Q = Quantity of output

C(Q) = Total cost function *i.e.*, cost is a function of output.

In the case of perfect competition, we get maximum profits by taking the first and second order conditions of profit function with respect to Q.

$$\frac{d\pi}{dQ} = P - \frac{dC}{dQ} = 0 \quad (1.14)$$

$$\frac{d^2\pi}{dQ^2} = - \frac{d^2C}{dQ^2} < 0 \text{ or } \frac{d^2C}{dQ^2} > 0 \quad (1.15)$$

Equation (1.14) is first order condition

Equation (1.15) is the second order condition

Equation (1.14) says that $P = MC = MR$

Numerical example —1

The revenue function of the firm R(Q) is expressed as

$$\hat{R} = 1,420 Q - 3Q^2 \quad (1.16)$$

and its total cost function is given as

$$\hat{C} = 1.2 Q^3 - 48.22 Q^2 + 1,600 Q + 1,000 \quad (1.17)$$

Profit function = $\pi (Q_1)$ is expressed as

$$\hat{\pi} = \hat{R} - \hat{C} \quad (1.18)$$

$$= (1,420 Q - 3 Q^2) - (1.2 Q^3 - 48.22 Q^2 + 1,600 Q + 1,000)$$

$$= 1.2Q^3 + 45.22 Q^2 - 180 Q - 1,000 \quad (1.18)$$

Taking the first derivative of equation (1.18) with respect to Q and equating it to zero we get maximum profit

$$\frac{d\pi}{dQ} = -3.6Q^2 + 90.44Q - 180 - 0 = 0 \quad (1.19)$$

Using the quadratic equation we can find out the values of Q.

$$Q = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Where,

$$a = -3.6$$

$$b = 90.44$$

$$c = -180$$

$$Q = \frac{-90.44 \pm \sqrt{(90.44)^2 - 4(-3.6)(-180)}}{2(-3.6)}$$

$$Q = \frac{(-15.69)}{-7.2} = 2.17$$

$$Q = \frac{(-165.19)}{-7.2}$$

$$= 22.94$$

The second order condition is:

$$\frac{d^2\pi}{dQ^2} = -7.2Q + 90.44 < 0 \quad (1.20)$$

Substitute Q value of 22.94 in equation (1.20)

The value obtained is - 74.73

When Q = 22.94 units the second order conditions is satisfied. Hence the optimal level of output is 22.94 units.

Substituting Q = 22.94 in the profit equation (1.18)

We get maximum profit = Rs. 4,181.10

Substituting $Q = 22.94$ in equation (1.16), we get total revenue of Rs. 30,996.07

$$Q^* = 22.94 \text{ units}$$

$$P^* = \frac{R}{Q} = \frac{30,996.07}{22.94}$$

Equilibrium price = Rs. 1,351.18

Numerical example — 2

The total cost function of the firm under perfect competition

$$\text{is given as } \hat{C} = 0.02Q^3 - 0.6Q^2 + 8Q + 10 \quad (1.21)$$

$$MC = \frac{dC}{dQ} = 0.06Q^2 - 1.2Q + 8 \quad (1.22)$$

Putting $P = MC$

$$P = 0.06Q^2 - 1.2Q + 8 \quad (1.23)$$

Solving for Q in terms of P

$$Q = 0.06Q^2 - 1.2Q + (8 - P) \quad (1.24)$$

Using quadratic equation

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Where,

$$a = 0.06$$

$$b = -1.2$$

$$c = (8 - P)$$

$$= \frac{-(-1.2) \pm \sqrt{(-1.2)^2 - 4(0.06)(8 - P)}}{2(0.06)}$$

$$= \frac{+1.2 + \sqrt{1.44 - 1.92 + 0.24P}}{0.12}$$

Supply function

$$Q = f(P) = \frac{1.2 + \sqrt{+0.24P - 0.48}}{0.12} \quad (1.25)$$

In the equation (1.25) negative value of $\sqrt{0.24P - 0.48}$ is ignored because supply curve is having positive slope.

Let the total variable cost function be given as

$$\hat{TVC} = 0.02Q^3 - 0.6Q^2 + 8Q \quad (1.26)$$

Please note that here when constant term is dropped from the TC function, then it becomes TVC.

$$\hat{AVC} = \frac{\hat{TVC}}{Q} = \frac{0.02Q^3 - 0.6Q^2 + 8Q}{Q} \quad (1.27)$$

Taking the first derivative of equation (1.27) and equating to zero we can solve for Q^*

$$\frac{d(AVC)}{dQ} = 0.04Q - 0.6 = 0$$

$$Q^* = \frac{+0.6}{0.04} = 15$$

Find the value of AVC by substituting the value of Q^* in the AVC equation (1.27). We get AVC as Rs. 4.76

The supply function will be valid for all prices greater than minimum AVC *i.e.*, Rs. 4.76.

The supply function of the firm is

$$\text{Quantity supplied } (Q_s) = \frac{1.2 + \sqrt{0.24P - 0.48}}{0.12} \text{ if } P \geq 4.76$$

<u>Q_s values</u>	<u>P values (Rs.)</u>
16.78	4.76
17.07**	5.00*
17.64**	5.50*
19.31**	7.20*
22.25**	11.00*

*Assumed value;

**Derived value

Plotting the value of P on vertical axis and value of Q on horizontal axis we can draw the supply curve. Assume that, if there are 50 firms in the industry and all are having similar cost functions then the market supply of the commodity would be

$$Q_s = (50) \left(\frac{1.2 + \sqrt{0.24P - 0.48}}{0.12} \right)$$

The Supply Curve of the Firm

Let us examine how the supply curve of the perfectly competitive firm is derived. The supply curve of the firm is derived by the points of intersection of its MC curve with successive MR curves (Figure 7.4a). If the market price is P_2 , the firm supplies Q_2 units and when the price is P_1 , it supplies Q_1 units. As long as the price is higher than the minimum ATC, the firm will supply the output given by $MR = MC$. Given the positive slope of MC curve, each higher MR curve intersects the MC curve to a point

which lies to the right of the previous intersection. This means that the quantity supplied increases with the increase in price. If the price is lower than minimum AVC, the firm has to shut down its operations. Since price cannot cover AVC, continuing the production will increase the loss. A competitive firm will produce the output given by $MR = MC$, whenever price is equal to or greater than the minimum AVC. The profit maximizing output is zero when the price is less than minimum AVC. Therefore the portion of the MC curve on or above the AVC curve is the supply curve of the firm. The supply curve of the firm is shown in Figure 7.4b.

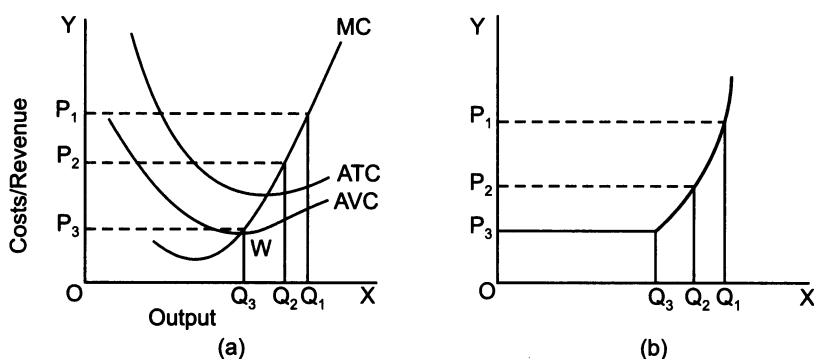


Figure 7.4 Supply curve of the firm.

Long Run Equilibrium of the Firm

Long run is the planning period during which a firm can make more adjustments than in the short run. In the long run the firm can adjust its plant capacity/scale of operations. Therefore, all costs are variable. Firms must earn only normal profits. If the price is more than long run average cost, the firms earn super normal profits. Attracted by these profits, new firms will enter the industry and super normal profits will be competed away. If the price is less than LAC, firms incur loss and some of the firms leave the industry so that no firm earns more than normal profits.

If the price is P , the firm makes super normal profits working with the plant whose cost is denoted by SAC_1 (Figure 7.5a). Excess profits encourage the firm to build new capacity and it will move along its LAC. Attracted by excess profits, new firms enter the industry. Consequently the quantity supplied increases and the supply curve shifts to the right. As a result the price falls and it reaches the level of P_1 (Figure 7.5b) at which the firm and industry are in long run equilibrium.

The condition for the long run equilibrium of the firm is that marginal cost equals the price and the long run average cost.

$$LMC = LAC = P$$

At equilibrium the short run marginal cost is equal to the long run marginal cost and the short run average cost is equal to the long run average cost.

$$SMC = LMC = LAC = SAC = P = MR$$

Equilibrium of the Industry in the Long Run

The industry is long run equilibrium, when all the firms are earning normal profits. Under these conditions there is no entry or exit of firms in the industry as shown in the Figure 7.6a.

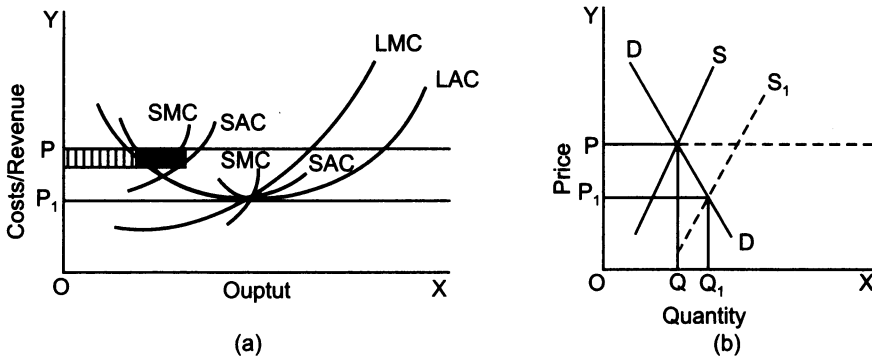


Figure 7.5 Long run equilibrium of the firm.

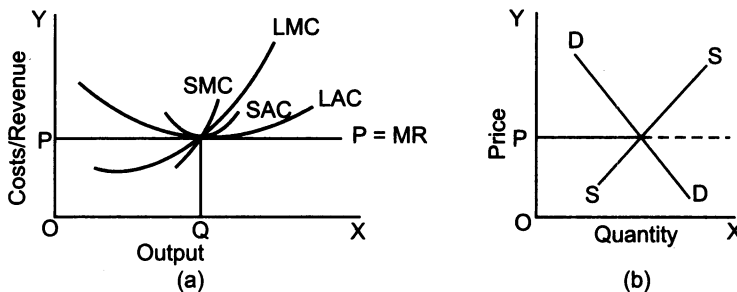


Figure 7.6 Long run equilibrium of the industry.

