

UNIT 1

FUNDAMENTALS AND BASIC ELEMENTS OF MICROECONOMICS

(25%)

Topics

- **The Economic Problem: Scarcity and Choice, Nature and Scope-Positive and Normative Economics.**
- **Scope of Study and Central Problems of Micro and Macroeconomics.**
- **Demand Schedule: Individual and Market Demand Curve, Determinants of Demand, Law of Demand, Elasticity of Demand: Meaning and Determinants.**
- **Supply Schedule: Individual and Market supply, determinants of supply, law of Supply, Elasticity of supply: Meaning and Determinants.**

[1] Meaning of Economic problem:

Economic problem is a problem of choice arising out of unlimited wants, which can be graded and scarce resources which have alternative uses. Thus, an economic problem arises out of following factors.

[1] Unlimited Human Wants:

Human wants are unlimited in number. It has been said perhaps rightly, that there is no limit to human wants. When one particular want is satisfied, another want arises and when that too is satisfied still another want crops up and the cycle goes on and on. There is, thus, no end to human wants; that is, to say the addition and multiplication of human wants, not their subtraction or division.

[2] Human Wants can be Arranged in order of their importance

Although human wants are unlimited in number, but all these wants are not of equal urgency. Some wants are more urgent, while others are less urgent. In other words, the wants of an individual can be arranged in a descending order according to their urgency or importance. An individual will try to satisfy first his more urgent wants say basic necessities of life like food, shelter, clothing, education, health care etc. before he purchases articles of comforts or luxuries. In short, human wants can be graded.

Now, in view of the fact that it is possible for us to compare urgency or intensity of various wants or to grade them in accordance with their importance, we can choose or select - a few from among those wants which are most - important. Thus, choice is possible because the ends or wants differ in their degree of intensity, urge, priority or importance and it is necessary to make a choice because all our wants cannot be satisfied simultaneously.

[3] Scarcity of Resources or Means:

Where, as human wants are unlimited, the means or the resources to satisfy them are limited or scarce. The economic problem arises because of scarcity of resources in relation to ends. If, however the resources were as unlimited as wants are, there would have been, perhaps, no economic problem. An economic problem primarily arises because resources are scarce in relation to wants or ends. It should be noted here that the word scarcity is to be used not in an absolute sense but in a relative sense. The mere fact short supply does not make a commodity scarce if there is demand for it.

[4] Scarce Resources can be put to Alternative Uses:

The means or the resources to satisfy unlimited wants are not only scarce and limited but they can be put to alternative uses; besides it also involves a choice as to their use. Thus, for example, a plot of land can be used for the cultivation of paddy or wheat; labour may find employment in a farm or in a factory; capital may be invested either in the production of consumer goods or producer's goods industries; a student may spend his

fifty rupee note either in going to cafe house or in witnessing a movie and so on. It is because the scarce resources can be put to several uses that the problem of choice becomes all the more complicated and complex.

To sum up, therefore, the basis of all economic activities is the existence of human wants. These wants are unlimited and rapidly changing in their nature; besides these wants can be arranged in order of their intensity and priority. On the other hand, the means or the resources to satisfy these wants are limited and these can be put to alternative uses. Economic problem, thus, arises because of unlimited wants or ends and the scarcity of resources which have alternative uses.

[2] Scarcity definition of Economics:

According to **Prof. Robbins**, economics is concerned neither with 'material means' nor with 'welfare'. In his illustrious book entitled- "An Essay on the Nature and Significance of Economic Science" published in 1932 he has defined economics as, "a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses".

The main points involved in this definition are as follows:

(1) Economics is a study of Human Behaviour:

According to Robbins, economics is a study of human behaviour.

It is, of course, true that there are many aspects of human behaviour, but economics studies economic aspect of human behaviour, that is, one which is related with economic problem and as we shall see later on economic problem arises because of the existence of unlimited human wants and limited means to satisfy them.

(2) Unlimited Ends (Wants):

Ends here refer to human wants. As we know, human wants are unlimited in number, there is no end to human wants. The satisfaction of one want immediately gives rise to another want. In fact, there is what we call addition and multiplication of wants rather than its subtraction or division. If human wants were limited and capable of being satisfied, economic problem would not have been so acute. But there is no end to human wants and hence the problem.

(3) Human Wants Differ in Degree of Urgency:

It is, of course, true that human wants are unlimited, but all these wants are not of equal urgency. Some wants are more urgent while others are less urgent and as such these wants can be arranged in order of priority. Factors like income of an individual, his social status, his habits, customs, fashion, etc determine the degree of urgency of his wants. If all wants were equally urgent, the problem of choice amongst them would not have arisen, but as it is not so, an individual has to make a choice as to which of the wants he should satisfy first and which of the wants he should satisfy later on. And this choice affects the nature of his economic activity.

(4) Scarce Means:

The means or the resources to satisfy the unlimited wants are limited or scarce. Of course, there are certain goods which nature has given us in plenty like light, air, sunshine, etc. These are free goods. But such goods are limited in number. For satisfying most of our wants, the resources or means are scarce and limited. It should be noted here that the word 'scarcity' is to be interpreted in a relative and not in an absolute sense. The mere fact of a short supply does not make a commodity scarce if there is no demand for it. As Prof. Robbins points out, the bad (rotten) eggs though much smaller in number than good ones are not scarce in the economic sense since

there is no demand whatsoever for rotten eggs. The scarcity or otherwise of a commodity is to be considered only in relation to demand.

This scarcity of resources in relation to ends gives rise to the problem of choice. If however, the means at our disposal were as unlimited as the ends, there would have been no economic problem.

But as Robbins has said, nature is niggardly and life is short. It is because of the scarcity of resources that there arises the problem of choice.

(5) Alternative Uses of Scarce Means:

The means or the resources to satisfy unlimited wants are not only scarce, but can be put to alternative uses; besides it also involves a choice as to their use. Thus, for example, a plot of land can be used for the cultivation of paddy or wheat, labour may find employment in a farm or in a factory, capital may be invested either in consumer goods industries or producer goods industries, a student may spend his fifty rupee note in cafe house or in going to a movie and so on. It is because the scarce resources can be put to several uses that the problem of choice becomes all the more complicated and complex.

True Nature of Economic Problem:

It would, thus, be clear from Prof. Robbin's definition that economic problem would not arise unless all the above-mentioned conditions are, fulfilled. Neither the 'multiplicity of ends' nor the 'scarcity of means' nor even the 'alternative applicability of the scarce means' taken alone can create an economic problem. An economic problem arises only when all these conditions are fulfilled simultaneously. In other words, when our wants are unlimited and the means to satisfy them are scarce and have alternative uses, there arises a problem of choice - of selecting the uses to which we shall put the scarce resources. And that is the economic problem - the problem of economizing scarce resources with alternative uses to attain maximum satisfaction. It is through the rationality of human behaviour that the problem of economising scarce resources to attain maximum satisfaction is sought to be achieved.

Universal Nature of Economic Problem:

It can then be said that economic problem is a problem of choice arising out of unlimited ends on the one hand and scarce means with alternative uses on the other. This problem of choice is universal in its application. It applies to all sections of the society - male or female, rich or poor, worldly persons or saintly persons. As Prof. Erich Roll has put it, "the problem of choice exists in the one-man community of Robinson Crusoe, in the patriarchal tribe of Central Africa, in medieval feudal Europe, in modern capitalist America and in communist Russia". He further observes, "The laws which shall be derived from this definition shall be applicable to all societies. The laws of choice, like the laws of gravitation, will be independent of the legal and political frame work. The problem of choice, thus, arises in every society irrespective of its legal and political frame work". It

arises even in Gail braith's Affluent Society of America. The problem has to be solved in dictatorships and democracies and in planned and unplanned economies. It is true that methods applied to solve the problem of choice may vary in different economies. Thus, for example, in capitalist economy, the problem is solved through the operation of the free working of price mechanism, in a socialist economy it is handled by the State Planning Board.

Criticism of the Scarcity Definition:

The main short comings of this definition are as follows:

(1) Too Wide and Too Narrow a Definition:

Robbins definition on the one hand is too wide and on the other hand too narrow. It is too wide because the problem of scarcity and choice is so universal that it arises practically in every aspect of our life- economic, social, political, and religious and so on. Are we to study the problem of choice in all these aspects? If so, the scope of economics becomes unlimited and too wide, but as a social science it is desirable that we should study man's economic life and economic problems within the society only.

Looked at from another stand point, Robbin's definition appears to be too narrow because according to him economics is concerned only with the means and not with the ends as such. The business of an economist according to him is simply to explain and explore and not to advocate or condemn.

(2) Robbin's Definition Accepts the Concept of Welfare through the Back door:

Although Robbins has severely criticised the "welfare definition", yet the concept of welfare is found implicit in his definition too.

Thus, for example, when it is said that the scarce resources with alternative uses are to be adjusted to unlimited ends in such a manner as to achieve maximum satisfaction, the idea of maximizing welfare is implicit in it. The concept of welfare, thus, does find a place in Robbin's definition through the back-door.

(3) Economics Cannot Remain Neutral Between Ends:

A very severe criticism of Robbin's definition pertains to views regarding the relationship between ends and scarce means. According to him economics is concerned only with the means, study of ends lies outside its scope. As he puts it, "economic neutral between ends".

Most of the modern writers, however, do not accept this views. According to them, economics cannot and should not remain neutral between ends. The study of economics aims at not only to know truth for its own sake, but also to provide a technique for the solution of various economic problems facing the society. Economics, let it be remembered, is not only a 'light bearing' science, but a 'fruit bearing' science as well. The justification of any social science its ability to contribute to the solution of practical problems. Thus, after analysing the various

aspects of an economic problem, economist must suggest remedies for its solution. It is, therefore neither desirable nor possible to separate economics from normative aspect. It has to study not only 'what is' but also 'what ought to be'. Economics cannot be divested, as Robbins does, ethical considerations. It is only when the subject of economics studied both from its positive and normative aspect that it can be in the solution of various economic problems facing the society. It is a sheer illusion to imagine that economics is neutral between ends.

(4) Too much Emphasis on Scarcity Aspect:

The definition given by Robbins lays too much emphasis on the scarcity aspect. However, the main problem which has engaged the attention of most of the countries at present is how to deal with and overcome this scarcity. Accordingly, more and more importance is being given to the economics of development. Modern economics is 'growth - oriented' rather than 'scarcity -oriented'.

(5) Economic Problem arises not only under conditions of scarcity but even under conditions of abundance:

Again, it has also been pointed out that an economic problem does not always arise from scarcity as assumed by Robbins, but: may arise even under conditions of abundance. Thus, for example during the great economic depression of the thirties, it was not 'scarcity', but 'abundance of goods (that is, over-production) which had created economic problems for governments in various capitalist countries of the world. Besides, an economic problem arising out of abundance is more serious in affluent countries. Robbin's definition thus, fails to take into account the fact that both under condition: of scarcity' and of abundance, there can be an economic problem.

(6) Robbin's Analysis is mainly Micro in Character:

Robbin's economic analysis is, in the main, micro in character.

His analysis studies human behaviour in the context of unlimited ends and scarce resources which have alternative uses, Economic analysis, however, is more related to the behavioural pattern of the society at large rather than an individual behaviour. Macro aspect, this, has not been given its due importance in Robbin's analysis.

In modern times, macro-economic analysis which studies problems like national income and employment, economic growth and economic development, etc. has come to occupy a very significant place in economic literature. Robbin's analysis, however, appears to have ignored this important aspect.

(7) Robbin's Definition is based on Static Analysis:

Another important lacuna in Robbin's definition is that it is based on static analysis. Robbins has considered the problem of scarcity from a static view point. In his analysis, unlimited ends (wants) and scarce means with alternative uses are assumed to be given. It does not envisage any change taking place either in the means or in

the ends. This is, however, a highly static and rigid view of a dynamic problem. In the modern dynamic society, ends and means seldom remain constant; these are subject to continuous change with the process of economic growth and economic development. Robbin's definition, unfortunately, tends to ignore this vital aspect.

General Remarks:

In spite of the above limitations of Robbin's definition, it is certainly an improvement over the earlier definitions and therefore has found wide acceptance. The welfare definition of economics had emphasized 'maximisation of welfare'; in Robbin's definitions too, it has been accepted in an implicit manner when it says that scarce resources with alternative uses are to be so utilized as to achieve maximum satisfaction. Looked at from this point of view there is no basic difference between welfare definition and scarcity definition. A number of economists have defined economics in the Robbinsian way. Thus, for example, according to Stonier and Hague, "economics is basically a study of scarcity and the problems arising out of it". Likewise, in the words by Ferguson, economics studies economic allocation of scarce physical and human resources between different uses. Similarly Cairn cross defines economics as a social science which studies how people attempt to adjust scarce resources with unlimited wants and how these attempts get related through exchange.

All the same, it should be noted here that Robbin's definition is inadequate as it does not go to the core of economics as also its scope and subject matter. In particular, the definition does not cover the theories of income and employment determination as also the theories of economic growth and economic development, which have come to occupy a very important place in modern economic literature. In the words of Prof. Schultz, "Robbin's definition is misleading because it does not reflect vital issues like problems of economic growth and economic development".

[3] Nature and Scope of Economics

Economics is a social science that studies how people, businesses, and governments make decisions to use limited resources to satisfy unlimited wants. It helps us understand how wealth is produced, distributed, and consumed.

The term 'Economics' is derived from the Greek word '**Oikonomia**', which means **management of the household**. Over time, its meaning has expanded to include the management of the entire economy.

The **nature of economics** explains what economics is all about, while the **scope of economics** defines the area or field it covers.

Nature of Economics

The nature of economics can be understood from the following points:

- 1. Economics is a social science**

Economics studies human behaviour in relation to the production, distribution, and consumption of goods and services. It deals with people living in society and their economic activities.

- 2. Economics deals with human wants**

Human wants are unlimited, but the resources available to satisfy them are limited. Hence, economics studies how individuals and societies make choices to use scarce resources efficiently.

- 3. Economics is concerned with scarcity and choice**

Scarcity of resources forces people to make choices. Economics examines how people choose between alternative uses of scarce resources.

- 4. Economics is both a science and an art**

It is a science because it uses systematic methods and principles to study human behaviour. It is an art because it provides practical solutions to economic problems, such as how to reduce poverty or unemployment.

5. **Economics is dynamic in nature**

The economic environment keeps changing due to technological progress, population growth, globalization, and government policies. Economics, therefore, is not static but dynamic.

Scope of Economics

The scope of economics includes the subject matter that economics covers. It mainly involves the following areas:

1. **Consumption**

It studies how individuals and households use goods and services to satisfy their wants. It deals with the theory of demand, utility, and consumer behavior.

2. **Production**

It examines how goods and services are produced using different combinations of factors like land, labor, capital, and entrepreneurship. It also studies the concept of cost, production function, and returns to scale.

3. **Exchange or Distribution**

It studies how the goods and services produced are exchanged in the market and how income is distributed among the factors of production (wages, rent, interest, and profit).

4. **Public Finance**

It includes the role of government in the economy. It studies taxation, public expenditure, budget, and fiscal policy.

5. **International Trade**

It studies trade between different countries, exchange rates, balance of payments, and globalization.

6. **Economic Growth and Development**

It analyzes how an economy grows and develops over time and how to improve the standard of living of people.

Positive and Normative Economics

Economics is a social science which studies human behaviour in relation to the production, distribution, and consumption of goods and services. In this process, economists try to understand how

individuals and societies make economic decisions. However, economics has two distinct sides — one that deals with **facts and realities**, and another that deals with **values and judgments**. These two sides are known as **Positive Economics** and **Normative Economics**.

The distinction between them was first clearly made by **Lionel Robbins** and later explained by economists like **John Neville Keynes**. Understanding this difference is important because it helps us know whether an economist is describing a situation as it is, or suggesting what should be done to change it.

Meaning of Positive Economics

Positive economics is the **scientific** part of economics that deals with **facts, data, and cause-and-effect relationships**. It answers questions such as “What is happening?”, “Why is it happening?”, and “What will happen if certain conditions change?”.

In simple words, positive economics **describes** the situation of the economy without making any judgment about whether it is good or bad. It studies **what is**, not **what ought to be**.

For example:

- “An increase in income leads to an increase in consumption.”
- “When the price of petrol rises, people use less of it.”
- “If the government increases taxes, people’s disposable income will fall.”

These statements are factual. They can be tested, verified, or rejected through data and observation.