When the price is P , the firms produce at their minimum cost, earning just normal profits. The firm is in equilibrium at the level of output Q .

$$LMC = SMC = P = MR$$

This equality ensures that the firm maximizes its profits at the price P . The industry is in equilibrium, because firms earn normal profits so that there is no incentive for entry or exit. It is shown by the equality of $LAC = SAC = P$, which is observed at the minimum point of LAC curve. As all firms in the industry are being in equilibrium, the industry supply remains stable. Given the market demand (D), the price P is a long run equilibrium price (Figure 7.6b).

Long Run Equilibrium for a Firm Under Perfect Competition

Numerical example

Let the demand function for competitive industry be given as

$$Q_d = 600 - 6P \quad (1.28)$$

and cost function for individual firm i

$$\hat{C}_i = 100 + 8Q_i + 1Q_i^2 \quad (1.29)$$

Where Q_i = level of output of the i^{th} firm. Here we assume that all firms are homogeneous with regard to production of output.

$$\hat{C}_i = 100 + 8Q + 1Q_i^2 \quad (1.29)$$

$$AC = \frac{100}{q} + \frac{8Q}{8} + \frac{1Q^2}{Q} \quad (1.30)$$

$$= \frac{100}{q} + 8 + 1Q$$

$$\frac{dAC}{dQ} = 1 - 100Q^2 = 0$$

$$1 = \frac{100}{Q^2} = Q^2 = 100$$

$$Q = \pm 10$$

$$Q^* = 10 \text{ units}$$

The second order sufficient condition is satisfied when $Q = 10$, hence equilibrium output is 10.

The price of the commodity when $Q_i = 10$

$$P = \frac{100}{10} + 8 + 1 \times 10$$

$$= 10 + 8 + 10 = 28$$

$P^* = 28$ (equilibrium price). To get total market demand when $P = 28$, substitute $P = 28$ in equation (1.28)

$$Q_d = 600 - 6 \times 28$$

$$= 600 - 168$$

$$= 432$$

This is total market demand. Since in perfect competition all firms are identifiable and each firm produces 10 units of commodity. Hence, the number of firms in the

$$\text{industry are} = \frac{432}{10} = 43$$

Shut Down Price

In the short run managers of the firm would like to close down the operations of the firm if the price of the product is less than its AVC. If the price is greater than AVC, but less than ATC or AC, the firm would like to continue production in the short run because contribution of profits can be made to fixed costs. In the long run, all costs are variable. If the price of its product is less than AVC, the firm will close down its operations.

Calculating Shut Down Price

Numerical example

Let the estimated cost function in the short run is assumed as

$$\hat{TC} = 500 + 120 Q - 18 Q^2 + 1.2 Q^3 \quad (1.31)$$

Here, Q = Quantity of output

TC = Total cost

The cost function is having a constant term *i.e.*, Rs. 500. It is called short run function. In the long run function constant term is absent.

Taking the first derivative of equation (1.31) we get marginal cost function.

$$MC = \frac{dTC}{dQ} = 0 + 120 - 36 Q + 3.6 Q^2 \quad (1.32)$$

The firms total variable cost function is given as

$$TVC = 120 Q - 18 Q^2 + 1.2 Q^3 \quad (1.33)$$

$$AVC = \frac{TVC}{Q} = \frac{120 Q - 18 Q^2 + 1.2 Q^3}{Q} \quad (1.34)$$

$$AVC = 120 - 18 Q + 1.2 Q^2 \quad (1.35)$$

Profit maximization condition requires that price = MC *i.e.*, $MR = MC$ (an equality condition.)

Here, MC = minimum point of AC curve

$$MC = 120 - 36 Q + 3.6 Q^2$$

$$AVC = 120 - 18 Q + 1.2 Q^2$$

Equating (1.32) and (1.35) and rearranging we get

$$120 - 36 Q + 3.6 Q^2 = 120 - 18 Q + 1.2 Q^2 \quad (1.36)$$

$$0 - 18 Q + 2.4 Q^2 = 0$$

$$- 18 Q + 2.4 Q^2 = 0 \quad (1.37)$$

$$- 6 Q (3 - 0.4 Q) = 0$$

$$- 6 Q = 0; Q = 0$$

$$- 0.4 Q = -3$$

$$Q^* = \frac{3}{0.4} = 7.5$$

Substituting ($Q^* = 7.5$) in MC equation *i.e.*, equation (1.32)

Here, $P = MC$

$$120 - 36 (7.5) + 3.6 (7.5)^2$$

$$\text{Hence } P = 120 - 36 (7.5) + 3.6 (7.5)^2$$

$$= \text{Rs. } 52.5$$

Shut down price = Rs. 52.5

When the price of the product is below Rs. 52.5 per unit of output, the firm stops production.

IMPERFECT COMPETITION

Any deviation from the conditions of perfect competition in a market leads to the existence of imperfect competition. More specifically the characteristic features like few sellers selling a differentiated product, absence of price information, restriction of free entry and free exit of the firms, existence of transportation costs *etc.*, represent imperfect competitive markets. Imperfect competition takes several forms, *viz.*, monopoly, monopolistic competition, duopoly, oligopoly, monopsony and oligopsony. These are briefly presented here.

MONOPOLY

Monopoly is a market condition, wherein the entire supply of a commodity is concentrated in the hands of a single firm. There exists no close substitutes for the product produced by a monopolist. The cross elasticity of demand is very low for the product. In monopoly, the firm and the industry are the same. Though he controls both price and output policies, he cannot adopt the same simultaneously, because the monopolist has the choice of fixing his own price, but cannot sell the expected quantity at the chosen price. Normally he decides the output and fixes the price for the product. He chooses between two options. He has to produce either more output to sell at a lower price or produce less output to sell at a higher price. Monopoly is of two types, *viz.*, pure monopoly and imperfect monopoly.

The cross elasticity of demand for the product under pure monopoly is zero. The existence of pure monopoly is of theoretical interest only. It is far from reality in the real world situation. As against pure monopoly, imperfect monopoly is a condition which is found in reality with the following features.

- (1) Product with a very low cross elasticity of demand.
- (2) Intentions to maximise profits.
- (3) No role of individual consumer influencing the price.
- (4) Uniform price for all the consumers, and
- (5) Absolutely no threat from the other firms.

Average Revenue Curve and Marginal Revenue Curve Under Monopoly

The average revenue curve of the firm under monopoly slopes downwards from left to right throughout its length as shown in Figure 7.7. Marginal revenue curve slopes downwards from left to right but stationed below the average revenue curve. The numerical slope of the MR curve is twice as steep as that of AR curve. The average revenue curve is the demand curve under monopoly. The demand curve reflects the intentions of monopolist in selling large quantities of output through price reduction.

Equilibrium in the Short Run

The intention of monopolist in maximizing the profits is achieved at the point of equality of MR and MC.

The firm is in equilibrium by producing OQ output at PQ or CO price. At this equilibrium level of output, the profit of the firm under monopoly is BCPA (Figure 7.8a).

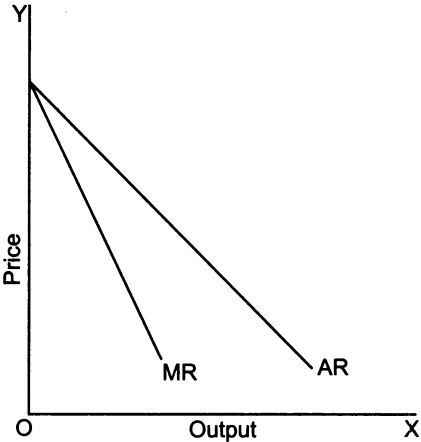


Figure 7.7 Average revenue curve and marginal revenue curve.

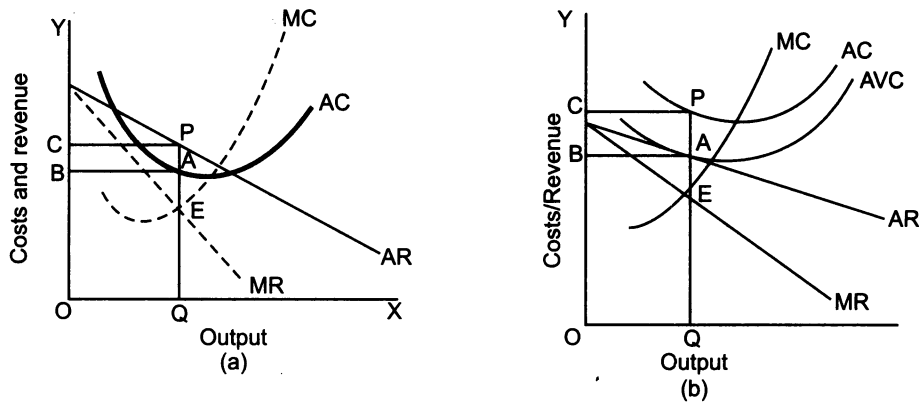


Figure 7.8 Equilibrium in the short run.

Another possibility for the monopoly firm in the short run is that, the price may be less than the average cost of production, covering only average variable cost of production. This situation is depicted in Figure 7.8b.

Price OB or AQ is found to be lesser than average cost but covers the average variable cost. Firms continue to operate inspite of the situation of price not covering average cost. The loss that the monopoly incurs consequently is BCPA. Even in monopoly the shut down point would be in the offing, in case the price fails to cover even the average variable cost.

Equilibrium in the Long Run

In monopoly, though the entry of new firms is ruled out still like a competing firm, it makes all out efforts to adjust the supplies to the changes in demand or even costs that are likely to occur. Even in the long run, monopolist will be in equilibrium by equating MC and MR. On the price front, it can be equal or more than average cost in the long run, but monopolist generally opts the price to be more than long run average cost, so that it can be in a position to earn supernormal profits. This aspect

is given tremendous importance in the absence of a threat from any other firm to enter the industry. As clear from Figure 7.9 the monopolist enjoys supernormal profit of CBAP by producing OQ output at OC or PQ price. This is the firm's equilibrium position in the long run.