Nature of Positive Economics

1. Descriptive in Nature

Positive economics aims to **describe and explain** economic events as they actually occur. It focuses on the **real-world situations** and explains how the economy works.

2. Objective Approach

It deals with facts and avoids personal opinions, beliefs, or moral views. Economists must remain neutral and objective in their analysis.

3. Based on Cause and Effect Relationship

It explains the relationship between different variables. For instance, if the price of a product increases, the demand usually decreases — this is a cause-and-effect relationship.

4. Can Be Tested or Verified

Positive economic statements can be tested through statistical data, experiments, and real-world evidence. For example, economists can collect data on how demand changes with price and verify the law of demand.

5. Predictive Function

It helps in predicting future economic outcomes based on existing data. For example, predicting inflation, unemployment trends, or the impact of monetary policy.

Importance of Positive Economics

1. Helps in Understanding Economic Phenomena

It helps economists and policymakers understand how the economy operates in reality — such as how markets determine prices, how employment levels fluctuate, or how consumers behave.

2. Basis for Policy Formulation

Before making policies, governments need factual information. Positive economics provides this foundation. For example, before deciding tax rates, policymakers study the actual relationship between taxation and consumption.

3. Helps in Forecasting

Positive economics assists in predicting the likely effects of a particular policy or economic change. For example, economists can forecast what will happen to inflation if interest rates rise.

4. Provides Scientific Basis to Economics

By using data, analysis, and models, positive economics makes economics more scientific and less theoretical.

Examples of Positive Economics

- “India’s unemployment rate is 7%.”
- “A rise in fuel prices increases transportation costs.”
- “Higher education levels lead to higher income.”

- “If the government increases subsidies, budget deficit increases.”

These statements are based on facts and can be verified with data.

Meaning of Normative Economics

Normative economics is the **value-based** or **policy-oriented** part of economics. It deals with what the economy **ought to be** rather than what it **is**. It expresses **opinions, judgments, and ideals** about economic policies and outcomes.

In simple words, normative economics provides **suggestions or prescriptions** to improve the economy. It involves moral and ethical considerations about what is good or bad for society.

For example:

- “The government should take steps to reduce unemployment.”
- “The rich should pay higher taxes than the poor.”
- “Education and health services should be free for all citizens.”

These statements cannot be tested scientifically because they are based on personal or social values.

Nature of Normative Economics

1. Prescriptive in Nature

Normative economics prescribes solutions or policies. It does not just describe what is happening but suggests what should happen.

2. Subjective Approach

It includes opinions and value judgments. What is desirable to one person may not be desirable to another.

3. Based on Ethical and Moral Values

It considers questions of fairness, justice, and welfare. For example, “Should income be more equally distributed?” is an ethical question.

4. Cannot Be Tested or Verified

Normative statements cannot be proved true or false using data because they are based on personal opinions or beliefs.

5. **Influenced by Social and Political Ideologies**

Different societies or political systems may have different opinions about what is desirable. For instance, a socialist economy may favor equality, while a capitalist system may value efficiency.

Importance of Normative Economics

1. **Helps in Policy Making**

Government policies are often based on normative judgments. For example, deciding the level of taxation, subsidies, or welfare programs depends on opinions about fairness and justice.

2. **Aims at Economic Welfare**

Normative economics focuses on improving the welfare and well-being of people. It helps in framing policies that promote social justice and equality.

3. **Sets Goals for the Economy**

It defines what the society should aim for — such as full employment, equitable income distribution, or price stability.

4. **Guides Positive Economics**

While positive economics gives factual analysis, normative economics provides direction about how those facts should be used to achieve social welfare.

Examples of Normative Economics

- “Unemployment should be reduced through government spending.”
- “The minimum wage should be increased to improve living standards.”
- “The government should provide free medical care to all.”
- “The rich should be taxed more to reduce inequality.”

These are based on opinions and moral judgments, not on facts.

Relationship between Positive and Normative Economics

1. **Complementary to Each Other**

Positive and normative economics are not opposed but complementary. Positive economics tells us how the economy works, and normative economics tells us how it should work.

2. Sequential Relationship

Normally, economists first study the situation through positive analysis and then make normative suggestions.

Example:

- Positive statement: “The unemployment rate in India is increasing.”
- Normative statement: “The government should create more jobs to reduce unemployment.”

3. Policy Application

Policymakers rely on positive data to evaluate the results of normative goals. Thus, both are necessary for sound decision-making.

[4] CENTRAL PROBLEMS OF MICRO AND MACRO ECONOMICS

Every economy in the world, whether rich or poor, developed or developing, capitalist or socialist, faces certain basic problems. These problems arise because of the scarcity of resources in relation to unlimited human wants.

In other words, we cannot produce everything that people want, because we do not have enough resources like land, labour, capital, and raw materials.

Therefore, we must make choices – what to produce, how to produce, and for whom to produce. These are known as the central problems of an economy.

Why Central Problems Arise

The central problems arise mainly because of three reasons:

1. Human wants are unlimited

Human beings always want more and more. As one need is satisfied, new wants arise. Example: After getting a car, one may want a luxury car, then a bigger house, and so on.

2. Resources are limited

Every country has a limited amount of land, labour, capital, and entrepreneurship. These are not sufficient to produce everything that everyone wants.

3. Resources have alternative uses

The same resource can be used for different purposes.

Example: Land can be used to grow wheat, build houses, or open a factory. So, we must decide the best use of each resource.

Hence, due to scarcity, unlimited wants, and alternative uses, economic problems arise in every economy.

(A) CENTRAL PROBLEMS OF MICROECONOMICS

Microeconomics deals with the individual units of an economy – such as one consumer, one firm, or one industry. It tries to solve the problem of allocation of scarce resources among competing uses.

The main central problems of microeconomics are explained as follows:

1. What to Produce and in What Quantity

Every economy has to decide what goods and services should be produced, and in what quantities. Because resources are scarce, producing one thing means sacrificing another. This is called the problem of choice.

Example: Should the economy produce more food or more clothing? Should it focus on capital goods (machines) or consumer goods (daily needs)?

The decision also involves balancing between current consumption and future growth, and between essential goods and luxury goods.

Thus, the first problem is deciding what to produce and how much of each product should be made.

2. How to Produce

After deciding what to produce, the next problem is how the production should take place – that is, which method or technique should be used.

There are generally two main techniques:

- Labour-intensive technique: Uses more human labour and less machinery. Example: Handloom weaving, agriculture.
- Capital-intensive technique: Uses more machinery and less labour. Example: Automobile manufacturing, cement industry.

The choice depends on the availability of resources.

In a country like India, where labour is abundant, labour-intensive methods are preferred. In developed countries like the USA, where capital is abundant, capital-intensive methods are more common.

The goal is to achieve maximum production at minimum cost.

3. For Whom to Produce

Once goods and services are produced, we must decide who will consume them. In other words, how will the total output be distributed among people?

This problem is known as the distribution problem.

Example: Should more goods be made for the rich (like luxury cars) or for the poor (like low-cost housing)?

Should income go mostly to capital owners or workers?

In a capitalist economy, distribution depends on market forces – those who own more resources get more income. In a socialist economy, the government decides distribution to ensure equality. In a mixed economy like India, both the market and the government decide. The goal is to achieve fair distribution of income and wealth.

4. How Efficiently Are Resources Used

After deciding what, how, and for whom to produce, the next issue is whether resources are being used efficiently. Efficiency means that all resources are fully and productively employed without any waste. If labourers are unemployed or machines remain idle, it means the economy is inefficient.

The aim is to achieve maximum production from available resources.

5. How to Ensure Economic Growth

Every economy wants to grow – that means to increase its productive capacity over time. To do so, it must decide how much of current resources should be used for consumption and how much should be saved for investment. Investment in capital goods, education, and technology helps the economy to grow faster in the future.

(B) CENTRAL PROBLEMS OF MACROECONOMICS

Macroeconomics looks at the economy as a whole.

It deals with big issues like national income, employment, inflation, and growth. While microeconomics focuses on individual choices, macroeconomics studies the overall performance and stability of the economy.

1. Problem of Full Employment

Every country wants to use all its resources, especially labour, fully and efficiently. But in reality, there is unemployment – people who are willing to work do not get jobs. Unemployment leads to wastage of human resources and reduces national income.

Therefore, governments try to achieve full employment – a condition where everyone who wants to work can find a job.