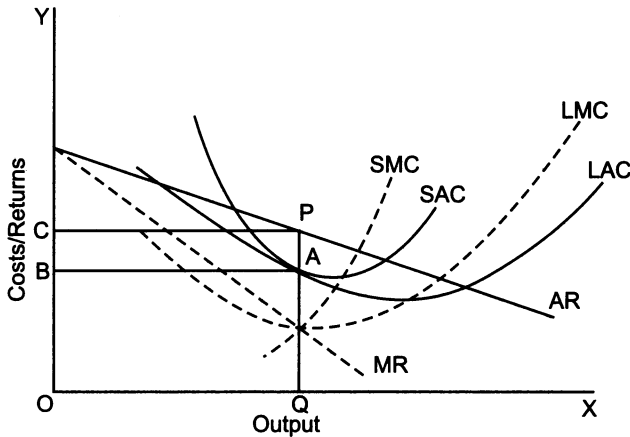


Figure 7.9 Equilibrium in the long run.

Equilibrium output for monopoly

Numerical example.

Let the estimated demand function for the monopolist be

$$\hat{Q}_d = 120 - 2P \quad (1.38)$$

Its cost function $\hat{C}$ is

$$\hat{C} = 10Q + 0.4Q^2 \quad (1.39)$$

Work out the equilibrium level of output and equilibrium price for monopoly firm. The demand function in equation (1.38) is inverted and expressed in terms of 'P' as

$$\begin{aligned} \hat{P} &= \frac{120}{2} - \frac{Q}{2} \\ &= 60 - Q/2 \end{aligned}$$

$$\hat{P} = 60 - 0.5Q \text{ (inverted demand function)} \quad (1.40)$$

Total revenue function for the monopoly firm

$$R = \hat{P} \cdot Q$$

$$R = (60 - 0.5Q) \cdot Q$$

$$= 60Q - 0.5Q^2 \quad (1.41)$$

Profit function = $\pi = TR - TC$

$$= (60Q - 0.5Q^2) - (10Q + 0.4Q^2)$$

$$= 60Q - 10Q - 0.5Q^2 - 0.4Q^2$$

$$\pi = 50Q - 0.9Q^2 \quad (1.42)$$

For profit maximization takes the first derivative of equation (1.42) and equate it to zero.

$$\frac{d\pi}{dQ} = 50 - 1.8Q = 0 \quad (1.43)$$

$$Q^* = \frac{50}{1.8} = 27.77 \text{ units (Profit maximizing output)}$$

Equilibrium P^* is obtained by substituting Q^* value in inverse demand function equation (1.40)

$$\begin{aligned} \pi^* &= 60 - 0.5Q \\ &= 60 - 0.5(27.77) \\ &= 60 - 13.89 \end{aligned}$$

$$P^* = 46.12 \text{ (Equilibrium price)}$$

Total profit of the monopoly firm is obtained by substituting $Q^* = 27.77$, in equation (1.42) i.e., total profit function

$$\begin{aligned} \pi &= 50Q - 0.9Q^2 \\ &= 50(27.77) - 0.9(27.77)^2 \\ &= 1,388.5 - 694.05 \end{aligned}$$

Total profits of the firm: Rs. 694.45

Price Discrimination

Let us assume that the product supplied by monopolist is having slight differences in its qualities. For example, in a cricket match, the audience are charged different prices for different sitting arrangements.

This is similar to different rates paid by the air travellers in different classes of the aircraft. In trains, theatres, circus we will observe different price discrimination methods applied by monopolists. We should note here the identical product produced at the same cost, but sold at different prices based on consumers tastes, income levels and availability of the substitutes for the products.

When different prices are charged for the same product, then the demand curve of the product will have different elasticities. For instance, a product is sold at higher price to rich people, when it is liked by them. On the other hand, the same product is sold to a lower income group of consumers at a less price. This results in differences in the slope of the demand curve for the product. Thus, price discrimination is understood as the process of charging different prices to different consumers or buyers of the same product but with slight differences in its characteristics.

The following conditions are necessary for successful price discrimination:

1. Firm should have full control on the price.
2. It must be possible to categorize different markets based on price elasticity of demand for its products.
3. The markets must be separable i.e., products cannot be purchased in one market and resold in another market.

4. It is assumed that the firm should charge higher price in first market and lower price in second market.

Price discrimination applies to airways, railways, services of a doctor, *etc.*

Types of Price Discrimination: There are three types of price discrimination *viz.*, (1) First degree price discrimination (2) Second degree price discrimination and (3) Third degree price discrimination.

First-degree Price Discrimination

It is a special case of limiting price discrimination in which the consumers are charged individually the highest possible price for each corresponding unit of output. Here the demand curve and MR curve are the same as shown in Figure 7.10. As a result the monopolist receives the entire consumer's surplus (PKD) for his product.

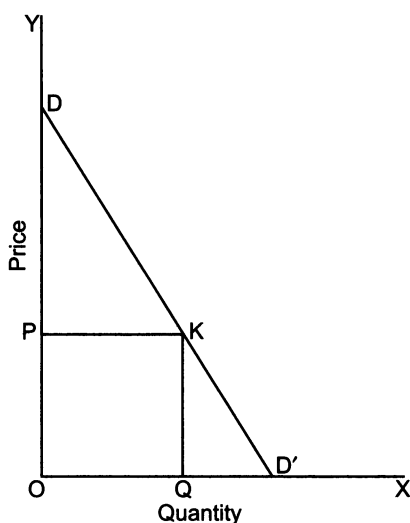


Figure 7.10 First-degree price discrimination.

Second-degree Price Discrimination

In this case the monopolist will have separate negotiations with the consumers and sells his commodity at different prices as shown in Figure 7.11. For example, it sells OQ_1 quantity of the product at P_1 price to one set of consumers and for another set of consumers it sells OQ_2 quantity at P_2 price. Thus by continuing this practice, the firm receives still larger part of consumer's surplus as shown in the Figure 7.11.

Third-degree Price Discrimination

This is the most common type of price discrimination. This involves separation of markets or consumers based on price elasticity of demand for commodities. Spatially markets are separated. The practice of selling textbooks outside the domestic market at very cheaper rate is one of the examples for this. Electricity consumption among farming and non-farming community is another example. Demand for a commodity in market I is assumed to be less elastic than that in market II. MR_1 and MR_2 are the individual marginal revenue curves. The combined marginal revenue curves is MR_1

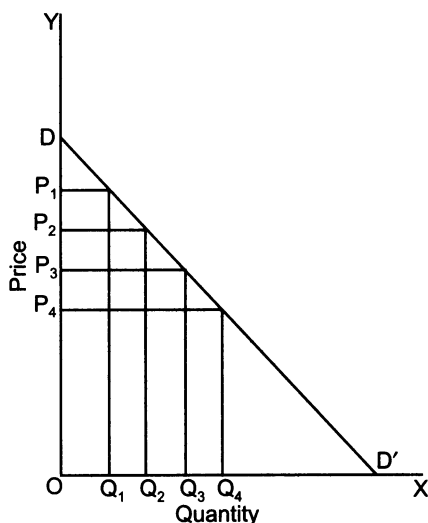


Figure 7.11 Second-degree price discrimination.

which is the horizontal summation of MR curves in the two markets. Combined output is found at point E, where $MR_t = MC$. This is the profit maximizing output. This is shown in Figure 7.12.

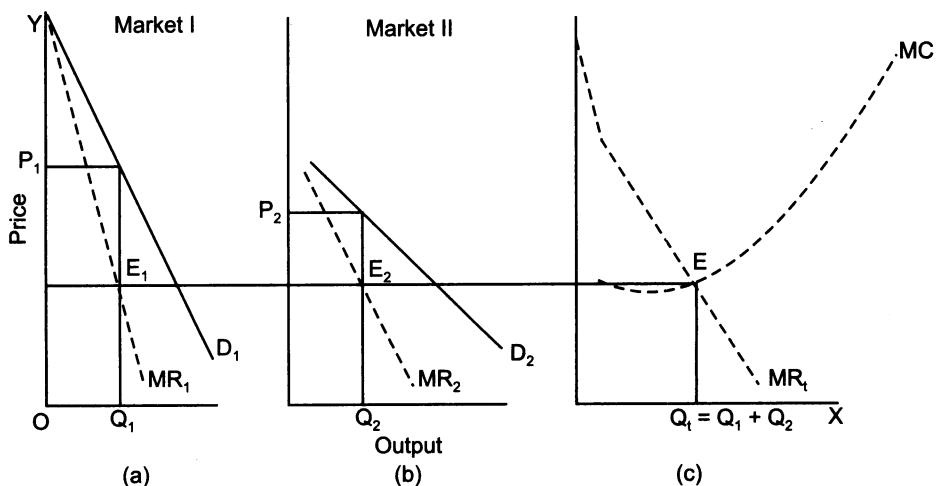


Figure 7.12 Third-degree price discrimination.