Example: The Indian government runs schemes like MNREGA to create rural employment.

2. Problem of Economic Growth

Economic growth means an increase in the total output or income of the economy over time. A growing economy provides more jobs, higher incomes, and better living standards.

To achieve growth, the economy must:

- Increase investment in industries and infrastructure
- Improve education and technology
- Use natural resources wisely

Example: “Make in India” and “Digital India” are initiatives to promote growth.

3. Problem of Price Stability

Stable prices are necessary for economic stability. When prices rise continuously, it causes inflation. When prices fall sharply, it leads to deflation.

Both are harmful:

- Inflation reduces the value of money and purchasing power.
- Deflation discourages investment and increases unemployment.

Therefore, the government tries to maintain moderate and stable prices through monetary and fiscal policies.

4. Problem of Balance of Payments

Every country trades with others by importing and exporting goods and services. The difference between what a country earns from exports and what it spends on imports is called the Balance of Payments (BoP).

If imports are greater than exports, there is a deficit. If exports are greater than imports, there is a surplus. A BoP deficit can weaken the economy, reduce foreign exchange reserves, and depreciate the currency. So, maintaining a balanced BoP is essential.

5. Problem of Income and Wealth Distribution

Inequality in income and wealth is a major problem in many economies. Some people earn very high incomes while others struggle for basic needs. This causes social and economic imbalance.

Therefore, the government uses progressive taxes, subsidies, and welfare schemes to reduce inequality and ensure social justice.

[2] DEMAND ANALYSIS

MEANING OF DEMAND

Demand means the desire to purchase a commodity which is backed by willingness and ability to pay.

According to Prof Hibdon, *“Demand means the various quantities of goods that would be purchased per time period at different prices in a given market.”*

INDIVIDUAL DEMAND AND MARKET DEMAND

Individual Demand: Individual Demand shows the different quantities of that a person will buy at different prices. Thus, it shows relationship between the price and the quantity of a product demanded subjectively, by an individual. **For Example**, if we study the different quantities of a commodity which an individual demand at

Market Demand: Market demand for a product refers to the total demand of the individual buyers taken together. It represents the total of a commodity which all the individuals taken together would demand in the market at difference prices.

Market demand is the sum of individual demand and is arrived at by adding all individual buyers demand in the market.

[7] Demand Schedule: Individual and Market Demand Curve

The demand schedule is a tabular statement of the price/quantity relationship.

It is simply a statement in the form of a table showing various quantities of a commodity that will be purchased against each price for a given period of time. It is usually imaginary.

Example: Demand schedule for commodity:

Price	Quantity demanded by an individual
Rs. 10	5 units
Rs. 8	7 units

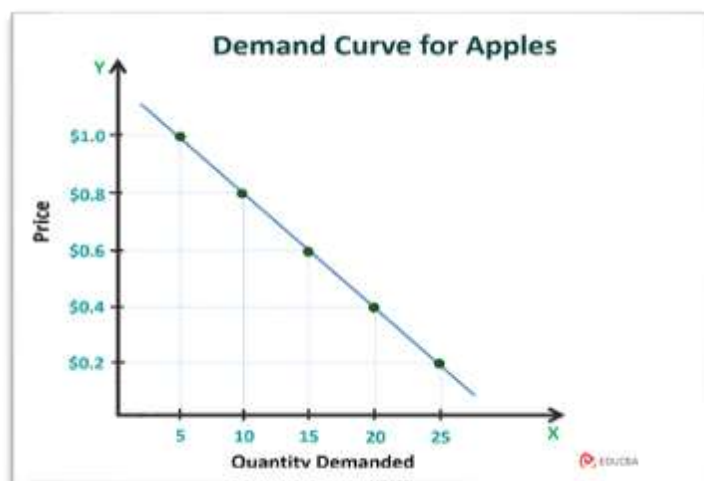
Rs. 7	10 units
Rs. 5	15 units
Rs. 2	18 units

Examples: Market demand schedule for commodity:

Price of commodity	Quantity of commodity (in kgs.) to be demanded at different prices by different buyers (A, B, C, D, E)					Market demand of commodities at different price (Kgs)
	A	B	C	D	E	
1	5	8	10	12	15	50
2	4	6	7	10	13	40
3	3	4	6	7	10	30
4	2	3	4	5	6	20
5	1	1	3	3	2	10

DEMAND CURVE

The demand curve is the geometrical representation of data in a demand schedule. The graph shows the amount the consumer is willing to buy at different prices in a given period of price.



REASONS FOR DOWNWARD SLOPPING CURVE:

If we study the slope of the demand curve, we shall find that it is a downward sloping call from left to right except in the case of inferior goods and certain other exceptions. This is because of the following

reasons;

1. **Negative substitution effect:** we know that when the price of a commodity Falls, it becomes relatively cheap as other commodities. Therefore, the consumer substitutes it for other commodities and accordingly, its demand goes up. Thus substitution effect is always a negative relationship between price only by cow which is convex to origin that is, which slopes to the right.
2. **Negative income effect In the case of superior goods:** Likewise, a fall in the commodity's price leads to an increase in the consumer's real income and therefore he buys more of these commodities or any other commodity. The income effect is negative for superior goods which explains the downward sloping slope of the demand curve. However, in the case of inferior goods, the income effect is positive hence we get an exceptional demand curve sloping upwards.
3. **Marginal consumers who were not up to this time in a position to buy that commodity:** Because of its high price, now start buying it due to a fall in its price. This increases the demand for that commodity.
4. **When a commodity has several uses,** its demand rises due to a fall in its price and vice versa. For example, electricity is used only for lighting purposes when it is expensive, but when it becomes cheap it is used for heating cooking etc. Other examples are milk potatoes etc.
5. **Unequal distribution of income is yet another cause:** Those with high income by a commodity even though the price is high. But when the price falls, those with low income also buy that commodity.

[8] DETERMINANTS OF DEMAND

The main demand determinants are as follows:

1) Price of the product:

As said earlier, price is one of the most important factors or determinants which affect the demand for a product. Other things being equal. A rise in the price of a product leads to a fall in its demand and a fall in price leads to an increase in demand. We have discussed this in detail under the title of the law of demand and therefore it is not necessary to repeat the same here.

2) Income of the consumer:

The income of the consumer is one of the basic determinants of the demand for a product since it

indicates the purchasing power of the consumer. As income increases, other things remain constant, and demand also increases and vice-versa. However, the income-demand, relationship is of a more varied nature than the other determinants of demand. This is because other determinants of demand like the price of the product or the price of its substitute etc. are more significant in the short run than in the long run.

A. Essential consumer goods:

These goods are generally consumed by almost all sections of society and include such items as food grains, vegetable oil, cooking fuel, minimum clothing, housing, etc.

B. Inferior goods:

Inferior goods and superior goods are widely known to both consumers and sellers. Thus, for example, every consumer knows that coarse grain is inferior to wheat and rises.

C. Normal goods:

These are goods whose demand increases with an increase in consumer income and decreases with a fall in income. Thus, for example, better clothing, furniture, etc. fall under this category.

D. Luxury goods:

These goods are consumed mostly by rich section of society and include items like precious ornaments and jewellery, diamonds, costly furniture and electrical gadgets, etc.

3) Price of substitutes and complementary goods:

Demand for a product is also affected by changes in the price of substitutes or complementary goods. Two products are set to be substituted for each other if changes in the price of one affect the demand for the other in the same direction. Thus, for example, tea and coffee are substitutes for each other.

4) Consumer taste and preference:

Consumer taste and preference are also important demand determinants. Generally speaking, taste and preference and to a large extent on the social customs. Changes in these factors bring about changes in consumer taste and preference consequently the demand for goods and services.

5) Consumer expectation:

Consumers' expectations regarding future changes in price, income and supply position of the product also affect the demand for goods and services in the short run. Thus, for example, if consumers expect a rise in the price of a commodity. Likewise, if a consumer expects a rise in income on account of wage revision or some other factor, this will induce them to increase their

current buying leading to a rise in demand.

6) Size of the population, its composition and distribution:

The demand for the product also depends upon the size of the population, its composition and distribution. Given a price, a per capita income and taste and preference. The larger the population, the larger the demand for a product and vice-versa. Thus with an increase in the size of the population, demand for various products will show an increase.