Second Degree Price Discrimination Under Monopoly

Numerical example

Let the estimated demand function for two markets where price discrimination is practiced by monopoly.

$$\hat{Q}_{1d} = 60 - P_1 \quad (1.44)$$

$$\hat{Q}_{2d} = 80 - 2P_2 \quad (1.45)$$

Inverse demand functions are

$$P_1 = 60 - Q_1 \quad (1.46)$$

$$P_2 = 80 - 0.5 Q_2 \quad (1.47)$$

Cost function for monopolist is

$$\hat{C} = 20 + 4Q \quad (1.48)$$

$$\text{Quantity sold in the two markets } Q = Q_1 + Q_2 \quad (1.49)$$

Total revenue functions for the two markets are specified as

$$\begin{aligned} R_1 &= P_1 \cdot Q_1 \\ &= (60 - Q_1) Q \\ &= 60Q - Q^2 \end{aligned} \quad (1.50)$$

$$\begin{aligned} R_2 &= P_2 \cdot Q_2 \\ &= (80 - 0.5Q_2) Q \\ &= 80Q - 0.5Q^2 \end{aligned} \quad (1.51)$$

Taking the first derivative of the total revenue function separately and making them equal to MC and solving the equation, we get optimal output

$$\begin{aligned} MR_1 &= \frac{dR_1}{dQ_1} \\ &= 60 - 2Q \\ &= 60 - 2Q \end{aligned} \quad (1.52)$$

$$\begin{aligned} MR_2 &= \frac{dR_2}{dQ_2} \\ &= 80 - 1Q \\ &= 80 - 1Q \end{aligned} \quad (1.53)$$

$$MC = \frac{dTC}{dQ} = 4$$

The equilibrium condition for monopolist under price discrimination is given as

$$MR_1 = MR_2 = MC$$

$$60 - 2Q_1 = 80 - 1Q_2 = 4$$

$$60 - 2Q_1 = 4$$

$$80 - 1Q_2 = 4$$

$$-2Q_1 = 4 - 60$$

$$= Q_1 = 56/2 = 28 \text{ units}$$

$$-1Q_2 = -80 + 4$$

$$Q_2 = 76 \text{ units}$$

Substituting $Q_1 = 28$ in equation (1.46)

$$P_1 = 60 - 28$$

$$P_1 = 32$$

Equilibrium price in market 1 = Rs. 32

Substituting $Q_2 = 76$ in equation (1.47)

$$P_2 = 80 - 0.5 (76)$$

$$= 80 - 38$$

$$= 42$$

Equilibrium price in market 2

$$\pi_1 = R_1 - C_1$$

$$= 32 \times 28 - 4 \times 28$$

$$= 896 - 112$$

Profit in market 1 = 784

$$\pi_2 = R_2 - C_2$$

$$= 42 \times 76 - 4 \times 76$$

$$= 3,192 - 112$$

Profit in market 2 = Rs. 2,888

So the total profit of monopolist under price discrimination is

$$\pi_1 + \pi_2 = \text{Rs. } 784 + \text{Rs. } 2,888 = \text{Rs. } 3,672$$

Third Degree Price Discrimination

Numerical example

The demand and marginal revenue functions in the two markets are given as

Market 1

$$P_1 = 50 - 2.2 Q_1 \quad \dots (1.54)$$

$$MR_1 = 50 - 4.4 Q_1 \quad \dots (1.55)$$

Market 2

$$P_2 = 24 - 1.2 Q_2 \quad (1.56)$$

$$MR_2 = 24 - 2.4 Q_2 \quad (1.57)$$

$$MC = 1$$

Using third-degree price discrimination, we can find out equilibrium price and equilibrium quantity of the product. The conditions for profit maximization are:

$$MR_1 = MR_2 = MC \quad (1.58)$$

$$MR_1 = MC \text{ i.e., } 50 - 4.4 Q_1 = 1$$

$$Q_1 = -4.4 Q_1 = -49$$

$$Q_1 = 11.14$$

$$MR_2 = MC \text{ i.e., } 24 - 2.4 Q_2 = 1$$

$$-2.4 Q_2 = -2.3$$

$$Q_2 = 9.58$$

To get equilibrium price, substitute Q_1 and Q_2 values in equation (1.54) and equation (1.56).

$$P_1 = 50 - 2.2Q_1 \quad (1.59)$$

Here equation (1.59) is inverse demand function in market 1.

$$\begin{aligned} &= 50 - 2.2 (11.14) \\ &= 50 - 24.51 \\ &= 25.49 \end{aligned}$$

$$\begin{aligned} P_2 &= 24 - 1.2Q_2 \\ &= 24 - 1.2 (9.58) \\ &= 24 - 11.50 \\ &= 12.5 \end{aligned}$$

$$P_1 = 50 - 2.2 Q_1$$

$$\begin{aligned} Q_1 &= \frac{50}{2.2} = \frac{P}{2.2} \\ &= 22.73 - 0.45 P \end{aligned}$$

$$\begin{aligned} \pi_1 &= TR_1 - TC \text{ (Profits in market 1)} \\ &= P_1 Q_1 - MC \cdot Q_1 \\ &= P_1 (22.73 - 0.45 P - 1 (Q_1)) \\ &= 25.49 (22.73 - 0.45) (25.49) - 1 (11.14) \end{aligned}$$

$$\pi_1 = 275.86 \quad (1.60)$$

Demand Function

$$P_2 = 24 - 1.2 Q_2 \quad (1.61)$$

Equation (1.61) is inverse demand function is market 2.

$$\begin{aligned} Q_2 &= \frac{24}{1.2} = \frac{P}{1.2} \\ &= 20 - 0.83P \end{aligned}$$

$$\begin{aligned} \pi_2 &= TR_2 - TC_2 \text{ (Profit in market 2)} \\ &= P_2 Q_2 - MC \cdot Q_2 \\ &= [(20 - 0.83) (12.5)] - 1 (9.58) \end{aligned}$$

$$\pi_2 = 110.73 \quad (1.62)$$

$$\pi_1 = \text{Rs. } 275.86$$

$$\pi_2 = \text{Rs. } 110.73$$

$$\pi = \pi_1 + \pi_2$$

$$\pi = 275.86 + 110.73$$

$$= \text{Rs. } 386.59$$

π_1 and π_2 are profits in market 1 and market 2 respectively. π denotes total profits in two markets.

In the demand function, quantity demanded is a function of price but its inverse demand is expressed as

$$P = f(Q_D)$$

$$Q^* = 11.14 + 9.58$$

$$(\text{Combined demand}) = 20.72$$

$$P = 25.49 + 12.5$$

$$(\text{Combined price}) = \text{Rs. } 37.99$$

MONOPOLISTIC COMPETITION

It is a market situation in which the transacted products of various firms are not perfect substitutes. Firms in the industry produce heterogeneous products. Products look rather similar but possess some distinguishing features. They are not identical. Thus product differentiation is an important feature of monopolistic competition. Another feature is the production of goods under different brand names. There are large number of firms so that no single firm is in a position to influence the industry through its output and price policies.

Under competition of this nature, since every good satisfies a given want of the consumers, the quality aspects of the product of a given firm catch the attention of the consumers over the same type of product produced by other firms. Some consumers don't mind to pay premium prices for certain quality products of a given firm. Sales promotion activity *viz.*, advertisement and propaganda is another feature of monopolistic competition.

Short-run Equilibrium

Under monopolistic competition, each firm has a price of its own, but that danger of new firms entering into the business always lurks, if one firm earns supernormal profit. It means that super normal profits of a firm are taken away by the entry of new firms. Similarly sub-normal profits drive out a firm from the existing business. The situation of a firm earning super normal profits is presented below (Figure 7.13a). MC and MR are equal at point E, which indicates the firm's equilibrium position. The output produced at this level is OQ and the price is OP. The super normal profit is represented by BCPA. The possibility of some firms deriving super normal profit and some other firms incurring losses is not ruled out in the short run. These possibilities are expected with the established firms charging higher prices. Those firms which are relatively new to the trade may be satisfied with relatively lesser prices. The situation of a firm earning only normal profit is depicted in Figure 7.13b.

The firm is just making normal profit at an output level of OQ. At this level of output AC and AR are equal. The firm that is incurring losses is shown in Figure 7.13c.

Here the firm is not able to cover its average cost and hence incurs losses. The price fixed at OP to produce OQ covers only AVC. The loss derived is to the extent of BCPA. The above situation indicates that equilibrium of the firm is certainly a possibility, but for the group of firms as a whole the equilibrium may likely to change.

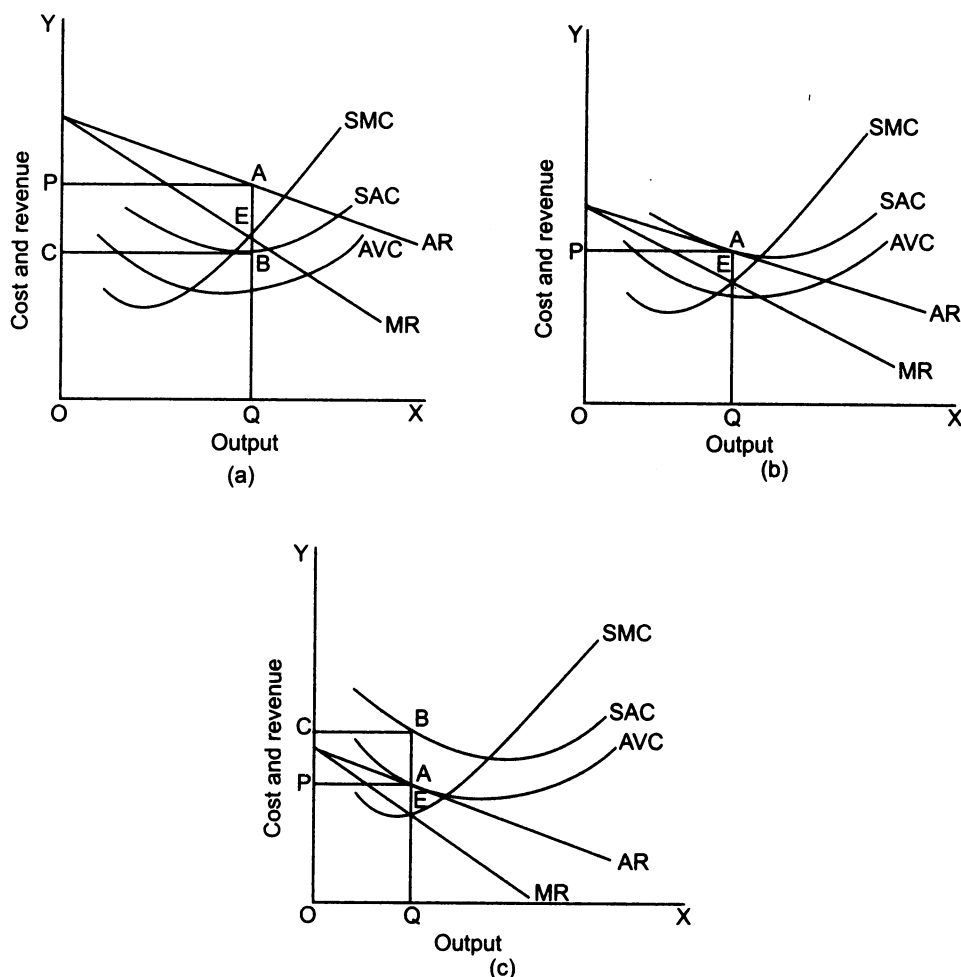


Figure 7.13 Short run equilibrium of the firm.

Equilibrium in the Long Run

Stability in equilibrium position of the firm as well as the group will be found in the long run. The guiding principle for price-output policy is only the equality of MC and MR. However, in the long run monopolistic competition is associated with two situations. Each firm plans to produce a given quantity of output and the aggregate production of all the firms makes the total supply in the market. For the industry to be in equilibrium, total supply should be equal to the total quantity demanded. If supply happens to be more, it will pull down the price level in which case, each firm has to make an adjustment with reference to the output and price to obtain the equality of MC and MR. The other situation in the long run is the entry of new firms attracted by the super normal profits earned by the existing firms. Their entry not only increases the supplies, but also new firms may fix prices at a lower level to have a more market share. This also forces the existing firms to lower the prices. This situation leads to the elimination of excess profits in the long run. The chances of the firm incurring losses is a remote possibility in the long run, as those firms which are

likely to get losses, make an advance assessment and leave the industry because there is no restriction to do so. From the Figure 7.14 it is clear that equilibrium output is OQ at which LRMC and LRMR are equal. PQ is not only the price but also the long run average revenue and the long run average cost of the firm. It is therefore clear that firm earns only normal profits in the long run.

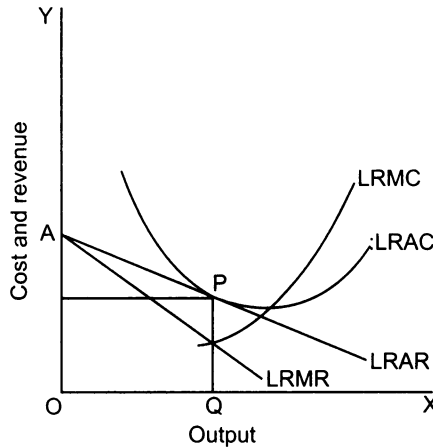


Figure 7.14 Long run equilibrium of the firm.

Numerical Example

Inverse demand function for a monopolistic firm is given as

$$\hat{P} = 150 - 10Q \quad (1.63)$$

The average cost function of the firm is

$$\hat{AC} = 200 - 40Q + 2Q^2 \quad (1.64)$$

The market share curve or proportional demand curve is given as

$$P^* = 160 - 22Q \quad (1.65)$$

To find out the equilibrium position of the firm in the long run, the profit function of the firm is specified as

$$\pi = P \cdot Q - C \quad (1.66)$$

$$\begin{aligned} &= (150 - 10Q) Q - Q (200 - 40Q + 2Q^2) \\ &= 150Q - 10Q^2 - 200Q + 40Q^2 - 2Q^3 \\ &= -50Q + 30Q^2 - 2Q^3 \end{aligned} \quad (1.67)$$

Taking the first derivative of equation (1.65) with respect to Q and equate it with zero and solve for Q

$$\begin{aligned} \frac{d\pi}{dQ} &= -50 + 60 - 6Q^2 = 0 \\ &= + (50 - 60Q + 6Q^2) = 0 \end{aligned} \quad (1.68)$$

Using quadratic equation

$$a = 6$$

$$b = -60$$

$$c = 50$$

$$Q = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{+60 \pm \sqrt{(-60)^2 - 4(6)(50)}}{2(6)}$$

$$= \frac{+60 \pm \sqrt{3,600 - 1,200}}{12}$$

$$= \frac{+60 \pm \sqrt{48.98}}{12}$$

$$= 60 + 48.98 = 108.98/12 = 9.08$$

$$= \frac{60 - 48.98}{12} = \frac{1.12}{12} = 0.093$$

Optimal output = 9.08 units

Substituting $Q = 9.08$ in equation (1.68)

$$= 50 - 60(9.08) + 6(9.08)^2$$

$$= 0$$

To get optimal price, substitute $Q = 9.08$ in equation (1.63) to get equilibrium price

$$P = 150 - 10Q$$

$$= 150 - 90.8$$

$$= \text{Rs. } 59.2$$

DUOPOLY

Duopoly is a market situation in which there are only two sellers. It is very close to oligopoly in all respects barring the number of firms. Each firm keeps a close watch on the actions of the other firms as a chain reaction is imminent since the policy of one is immediately challenged by the other. This sort of rivalry goes ahead in duopoly. So as to continue in the business, one firm has to make an intelligent guess of rival's actions. Hence, the stiff competition exists between the two firms. If each seller feels that the competition in which there are locked in is going to ruin their fortunes, a mutual agreement is arrived at for the benefit of both the firms. Thus, in duopoly, competition as well as co-operation coexist.

Numerical Example

The cost function of firm - I is given as

$$\hat{C}_1 = 60 + 30Q_1 \quad (1.69)$$

The cost function of firm - II is given as

$$\hat{C}_2 = 30 + 20Q_2 \quad (1.70)$$

Inverse market demand function for their products is given as

$$P = 80 - 2(Q_1 + Q_2) \quad (1.71)$$

Where,

$$Q_1 + Q_2 = Q$$

Find out equilibrium quantities, prices and profits of these two firms.

Now let us define the profit equations for the two firms as

$$\pi_1 = ((80 - 2(Q_1 + Q_2)) \cdot Q_1 - (60 + 30 Q_1)) \quad (1.72)$$

$$\pi_2 = ((80 - 2(Q_1 + Q_2)) \cdot Q_2 - (30 + 20 Q_2)) \quad (1.73)$$

$$\pi_1 = (80 Q_1 - 2Q_1^2 - 2 Q_1 Q_2) - 60 - 30 Q_1 \quad (1.74)$$

$$\pi_2 = (80 Q_2 - 2Q_1 Q_2 - 2Q_2^2) - 30 - 20 Q_2 \quad (1.75)$$

The first order condition for profit maximization for the two firms is given as

$$\frac{d\pi_1}{dQ_1} = 80 - 4Q_1 - 2Q_2 - 0 - 30 = 0 \quad (1.76)$$

$$= 50 - 4Q_1 - 2Q_2 = 0$$

Reaction function of firm - I

$$= -4Q_1 - 2Q_2 = -50$$

$$4Q_1 + 2Q_2 = 50 \quad (1.77)$$

$$\frac{d\pi_2}{dQ_2} = 80 - 2Q_1 - 4Q_2 - 0 - 20 = 0 \quad (1.78)$$

$$= 60 - 2Q_1 - 4Q_2 = 0$$

Reaction function of firm - II

$$= -2Q_1 - 4Q_2 = -60$$

$$= 2Q_1 + 4Q_2 = 60 \quad (1.79)$$

Solving the equations (1.77) and (1.79) simultaneously, we get Q_1^* and Q_2^*

$$4Q_1 + 2Q_2 = 50 \quad (1.77)$$

$$2Q_1 + 4Q_2 = 60 \quad (1.79)$$

Multiply the equation (1.77) by 2 and equation (1.79) by 4 to cancel Q_1

$$8Q_1 + 4Q_2 = 100$$

$$8Q_1 + 16Q_2 = 240$$

$$\underline{- 12Q_2 = -140}$$

$$Q_2^* = \frac{140}{12}$$

$$= 11.66 \text{ units}$$

Substituting Q_2 value in equation (1.77) we get Q_1 value

$$4Q_1 + 23.32 = 50$$

$$4Q_1 = 50 - 23.32$$

$$Q_1^* = \frac{26.68}{4}$$

$$= 6.67 \text{ units}$$

Thus substituting Q_1 and Q_2 values in equations (1.72) and (1.73), we get profits of firm – I and firm – II

$$\pi_1 = ((80 - 2(6.67 + 11.66)) 6.67 - (60 + 30 \times 6.67))$$

$$= (43.34) 6.67 - 260.1$$

$$= 289.07 - 260.1$$

$$= \text{Rs. } 28.97$$

$$\pi_2 = ((80 - 2(6.67 + 11.66)) 11.66 - 30 + 20(11.66))$$

$$= (43.34) 11.66 - 263.2$$

$$= 505.34 - 263.2$$

$$= \text{Rs. } 242.14$$

To find out equilibrium price, substitute Q_1 and Q_2 values in inverse market demand function (1.71).

$$P = 80 - 2(Q_1 + Q_2)$$

$$= 80 - 2(6.67 + 11.66)$$

$$= 80 - 36.66$$

Equilibrium price = Rs. 43.34

OLIGOPOLY

It represents the presence of a few firms in the market, producing either a homogeneous product or products which are close but not perfect substitutes to each other. Oligopoly can be divided into two forms, *viz.*, perfect oligopoly, wherein a few firms produce a homogenous product and imperfect oligopoly wherein there are a few firms producing heterogeneous products. The examples are televisions, two wheelers, four wheelers, tyres, cigarettes, textiles, *etc.*

Characteristics of Oligopoly

1. *Presence of Few Sellers:* An important feature of oligopoly is the presence of few sellers. The product here is homogenous or heterogeneous in nature. Since the number of sellers is few, each firm commands a sizeable market share of a product.
2. *Interdependence:* Due to few number of firms in the industry, no single firm can afford to ignore the reaction of other firms to its actions. Suppose a given firm is contemplating to bring some changes in its price and output policies, it duly considers the counter actions of the other firms. Thus, the fortunes of one firm are decided upon by the policies of the other firms.
3. *Indeterminate Demand Curve:* The interdependence of the firms under oligopoly creates an uncertain atmosphere. The price and output policies resorted to by a given firm and its consequent sales of other firms can not be estimated with any amount of certainty. Suppose, if a firm would like to lower the price for increasing sales, the anticipated increase may not take place, for other firms too would have lowered the price by still a higher margin. This reaction of the other firms is a difficult proposition to be assessed. Hence, the demand or revenue curve is indeterminate.
4. *Conflicting Attitudes of Firms:* The firms in oligopoly behave as arch rivals and like to be independent to get maximum profit. By their actions and counteractions, they create an atmosphere of uncertainty. Against this action, at times they behave differently by cooperating each other to eliminate uncertainty arising out of mutual competition. By this way they join together for maximizing their profit. Certainly it is a conflicting attitude of the firms as reflected by the competition and co-operation.
5. *Competition:* There is always a constant battle among the firms in oligopoly. This rivalry continues as long as the firm exists in the business.
6. *Features of Monopoly:* Oligopoly is characterized by presence of few firms, product differentiation and a larger market share. It enjoys the superiority of a monopoly in the business as the differentiated product produced by oligopolist attracts the consumers or rather consumers are more attracted to it. The possibilities are plenty for the firms to unite and done the role of monopoly to enjoy the liberties.
7. *Price Rigidity:* Alongside competition, and monopoly element in oligopoly, price rigidity is another feature. The rivals are more passive for bringing the changes in prices, for such changes may affect the sales and consequently the revenue. The firms are well aware of the fact that any reduction or rise in price leads to price war or loss of sales. This impending danger forces them to keep quiet, consequently the price rigidity is a more common phenomenon rather than an exception in oligopoly.
8. *Lack of Uniformity in the Size of Firms:* Size of the firms in oligopoly differs considerably. Some may be very large, while others very small.