7) Demonstration effect:

When some new products or new models of existing products appear in the market, rich people are the first to buy, thus for example, when Colour television sets first appeared in the market, rich people were first to buy them likewise electronic watches were first seen on the wrist of the well to do people and cell phones are finding a place at residence of rich people. Some people buy new products or new models of existing products because they have a genuine need for them, while others buy simply to exhibit their affluence. But once the new products are in the market many people purchase them not because they have no genuine need for them but because their friends and neighbours have purchased it

8) Advertisements expenditure:

Advertisement also helps in increasing the demand for a product in the following ways.

1. By informing the potential consumers about the availability of the product
2. By showing superiority over the rivals products.
3. By influence consumers' choice against rivals' products.
4. By setting fashion and changing tastes.

It may be said that, another thing remaining equal as a firm increases its expenditure on advertisement, its volume of sales increases.

9) Availability of consumer credit facility:

Availability of credit facilities from banks and other financial institutions also encourages the consumer to buy more than what they would have bought in the absence of such credit facilities. Credit facilities mostly affect the demand for durable consumer goods, particularly those which require bulk payment at the time. Thus, for example, car finance facilities or the availability of credit facilities to purchase white goods like refrigerators or air conditioners have a positive effect on their demand.

10) Distribution of national income:

The pattern of distribution of national income also affects the demand. Thus, for example, if the distribution of a national income is more or less equal amongst the different sections of society, the demand for normal goods will be the largest. Conversely, if the national income has an uneven distribution, that is, if the majority of the population belongs to the lower income groups, market demands for essential goods including inferior ones will be the largest, whereas the demand for other kinds of goods will be relatively less.

[9] THE LAW OF DEMAND

The law of demand explains the relationship between price and demand of a commodity. The law says that demand varies inversely with price, not necessarily proportionately. If the price falls, amount demanded will increase and vice-versa.

Statement of the Law of Demand

The law states that “A rise in the price of a commodity or service is followed by a reduction in demand, and a fall in price is followed by an increase in demand, if conditions of demand remain constant”.

Similarly, **Prof. Samuelson** explains the law of demand as “*The Law of Demand states that people will buy more at lower price and buy less at higher prices, other things remaining the same*”.

The law can be understood with the help of a demand schedule and curve.

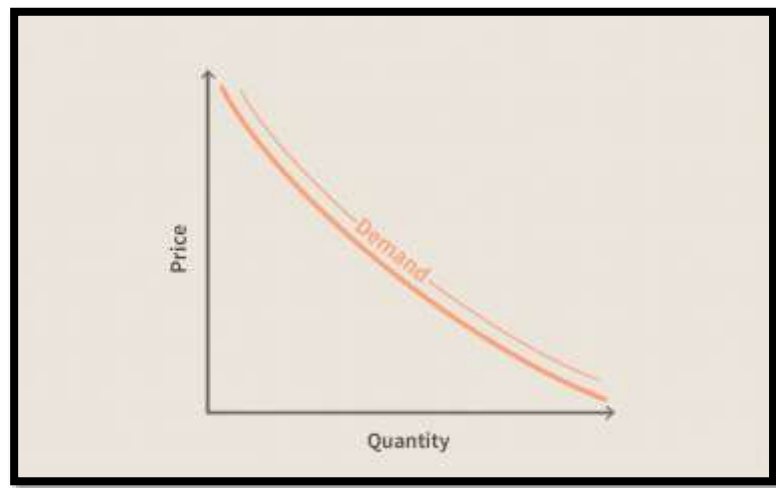
(Diagrammatic Presentation of the Law of Demand)

Demand schedule

Price (in Rs.)	Quantity Demanded (in Units)
5	100
4	200
3	300
2	400
1	500

The above table shows that quantity demanded is continuously increasing from 100 units to 500 units with respective decreases in the price.

Demand Curve



In the above figure DD is the demand curve which is sloping downwards from left to right. Here, with every fall in price of the commodity the quantity demanded is being increased.

Demand Function

The demand function explains in mathematical terms the relationship between the demand for the product and its various determining variables.

Example:

$$D_x = f(P, P_s, P_c, Y_d, T, U)$$

Where, X is Commodity

P is Price

S is Substitute goods

C is Complementary goods

Y is Income

T is Taste

U is determinants.

Thus, demand for commodity x is a function of price of x, substitute and complementary goods, taste, income and other unspecified determinants.

Salient Features of the Law of Demand

1. There is an inverse relationship between price and demand of a commodity.
2. Price is an independent variable and demand is a dependent variable.

Assumptions to the Law of Demand

The law of demand assumes *other remaining the same*. It implies the following:

1. There should be no change in the income of the consumers.
2. There should be no change in tastes/preferences and nature of the consumers.
3. There should be no change in the price of the related goods.
4. Consumers do not have knowledge of new substitute products.
5. There should be no hope of change in the price of commodity in near future.
6. The commodity should not be a prestige commodity.

Exceptions of law of Demand

The following are some of the main exceptions to the law of demand:

1. Expectation regarding price variations:

When consumer expect a continuous rise in the price of commodity, they would buy more of it despite increase in its price with a view to avoid the hardships of paying even higher prices in future. Likewise, when consumer anticipate more and more fall in price in future, they will postpone buying and wait for the price to fall further. These kind of consumers' behaviour are exceptions to the law of demand.

2. Articles of prestige value:

There are some goods which are purchased mainly for their snob-appeal or because they have status symbol. When price of such goods rise their snob appeal increases and they are purchased in the larger quantities. Things like diamond, costly jewellery etc. possess Prestige value and with every increase in their price, the Prestige value also increases. The result is that even at rising prices, the rich and aristocratic section of society is found to increase the buying of these articles. On the other hand, with a fall in the price the demand from this section also falls.

3. The Giffen goods or inferior goods:

An exception to the law of demand is known as GIFFEN goods, Named after Robert Giffen. Giffen goods do not mean any specific commodity. It may be any commodity much cheaper than its substitute, consumed mostly by poorer section of the society as a necessary item for examples, coarse cloth, coarse food grains etc.

When the price of such inferior goods falls, consumers do not buy more of it, instead they spend the saved income on some better or superior commodity say like wheat or better quality of clothes. This exception is known as Giffen Paradox, Because of all the fall in the price of inferior goods does not lead to a rise in its demand but rather it leads to a fall in demand.

4. Illusion:

Some consumers develop an illusion that a high-priced product is of a better quality and therefore when the price of such product falls, they are under an illusion that its quality must have deteriorated and therefore they do not buy it.

5. When the commodity goes out of fashion:

When the product whose demand is being studied goes out of fashion, or all in its price fails to pick up the demand. Thus, for example with the advent of transistors radio, the demand for radios operated by electricity has fallen even if they may be available at lower price. Likewise during off seasons, goods are sold at reduced prices and yet their demand remains low.

[10] ELASTICITY OF DEMAND

Elasticity of Demand: Meaning

The law of demand explains the direction of change in demand. As a result of change in price, demand extends or contracts with a rise or fall in price respectively. But the law of demand does not tell the rate of change in demand. The term ‘elasticity’ has been used to measure the degree of change in demand.

The elasticity of demand measures the responsiveness of demand for a commodity with respect to change in various determinants of demand.

Symbolically,

$$\text{Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in determinants of demand}}$$

However, unless specifically mentioned, the term elasticity of demand refers to price elasticity of demand, where, responsiveness of change in demand is measured with respect to changes in price of the product.

According to **Stonier and Hague** “*elasticity of demand is a technical term used by the economists to describe the degree of responsiveness in demand for a commodity to change in price.*”

Accordingly to **Mrs. Joan Robinson** “*the elasticity of demand, at any price or at any output, is the proportional change of amount purchased in response to a small change in price, divided by the proportional change in price.*”

Besides price elasticity of demand, there are two more types of elasticity of demand. They are

- Income elasticity of demand
- Cross elasticity of demand

[10.1] PRICE ELASTICITY OF DEMAND

‘Other things remaining the same’ when the responsiveness of change in demand is measured with respect to change in price it is called price elasticity of demand.

Symbolically,

$$\text{Price Elasticity of Demand} = \frac{\text{Proportionate change in quantity demanded}}{\text{Proportionate change in price}}$$

$$E_d = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$$

Where,

Δ = is change

P = Price

Q = Quantity Demanded

Thus, price elasticity of demand measures the ratio of relative change in quantity demanded to a relative change in price.