Kinked Demand Curve and Price Rigidity

In oligopoly mutual interdependence of firms creates an environment of uncertainty for all the firms regarding price-output policy. The plans of a firm to make a given level of profits is totally influenced by the way other firms react to the activities of

the one. The demand curve of the oligopolistic firm therefore cannot be definite as a given firm cannot precisely estimate the reactions of the rival firms. The demand curve which is *kinked* in this situation explains the price rigidity observed in oligopoly. It is assumed that a given group of firms produce the same product and the price OP is accepted by all the firms. At price OP , if a particular firm sells OQ quantity of output; others need not sell the same quantity (Fig 7.15). Under this situation, when we look at the demand curve (AR), 'MEN' has a *kink* at point E , because of which the demand curve has two parts *viz.*, the upper part (ME) being more elastic and lower part (EN) less elastic. The reasons for the *kink* at point E are that if this particular firm brings in a small increase in its price with other firms not reacting in the same, fearing for a fall in sales, this increase in price will cause a large reduction in sales. Hence the demand is more elastic if only one firm increases the price. Against this, if this particular firm opts to reduce the price, the competing firms also reduce the price by the same extent. Although general price cut is found here it ensures the same market share for each of the rival firms. Therefore, after point E the demand curve slopes down steeply. This leads to the point that the demand curve can be drawn given the assumption that a single price has been established in the industry with price rise by one firm not being followed by others and price decrease followed by other firms. The marginal revenue (MR) curve is discontinuous at OQ output *i.e.*, has got a gap, which is shown by dotted line OL . This is figured as a result of change from elastic nature of demand to inelastic nature of demand.

MONOPSONY

Monopsony means the presence of a single buyer for the products produced by the firms. The example that can be cited is sugar factory. Farmers who are registered as sugarcane growers under factory's jurisdiction are supposed to sell the cane to sugar factory only. Tobacco board and coffee board can be cited as other relevant examples.

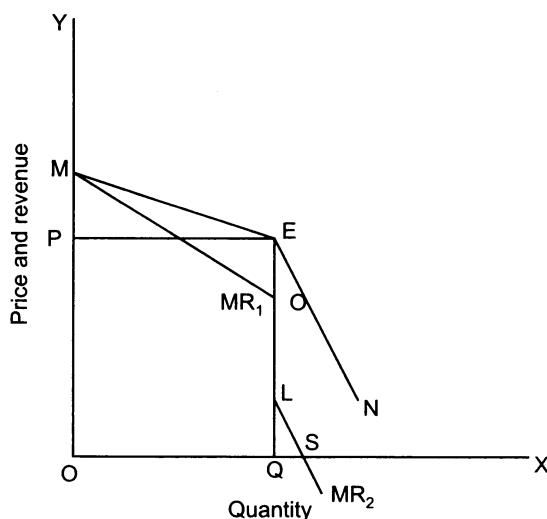


Figure 7.15 Kinked demand curve.

OLIGOPSONY

It is from the buyers side in a market. There are only few in number buying sizeable quantities of a product. Each individual buyer is so powerful that his buying behaviour influences the market price. The relevant example are gas and iron ores. These are purchased by a few firms in the country and final products are supplied to the market through these oligopsonies, *viz.*, Tata company for purchases iron ore, Hindustan Petroleum corporation buys the gas from Government or supplies to consumers after refinement etc.

Distribution

In the process of production, the producer coordinates different factors of production *i.e.*, land, labour, capital and management. In the process of distribution the returns obtained through the production activity are apportioned to these factors that are employed in the production process. Consequently land gets rent, labour gets wages and interest is paid to capital and finally organization is rewarded with profit. Such an apportionment of returns among different factors of production is called distribution. It is also called factor pricing.

RENT

Rent is the return for the fertility status of the land. In fact the land is defined in a broad sense. All the natural resources existing on the surface and beneath the surface of land like mines, rivers, *etc.*, are also treated as land, from which rent is received. Some resources are publicly owned, while others are privately owned. Rent is almost zero for publicly owned resource because one cannot use it for one's own purpose. These are meant for public welfare. Rent is expressed in two forms *i.e.*, one is economic rent and the other is contract rent.

Economic Rent

Economic rent is the rent received exclusively from the use of land only. We use the term, exclusively because the rent of a building refers to the return obtained by the owner on the capital invested in the construction of building as well as the land. It is the return obtained from the combined values of both. Then it does not become rent. In farming the rent paid by a tenant to the landlord is not economic rent.

Contract Rent

This implies the money paid by the tenant to the land lord for cultivating the land in a given year. Normally a certain rent is charged by a farmer not only for land but also for making availability of certain infrastructure on land like buildings, machinery, wells, fencing, *etc.* This means that he would like to realize some return on the investment made on the farm. Then it is not exclusively rent for land only. Thus economic rent is a part of contract rent.

Quasi Rent

The basis for evolving this rent is the short run fixity of man made assets of production like machines, buildings, *etc.* When in the short run, the demand for these assets increases, consequently their income also increases. This results in a surplus income due to increased demand. This surplus income of assets is called quasi rent. This rise in quasi rent is a temporary phenomenon. In fact, the supply of these assets being elastic it is increased in the long run to match with the demand causing the surplus earnings to disappear. The concept of quasi rent does not apply to land because supply of land is inelastic.

Scarcity Rent

This is the rent which arises due to scarcity of land in relation to demand. Scarcity rent is due to inelastic supply of land. This is surplus rent over the market rent for land due to increased demand for land.

Determination of Rent for Land

We have now understand the diversified meaning of rent for land. We now go ahead to examine as to how the rent for land is determined. David Ricardo of England propounded a theory on rent, which is popularly known as Ricardian theory of rent. His theory is based on several assumptions, *viz.*, 1) The most fertile lands are cultivated first 2) There is continuous growth of population in the area 3) Rent arises due to difference in fertility of lands 4) Existence of marginal lands in every country 5) Quantitative limitations of land such as size of land 6) Land possesses certain original and indestructible power and 7) Rent is confined only to land which is a free gift of nature.

Ricardian Theory of Rent

Ricardo applies his theory citing the example of a new country in which human habitation is yet to be found. It is being a new country people from another country slowly move into this country for settlement. It is hypothesized that there are four types of land *viz.*, A, B, C and D designated in the descending order of land fertility. It is assumed that all plots are of same size, requiring same doses of labour and capital. The people from the other countries are expected to migrate in batches to the unhabited country. The first batch thus migrating occupies more fertile land *i.e.*, type 'A' as the land is abundantly available besides being free. As the land is freely available no rent need to be paid by these migrants. Let us assume that 'A' type of lands are productive enough to produce 100 Q of wheat per unit of land in the beginning, which is sufficient for the people. Hence there is no rent for 'A' type of lands. But as the demand for wheat increases, it forces the cultivators to occupy 'B' type of lands which are relatively less fertile and uncultivated. If the productivity of this type of lands is 70 Q, 'A' type of lands begins to yield a surplus of 30 Q. This is the surplus and it is the rent of 'A' type of land. Let us assume that if still demand mounts up for wheat in view of growing population, 'C' type of lands are also occupied for cultivation, which are less fertile compared to 'B' type of lands. If the productive capacity of this type of land is assumed as 50 Q, it leaves a surplus of 20 Q for B type of lands and 50 Q for 'A' type of lands, which is claimed as rent by the respective owners of these lands. Likewise even 'D' type of land is brought under cultivation in view of the spiralling population growth.

Through his theory Ricardo described that superior or more fertile land as intra-marginal or super-marginal lands land the last type of less fertile land is called as the marginal land or no rent land. These two concepts are used depending on the situation. If still inferior type of land is brought under cultivation, it is called marginal land and the earlier marginal land becomes super-marginal land. The rent is the difference between the yield obtained from the super marginal land and that of marginal land. Rent is that extra value imparted to the type of land based on the yield surplus.

Criticism

1. There are no original and indestructible powers of the soil.
2. It is not the fertility but scarcity which leads to rent.
3. Marginal land concept is not accepted because if the demand is higher even marginal land gets rent, and
4. Rent is not applicable for the use of land only, as it applies to all scarce inputs in economics.

Modern Theory of Rent

Modern economists assert that rent arises for any factor of production. It is the surplus payment in excess of transfer earnings of a factor. Transfer earnings imply the amount of money which any particular unit of factor could earn in its next best alternative use.

The rent of the land is determined by the two market forces *viz.*, demand for and supply of land (Figure 8.1). Demand curve for land slopes downwards because the rent of land is influenced by the marginal productivity. On the other hand supply of land is fixed *i.e.*, supply is inelastic. Supply curve is vertical to X-axis. Equilibrium between demand and supply determines the rent of land.

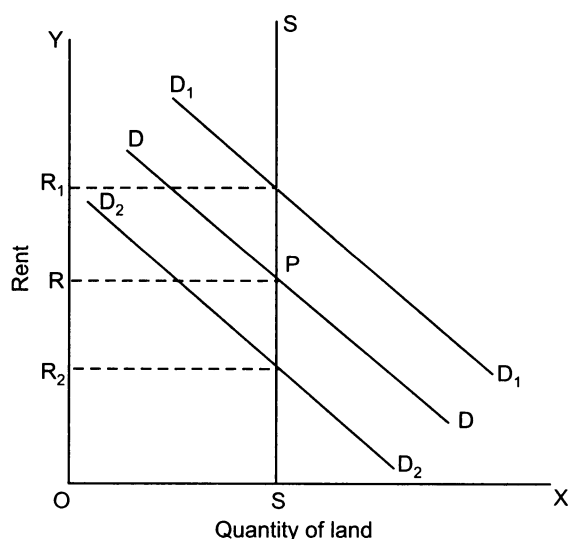


Figure 8.1 Determination of Rent.