[11] Factors Determining the Elasticity of Demand

Demand is called inelastic when a substantial change in price does not affect the demand. Conversely, demand is called elastic when a slight change in price affects the demand drastically. The factors which make the demand elastic or inelastic are given below.

1. Nature of the commodity:

The demand for necessities is generally less elastic because the consumption of this article like food grains, edible oils, sugar, salt etc. does not change much with a change in their prices. On the other hand, the demand for articles of Comfort and luxuries is more elastic. A small change in their prices leads to a considerable change in the demand. Like the demand for producer goods broadly speaking is more elastic, while the demand for consumer goods is readily less elastic.

2. Availability of substitutes

The demand for those products whose substitutes are easily available is generally more

elastic. Thus, for example, if the price of tea rises, it will be substituted by coffee which becomes relatively cheaper for the consumer and so the demand for coffee will expand substantially and the demand for tea sources will fall. On the other hand, demand for goods having less or no substitute is inelastic or less elastic, say like salt.

3. Variety of uses of a commodity:

If a commodity or a service has several uses, its demand tends to be more elastic. When the price of such commodity falls, it is not in larger quantities and put to several uses. Thus for example, when electricity becomes cheap it is used not only for lighting purposes but also for cooking, ironing and heating purposes. On the other hand, demand for goods which have only a few uses is less elastic.

4. Postponement:

Commodities whose consumption can be postponed have a more elastic demand, say television sets, tape recorders etc. On the other hand, those commodities whose consumption cannot be postponed but have to be purchased immediately have a less elastic demand.

5. Influence of habits

There are certain goods whose consumption has become a part of habit, like the use of tobacco, pan, alcohol etc. since the consumers have formed a habit for their use. The demand for such goods stands to be elastic or elastic.

6. Proportion of income spent on commodities:

Those goods and commodities on which a consumer spends a very small part of his total income are relatively less elastic, say salt, matchbox, thread and needle etc. On the other hand, those commodities on which a substantial part of his income is spent have relatively Mod elastic demand.

7. Range of prices:

Generally speaking, the demand for low price goods and very high price goods tends to be elastic or less elastic. Thus for example, in the case of very low-priced goods, of further reduction in the price will not cause any significant increase in demand. Say like match box.

Similar is the case with high-priced goods like diamonds very costly jewellery etc. will not expand much as a result of a fall in price.

8. Income group:

Also related to the different income groups of the society. Thus, the demand for an elastic product for one income group may prove to be elastic for another. Demand for motor cars for the very high-income group and the very low-income group is elastic or less elastic. Still, for the upper-middle-class income group, it may be more elastic.

9. Element of time:

The element of time is also an important factor which affects the elasticity of demand. Generally speaking, the demand for certain products is less elastic in a short period because a change in their price does not bring about an immediate change in their demand.

Beside when consumers are habituated to using a particular brand of a product it takes some time to make them shift to a new product.

Similarly because of the market for imperfections also the demand for a certain product tends to be less elastic in a short time.

10. The pattern of income distribution:

In general more equal the distribution of income within the society the more elastic is likely to be demand for most of the commodities. However, if there is an unequal distribution of income demand tends to be inelastic or less elastic

[12] Types of Price Elasticity of Demand

There can be five types of price elasticity of demand depending upon the degree of responsiveness. These are:

1. Perfectly Elastic Demand
2. Perfectly Inelastic Demand
3. Relatively Elastic Demand
4. Unitary Elastic Demand
5. Relatively Inelastic Demand.

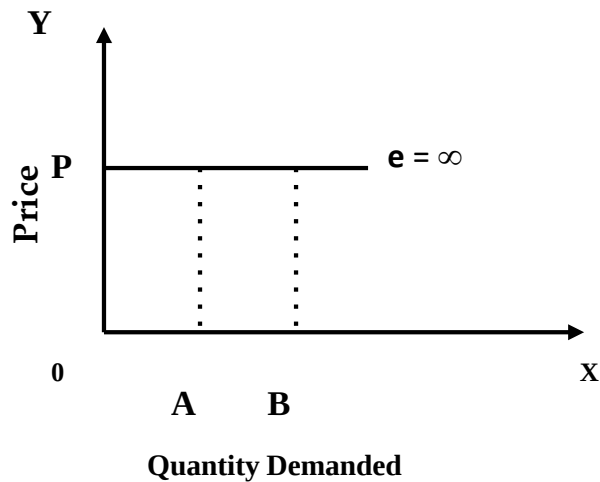
1. Perfectly Elastic Demand

In case of perfectly elastic demand, slight change or a very insignificant change in price affects the demand drastically. That is, slightest fall in price leads to an infinitely large increase in demand for the product, and an insignificant rise in price causes the demand to fall to zero.

Emblematically, the co-efficient of elasticity is $e = \infty$. The demand curve will be a horizontal

straight line parallel to X axis.

Diagram

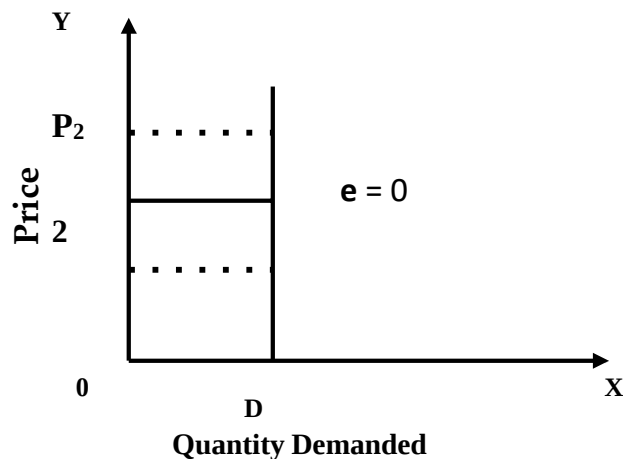


At price OP an infinite quantity is demanded.

2. Perfectly Inelastic Demand

In case of perfectly inelastic demand, even a substantial change in price does not affect the demand at all. The demand is insensitive to both rise and fall in prices and elasticity is zero.

Symbolically, $e = 0$. In this case the demand curve would be a vertical straight line.

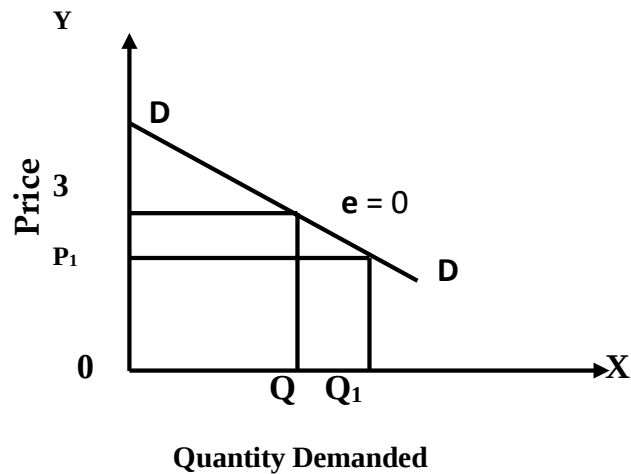


This is also a rare phenomenon. In the above diagram at price OP, quantity demanded is OQ. The same amount is being demanded at price OP₁, and OP₂.

3. Relatively Elastic Demand

In case of a relatively elastic demand, a small proportionate fall in price is followed by a large proportionate increase in demand.

Symbolically, $e > 1$

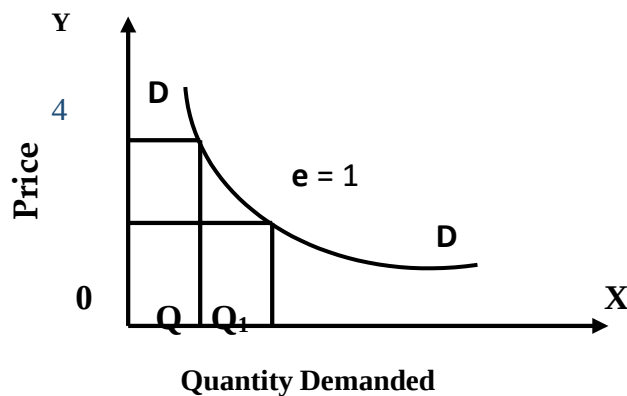


In the above figure, DD is the demand curve. As the price falls from the P to P_1 the quantity demanded increases from OQ to OQ_1 . It shows that increase in demand is more than proportionate to the fall in price.