As seen from figure, DD is the demand curve for land and SS is the supply curve of land. The two curves intersect at 'P' and hence the rent is OR. Changes in population and consequent additional pressure on land increase the demand for land. Therefore the new demand curve is $D_1 D_1$ and the rent is OR_1 . Contrary to this when demand for land falls the new demand curve $D_2 D_2$ is formed and its corresponding rent is OR_2 .

WAGES

Wages are the rewards paid for the labourers for sparing their productive services. It may be paid either in cash or kind or both. *A wage may be defined as a sum of money paid under contract by an employer to a worker for services rendered (Benham).* Wages are paid for casual labourers, while salaries are paid for permanent staff and consultation fee for doctors, lawyers, etc.

Methods of Wage Payment

Based on the payment, wages are classified as (1) Cash wages and kind wages (2) Time wages (3) Piece wages; and (4) Task wages.

1. *Cash Wages and Kind Wages:* Wages for the workers are paid in cash or kind or both. With the advent of currency, wages are paid in cash. However, kind payment is also in vogue along with the cash payment.
2. *Time Wages:* It is the wage per unit of time. It is the payment of wages on hourly, daily, weekly, fortnightly and monthly basis. In farming, casual labourers are paid on daily basis, workers for domestic services are paid on monthly basis and attached servants in farming are paid on half-yearly or yearly basis.
3. *Piece Wages:* It is based on the work performed by an individual in the production of goods and services. In the manufacturing process of a good, the entire production activity is divided into various sub-processes. An individual attending to a sub-process is paid according to the work he completes on a particular day.
4. *Task Wages:* Wages are paid for a given work after its completion, say in farming, paddy transplanting, weeding, harvesting, etc., are completed by a group of labourers. Wages are decided based on the work assigned to the group and it has nothing to do with the number of labourers in that group. The task is given to the group for completion of work in time according to agreed wages. They are also called as contract wages.

Types of Wages

1. *Nominal Wage or Money Wage:* It is the wage paid in terms of money at current market prices.
2. *Real Wage:* It indicates the purchasing power of money wage. Real wage of the worker is obtained by dividing nominal wage of the workers at different time periods by general price index. Real wage is measured by

$$R = W/P$$

Where,

R = Real wage

W = Money wage

P = General price index

THEORIES OF WAGES

1. Subsistence Theory of Wages

David Ricardo was the proponent of this theory. It is called as 'Iron law of wages' according to Lassalle, the German Economist. This theory emphasizes that wages prevail at such a level just to enable the workers and his family members to live at the minimum subsistence level*. In case there is a rise in wages, it attracts the workers to have large families, thereby increasing the supply of labour. The increased supply of labour brings down the wages to minimum subsistence level. On the contrary, when wages fall down, marriages are discouraged and coupled with malnutrition and consequent death, the supply of labour decreases. This results in increase of wages back to subsistence level.

2. Wage Fund Theory

The development of this theory is owed to J.S. Mill. According to him in any country certain fixed proportion of the capital is set aside for payment of wages to the labourers which is called wage fund. The wage at a particular point of time in a country is determined by the amount of wage fund available and the total workers. The rise and fall in wages depend on the number of workers and the amount of fund.

3. Residual Claimant Theory

This theory was propounded by American Economist, Walker. According to him labourers are the residual claimants in any production activity. After the rewards of the other factors, *viz.*, rent for land, interest for capital and profit for organization have been paid, the residual amount from the production is the wages to the labourers. Wages are thus the residual after rent, interest and profits are deducted from the income obtained from a production activity.

4. Marginal Productivity Theory

According to this theory, under conditions of perfect competition, the wages received by a worker of same skill and ability will be equal to his marginal value productivity. Marginal productivity of labour unit is the contribution to the total output with other factors remaining the same. The marginal value productivity of a labour unit is the value of an additional unit of the output produced due to its employment.

5. Modern Theory

Modern theory is based on demand for and supply of labour. Demand for labour is a derived demand**. If there is a higher demand for products from consumers, there would be more demand from producers for labour for helping to bring the expected level of output.

* It is the minimum amount of food, clothing and shelter which a worker in a family requires for existence.

** Derived demand for an input means the increased demand for output that would result in increased demand for the input. The term derived demand is used because the demand for input increases, not due to direct input demand, but indirectly from increased output demand.

A rise in demand for a commodity pushes up the demand for the labour involved in the production of that commodity.

The supply of labour is represented by the number of workers willing to work in a production activity at various wage rates taking into consideration the number of hours, number of days in a week, *etc.* These two forces *i.e.*, demand and supply determine the wages.

DD is the demand for labour and SS is the supply of labour which intersect at point E. The wage rate is OW (Figure 8.2).

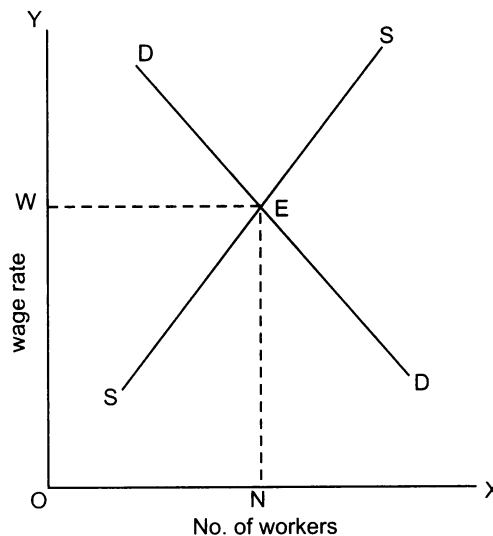


Figure 8.2 Determination of wage rate.

INTEREST

Interest is the amount paid by the borrower to the lender for the use of capital. According to Marshall "*the payment made by a borrower for the use of loan for, say a year, is expressed as the ratio which that payment bears to the loan*" is called interest.

Interest is the price paid for the use of loanable funds (Meyers).

The interest charged by a lender from the borrower is termed as gross interest. It is because lending activity is fraught with risk as well as inconvenience which are also considered. Taking these items into account the gross interest is considered under the following terms.

1. *Net or Pure Interest:* This interest is the payment exclusively made for the loan amount.
2. *Insurance Against Risk:* In the lending activity there is always the risk of not getting back the funds lent by the lender. The loan may turn out into a bad debt. This risk needs to be insured. For this purpose, some more interest is added to the net interest.
3. *Payment for Inconvenience:* Through the lending activity the lender gets interest but in the same process he is placed in inconvenience to get back his funds at the time he wants, because the funds are locked up for a certain period of time. Unless the

loan period was over he cannot get back his funds. For this inconvenience, he charges some additional interest to the net interest.

4. *Reward for Management*: The business of lending requires perfect maintenance of the records to keep a close watch on the business performance. Apart from this, the borrowers are to be pursued for prompt repayment. This calls for efficient management of the business. Hence reward for management is included in gross interest.

THEORIES OF INTEREST

1. Productivity Theory

This theory is based on the fact that capital is productive. People borrow required money when they do not have enough funds. The individuals are encouraged for borrowing because they fetch additional gains in the production activity. Since the borrowed capital is helping them to generate additional income, they have to part with the money in the form of interest to the lender. The theory is based on the premise that an individual demands capital because of its productivity and naturally such a productive resource must be paid interest.

2. Abstinence Theory or Waiting Theory

This theory was developed by economist *viz.*, Senior, based on the supply side of money. According to him, the capital is generated from savings. In turn savings are created from the earnings of the individual *i.e.*, individuals, by foregoing some of their present consumption requirements, keep aside some money as savings for future requirements. Thus, capital is generated from abstaining from present consumption. Interest therefore needs to be paid to the person who saves capital and offers for investment, to compensate the sacrifice he has to make in the process of generating capital*.

3. Austrain or Agio Theory

Bohm-Bawerk, an Austrian economist developed this theory. It is based on time preference. Naturally people tend to prefer present income and consumption to that of future, hence there is always premium on present consumption compared to some future date. Conversely, future consumption undergoes a discount compared to present consumption. Hence, interest is that discount which is paid to the lenders who postpone their present satisfaction to a future date.

4. Time Preference Theory

This theory was put forth by Irving Fisher. He incorporated the element of certainty for future. He extends by saying that even when the future is certain, people prefer present consumption and satisfaction to future consumption. Though people are very much interested in present consumption, but still they show willingness for saving to generate capital which needs to be given compensation in terms of interest.

* Here the word capital is used in the sense of money used for investment.

Theories of Interest Rate Determination

Theories have been developed to explain as to how the interest rates are determined. They are 1) Classical or real theory 2) Loanable funds theory and 3) Keynes's liquidity preference theory.

Classical Theory of Interest

It is based on the demand for savings to invest in capital goods and the supply of savings. Rate of interest is determined at the equilibrium point of two forces, as seen from Figure 8.3. SS is the supply curve of savings while DD is the demand curve of savings to invest in capital goods. The equilibrium position is attained at the intersection of supply and demand curves. OR is the interest rate that is determined.

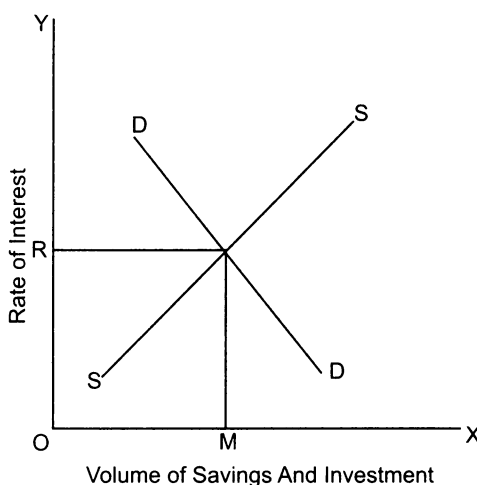


Figure 8.3 Determination of rate of interest.

Loanable Funds Theory of Interest

According to Wicksell, the Swedish economist, interest rate is determined by the forces of demand for and supply of loanable funds. Loanable funds represent the sum of money supplied and demanded in money market. On the supply side of loanable funds, it comes from savings of people and money supply (credited and created through banks), *i.e.*, savings (S) and the net new money (M) (resulting from credit creation of commercial banks). The combination of these two represent the supply of loanable funds, which is represented by $S + M$. Here, the loanable funds (L) is nearly equal to $S + M$.