4. Unitary Elastic Demand

In case of unitary elastic demand, a given proportionate change in price is accompanied by equal proportionate change in quantity demanded.

Symbolically, $e = 1$. The demand curve having unitary elasticity is called equilateral or rectangular hyperbola.

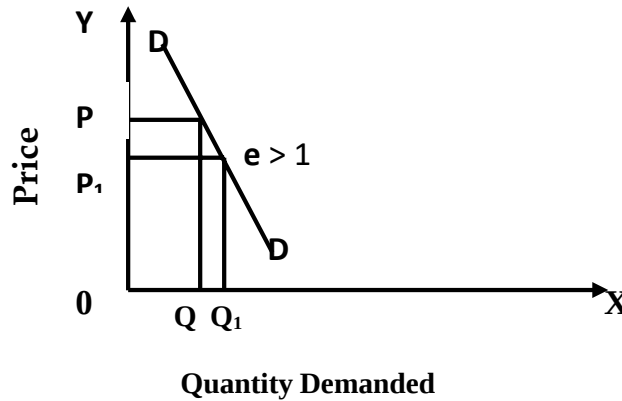


In the above diagram, when price was 4 , quantity demanded was 1 unit, when price became 2 , the quantity demanded doubled.

5. Relatively Inelastic Demand

This is a situation when a reduction in price leads to a less than proportionate change in demand. A big proportionate change in price is followed by a smaller proportionate change in quantity demanded.

Symbolically, $e < 1$.



In the above diagram, it can be seen that change in quantity demanded that is, QQ_1 is relatively smaller to change in price PP_1 .

[10.2] INCOME ELASTICITY OF DEMAND

Income elasticity of demand shows the change in quantity demanded as a result of a change in income. Income elasticity of demand may be stated in the form of a formula.

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

[10.3] CROSS ELASTICITY OF DEMAND

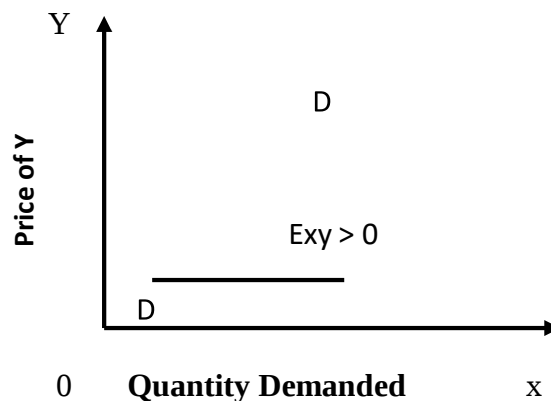
A change in the price of one commodity leads to a change in the quantity demanded of another commodity. The term cross elasticity may be defined as the ratio of proportionate change in quantity demanded of commodity X to a given proportionate change in the price of related commodity Y.

$$\text{Cross Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded of X}}{\text{Percentage change in price of commodity Y}}$$

In case of substitutes

Basically, the nature of commodities and their uses decide the cross elasticity of demand for the products. This is explained below:

If commodity x and y are perfect substitutes, for example two brands of Tea Jeevraj (x) and Tajmahal (y) then, the demand curve in case of substitute goods as shown in the diagram will have an upward slope.



If price of Y increases the demand for x also increases and the demand for y becomes zero. But if price Y falls demand for x falls.

When the commodities are perfect substitutes, the cross elasticity of demand will be ∞ (infinity) meaning thereby that a slight change in price of 'y' will cause a substantial change in quantity demanded of x. A slight increase in price of 'y' will reduce demand for y to zero.

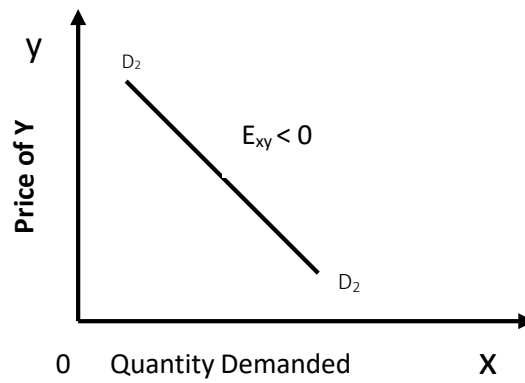
In Case of Complementary Goods

In case of complementary goods (e.g. Shampoo and Hair Conditioner), the cross elasticity of demand will be (-tive) negative. A rise in price of Y will mean decrease in quantity of Y as well as decrease in quantity of X because both are demanded together.

Thus, the different kinds of cross elasticity of demand can be summarized in the following table.

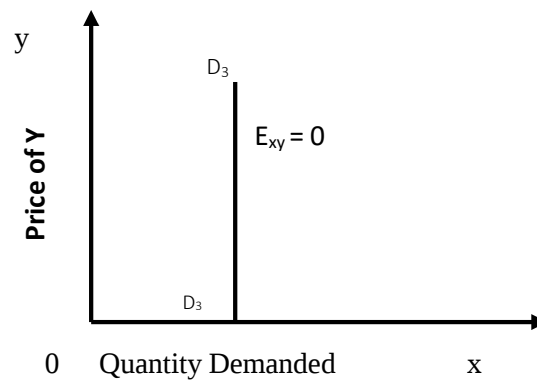
Sr. no.	Elasticity of Demand	Terminology	Conditions
1.	$E_{xy} > 0$ (+tive)	Elastic	When X,Y are good substitutes.
2.	$E_{xy} = 0$	Perfectly inelastic	When X,Y are not related to each other
3.	$E_{xy} < 0$ (-tive)	Inelastic	When X, Y are complements.

Diagram



In Case Goods are Unrelated

If two goods x and y are not related to each other (e.g. Shampoo and Tea) the cross elasticity of demand = 0, implying that a change in price of one commodity will not affect the quantity demanded of another commodity.



The demand curve will be a vertical straight line D_2D_3 if commodity x and y are unrelated goods.

[2] SUPPLY ANALYSIS

MEANING

Supply of commodity is the quantity which a producer or seller agrees to sell in market at a certain price during a certain period of time. It is related to a particular time and price.

Example

The daily supply of SUMUL's milk is

1. 50,000 liters at the price of Rs.20 per liter.
2. A farmer in Bardoli is ready to sell 100 tons of sugar cane in December 2008 at the price of Rs. 1200 per ton.

A statement of supply should have all the three elements- Price, quantity and time period.

Difference between Supply and Stock

Stock of a commodity is the total quantity which is available in the market at a certain time. Supply is that part of stock which a producer or seller is willing to sell at the price prevailing in the market. Thus, supply is the part of stock offered for sale.

Example

A farmer has a stock of 1,000 quintals of wheat, whose rate is Rs. 1200 per quintal. Farmer is ready to sell only 200 quintals of wheat at this price because he expects an increase in this rate. Here, the stock of wheat is 1000 quintals but the supply of wheat is only 200 quintals. Thus Supply depends on stock and price (prevailing and expected both).

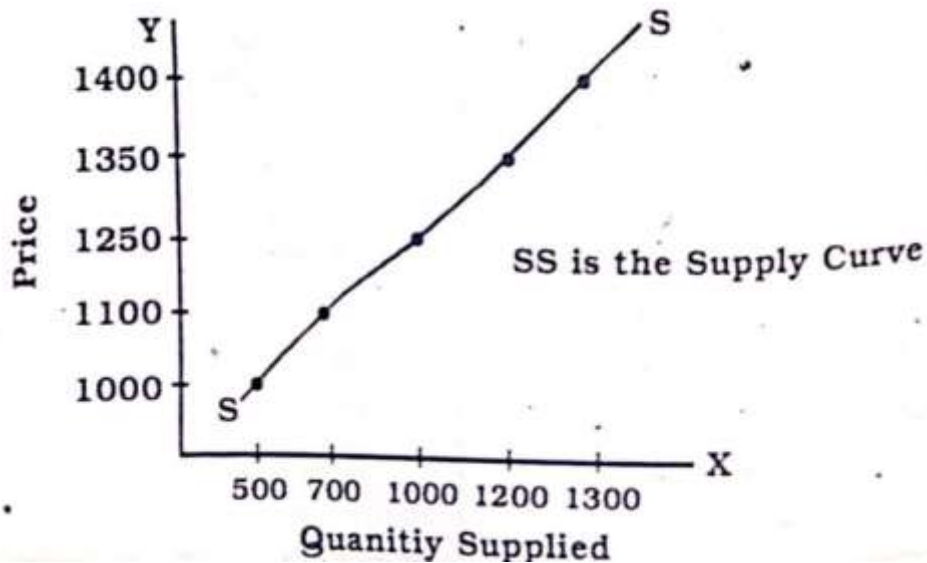
Individual Supply Schedule:

An individual supply schedule shows the different quantities of a commodity which an individual producer or seller offers for sale in the market at different prices. We can prepare an individual supply schedule as below:

Individual Supply Schedule

Price of Wheat (per quintal)	Quantity of wheat supplied (in quintals)
Rs. 1000	500
Rs. 1100	700
Rs. 1250	1000
Rs. 1350	1200
Rs. 1400	1300

On this basis, we can draw an individual supply curve.