The demand for loanable funds results from demand for investment, in addition to demand for hoarding money. Hoarding money influences the supply of loanable funds. If the hoarded money increases, the supply of loanable funds is reduced. Conversely an increase in dishoarding results in increase in the supply of loanable funds. Demand for loanable funds ultimately is decided by the demand for investment (I) and net hoarding (H)*. $I + H$ therefore represent the total demand for loanable funds. Interest rate is determined by the equality of $(I + H)$ and $(S + M)$.

* Difference of increase of total hoarding and increase in dishoarding.

Liquidity Preference Theory

J.M. Keynes is the proponent of this theory. The term, liquidity means money in cash form. People have options to keep money in cash form and/or in non-liquid form like, gold, shares, fixed deposits, *etc.* According to him three motives lead to liquidity preference by the people. These are (1) Transaction motive (2) Precautionary motive and (3) Speculative motive.

1. *Transaction Motive:* People would like to hold some money in cash form to meet their daily requirements. This varies with income earners *i.e.*, those getting daily incomes, weekly incomes, fortnightly incomes, monthly incomes and annual incomes. The amount of money one wants to have in cash form for transaction motive depends on the periodicity of deriving the income.
2. *Precautionary Motive:* Apart from transaction motive, people would like to have cash balance to meet the unforeseen exigencies. To overcome the problems of raising money to meet the unforeseen expenditure, certain amount of liquid money (cash) is set aside.
3. *Speculative Motive:* Speculative motive refers to the process of taking ventures by people in high business areas where returns are more. So this motive results in keeping aside certain amount of money for obtaining higher returns.

Determination of Interest Rate

Liquidity preference and supply of money determine the rate of interest. Liquidity preference here means the liquidity preference for speculative purpose according to Keynes. Therefore, the equilibrium between liquidity preference for speculative purpose and supply of money determine the rate of interest.

In Figure 8.4 LPS indicates liquidity preference for speculative purpose. It is the demand for money. OM represents the fixed amount of money available to meet the requirements of liquidity preference for speculative purpose. Rate of interest is determined by the equality of demand of money for speculative purpose and supply of money. The interest rate that prevails is OR, which is the equilibrium interest.

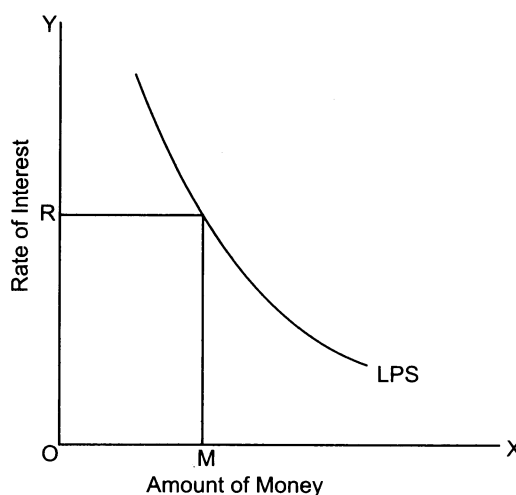


Figure 8.4 Determination of rate of interest.

PROFIT

Profit is the reward for entrepreneurial function of decision-making and uncertainty bearing. Profit can be either positive or negative, since it is a residual income. Profit differs from rewards of other factors of production like rent, wages and interest on the point that these are all certain, while profit is tentative. These rewards are paid even before the ultimate product is obtained, while profit happens to be the surplus of returns over total costs, and it is obtained at the end of production activity.

Various Concepts of Profit

Gross Profit: It is the surplus of gross revenue over paid out costs (explicit costs) obtained in a production activity. Gross profit cannot be treated as ultimate profit, for it includes several items which are not actually profits as presented below:

Remuneration for Entrepreneur Himself: It is a practice for the entrepreneur to contribute his own capital in the business besides offering his services as a manager. In such a situation the opportunity cost of owned capital and the services rendered in his own business are also included in the gross profit. These imputed costs are to be deducted from the gross profit to arrive at the net profit.

Depreciation and Maintenance Charges: When the plant is in operation there will be wear and tear (depreciation) on equipment and machinery which needs to be duly accounted for. In addition to this, interest on fixed capital and insurance premium are other fixed cost items that are incurred in a production activity. These cost items need to be deducted from the gross profit to arrive at net profit.

Extra Personal Profits: These are the profits which accrue to a business unit not due to the managerial ability of the entrepreneur, but due to other factor, say the profits of monopoly. These are not due to the businessman's managerial abilities but for his position as a monopolist. The monopoly profit needs to be deducted from gross profit to arrive at net profit. Another source of getting unexpected high profit is from windfall gains or chance profits. Any sudden happening, say outbreak of war, natural calamities in certain pockets of the country *etc.*, lead to a rise in the product prices, resulting in abnormal profits for the entrepreneur. Such unexpected profit should be deducted from gross profit to find out the net profit.

Net Profit: The aforesaid three items *viz.*, remuneration for entrepreneur himself, depreciation and maintenance charges and extra personal profits are to be deducted from gross profit to work out the net profit. It is the reward of the entrepreneur for coordination and risk-taking.

$$\text{Net profit} = \text{Gross income} - \text{Total cost.}$$

THEORIES OF PROFIT

1. Rent Theory of Profit

Development of this theory goes to the credit of an American economist, F.A. Walker. He was the first economist who clearly distinguished capitalist from entrepreneur by putting forth that every entrepreneur need not be a capitalist but still can carry on the production activity without contributing his own funds. He highlighted through his theory the similarity between rent and profit. Just like rent arising for a piece of land due to its fertility status, an entrepreneur also gets rent for his managerial

ability, *i.e.*, profit. Further, as the rents for different lands are not uniform, so also the profits recovered by the entrepreneurs. Entrepreneurs with different skills are rewarded with different profit levels. Extending this similarity further between rent and profit, just as there is marginal land, there is marginal entrepreneur. As the marginal land is associated with no rent, the marginal entrepreneur too is associated with no profit. The profits of the super marginal entrepreneur are measured taking the situation of marginal entrepreneur.

The marginal entrepreneur just secures wages of management but not requisite profit. So according to Walker, profit does not enter the price, as market price is determined based on the cost of production of the product attributed to marginal entrepreneur.

2. Wage Theory of Profits

Prof. Taussig, an American Economist advocated this theory. In rent theory, a similar comparison was developed between rent and profit, while in this theory a similar comparison was identified between the labourer and entrepreneur. This is justified by advancing that just as labourer receives wages for his services, likewise an entrepreneur too gets profit for his services. Only the services differ in the two cases, as it is physical service in the former and organizing capacity in the latter. Through this comparison, this theory concludes that profit is a type of wage.

3. Dynamic Theory of Profits

Through this theory J.B. Clark, an American economist defined profit as the excess of price of goods over their costs. Further, he advocated that profits arise only due to the dynamic change that takes place in a society, and profits do not vary much in a static society. The reason put forth is that, in a static society, the parameters which influence an economy like population, technology, desire of the individuals, the available capital, *etc.*, remain the same. Everything is certain in such an economy, so economic environment in current year is the same as that of previous year. Risk and uncertainty are absolutely absent. In such a society, the prices of goods are equal to cost of production. All that what an entrepreneur gets is wage for his labour and interest on capital. If by chance, the prices of commodities are more than cost of production, competition exists, soon bringing down the prices to the level of cost of production. Hence, there is no chance of profits in a static society. Against this situation, in the dynamic economy profit arises. Dynamic economy is associated with the same parameters as indicated above of a static economy, but these are subject to change over time. The entrepreneur who takes advantage of changing demand and supply conditions of a commodity makes profit. It depends more upon the efficiency of the entrepreneur who takes advantage of it. Entrepreneurs with different efficiencies make different profit levels.

4. Risk Theory of Profits

Prof. Hawley, an American economist advanced this theory in 1907. His theory is based on the risk that is associated with every business activity. It explains that those who are prepared to take great risk are rewarded with greater profit. Thus greater the risk, greater would be the profits in a business activity. The profit that is obtained through risk taking exceeds the ordinary return on capital.

5. Uncertainty-bearing Theory of Profits

According to Prof. Knight, an American economist profit arises due to uncertainty rather than risk taking*. Further he classified risk into two categories *viz.*, foreseeable risks (insurable risks) and unforeseeable risks (non-insurable risks). Foreseeable risk is that which can be foreseen or predicted by an entrepreneur, while the unforeseeable risk cannot be foreseen or predicted. Prof. Knight calls this unforeseeable risk as uncertainty and because of this uncertainty, profits are received by the entrepreneur. Coming to risks, some risks say death, fire, theft, accident, *etc.*, in a business activity are estimable and since these are insured, it is the insurance company which undertakes these risks. As insurance is a fixed cost, the insurance premia are included in the cost of production. So the risks in a business will not help the entrepreneur to derive more profits. Moreover risk taking is not the function of an entrepreneur, but of insurance companies.

On the other hand, the unforeseen risks such as production risk, trade cycles, competition, new techniques of production, changes in Government policies, price uncertainty *etc.*, cannot be predicted and there is no insurance protection for such events. Thus, according to Prof. Knight, profits arise due to uncertainty bearing but not due to the risk bearing. Greater the uncertainty bearing, higher would be the level of profit.

6. Innovations Theory

This theory was postulated by Joseph A. Schumpeter, an American Economist. He brought out that profits accrue to the entrepreneur as a result of innovations that are created in the production process and also in marketing of the products. Product innovations refer to the changes that are introduced in production process which will help to minimize the production costs. Innovations on marketing front mean introducing new products, making inroads into new markets, obtaining more market share, new sales promotion techniques, *etc.*

Innovations thus brought out, increase the profits. These profits are contributed by lesser production costs and/or higher product prices. However, profits which were generated through innovations do not last long, as the new firms enter into the business activity knowing the innovations and compete away with the profits. Once profits disappear from these innovations, then new innovations would be developed to derive profits which again disappear when once again new firms make their entry. So profit due to innovations would appear, disappear and reappear in regular cyclical fashion.

7. Monopoly Theory of Profits

Firms under monopoly or monopolistic competition will be having high market power. They will be 'price-makers' rather than 'price-takers'. They make their best efforts to safeguard their interest and keep their profits at higher level. Also in order to maintain their monopoly power, the firms will prevent the entry of new firms into the business in the form of several barriers, therefore the basic source of profits is the monopoly power of the firm.

* The main difference between risk and uncertainty is that risk is measured through probability concepts while uncertainty cannot be measured.