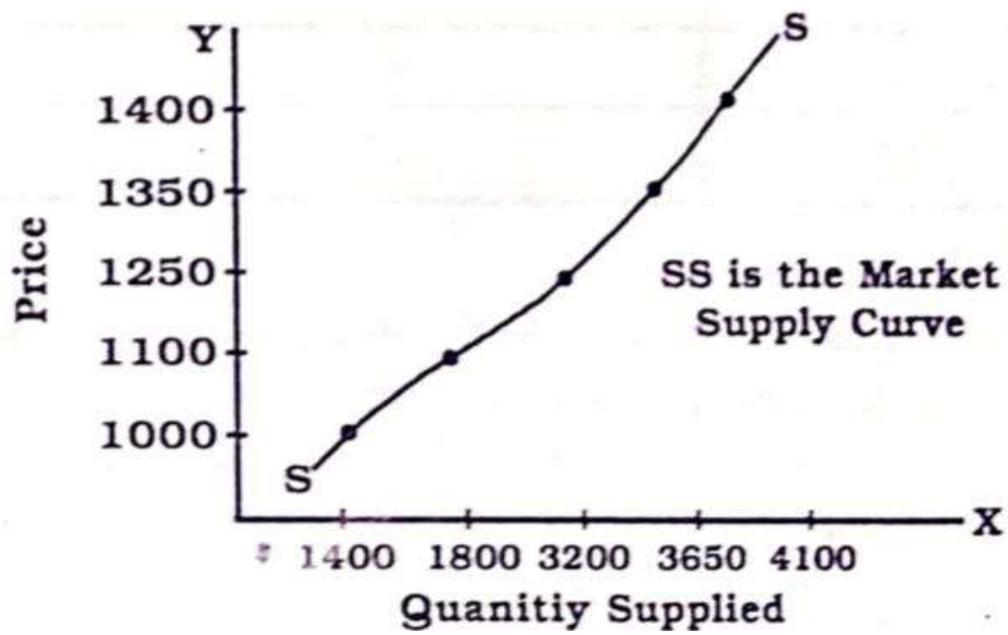
Market Supply Schedule

Market supply schedule is also known as total supply schedule and may be defined as a schedule indicating the various quantities of a product that would be supplied by all producers or sellers in the market at different prices during a given period of time. Thus, the market supply schedule is derived from the total of individual supply schedules of each producer or seller in the market. This can be explained with the help of a table.

Market Supply

Price of Wheat (per quintal)	Quantity of Wheat Supplied per month by			Total Quantity supplied that is Market Supply (A + B + C)
	Producer A	Producer B	Producer C	
Rs. 1000	500	500	400	1400
Rs. 1100	700	600	500	1800
Rs. 1250	1000	1200	1000	3200
Rs. 1350	1200	1300	1150	3650
Rs. 1400	1300	1500	1300	4100

we can draw a market Supply curve as



[12] DETERMINANTS OF SUPPLY

There are a number of factors which affect the supply of a commodity in the market. These are known as determinants of market supply, that is, these are the factors or the determinants which affect the market supply of a product. The main determinants of market supply are as follows:

1. Price of the Product:

As said earlier, price is one of the most important determinants of market supply. Other things remain equal. a rise in the price of the product leads to an increase in its supply and a fall in price leads to a decrease in its supply.

2. Natural Factors:

Natural factors like famines, floods, plant diseases, locusts, hail storms etc. adversely affect the production of agricultural commodities and consequently their market supply; on the other hand favorable climatic factors likely adequate and timely rains, favorable weather etc. result in increasing agricultural output and consequently its supply. Similarly, calamities like earthquakes. Tsunami, breakdown of war, fire etc. by adversely affecting the production results in decreased market supply of goods and commodities.

3. Cost of Production:

A rise in the cost of production due to an increase in the prices of raw materials and factor prices or increased taxes would have an adverse effect on production resulting in the fall in the market supply of goods and commodities. On the other hand, if as a result of the adoption of new technology, there is a fall in the cost of production. This would lead to an increase in production resulting in increased market supply.

4. The State of Technology:

Market supply of a product also depends upon the technique of production. Adoption of improved and updated technology, extensive use of research and development (R and D). Improvement in labor efficiency and its skill upgradation etc. lead to increase in productivity and production. This results in increasing the market supply of various goods and commodities.

5. Prices of Related Products:

Changes in the prices of related products or substitutes also influence the supply of a commodity. Thus, for example, if there is a rise in the price of wheat, the farmers would grow more wheat and less rice. Accordingly, market supply of rice will diminish while that of wheat will increase and vice-versa.

6. Expectations Regarding Future Prices:

If the producers or the sellers anticipate that prices would rise in future, they would withhold the stock to take advantage of future rise in prices and this would lead to a fall in the market supply. Reverse would happen if

the producers or the sellers anticipate the prices to fall in future. Thus, expectations about future changes in prices also affects the market supply of a product.

7. Transport Conditions:

Adequate, quick and cheap means of transport together with an efficient network of communications facilitate the movement of commodities from areas of plenty to areas of scarcity and thus ensure a balanced supply between different regions of the country. Likewise, an updated communication system by providing the necessary information regarding the price, quality, use and availability of the product can have a favorable impact on the market supply.

8. Government Policy:

Government economic policy like industrial policy, trade policy. Taxation policy, policy regarding subsidy etc. also affect the market supply of goods and commodities. Thus, for example:

1. A liberal industrial policy would encourage more and more firms to enter the field of production: besides existing firms too will have an incentive to increase their production. This will result in more production and more supply.
2. An increase in the tax rate on commodities will raise the cost of production in turn would affect the production and supply.
3. An increase in import duty, by restricting the supply of foreign goods would encourage domestic production resulting in an increased supply of those goods.
4. Likewise, subsidies and bounties given by the government to certain industries would encourage them to raise their production and thus increase the market supply.

9. Political Stability:

Political stability in the country, that is, a stable and strong government, maintenance of law and order, security, life and property etc. create a favorable atmosphere to step up production and start new lines of production. This means an overall increase in production leading to an increase in supply as well. On the other hand, political instability, breakdown of law and order leading to chaos and anarchy, insecurity of life and property, frequent dacoities and robberies etc. create chaotic conditions in the country and discourage not only new investment but also adversely affect existing production as well. All this would naturally result in a fall in the market supply of goods and commodities.

[13] LAW OF SUPPLY

Supply means the quantities that a seller is willing and able to sell at different prices. The law of supply explains the functional relationship between the price of a commodity and its quantity supplied. Thus, it describes the sellers' supply behaviour under given assumptions at different prices.

The Assumptions to the Law of Supply

The law of supply is conditional i.e. 'other things remaining the same' and operates only under the following assumptions:

- Cost of production remains unchanged.
- No change in techniques of production.
- The level of production is constant.
- No changes in Government policies.
- No changes in transportation costs.
- No speculation
- Price of related goods do not change.
- No change in the income of buyers and sellers.
- No change in the habits and preferences of buyers and sellers.

Statement of the Law of Supply

Other things remaining the same, the supply of a commodity expands with a rise in its price and contracts with a fall in its price.

The law suggests that there is a direct relationship between price and supply. A larger quantity is supplied at higher prices and smaller quantity at lower prices.

The law can be explained by the following supply schedule and curve

1. Supply Schedule of commodity X

Price (in Rs. Per kg)	Quantity (in units) supplied
5	400
10	600

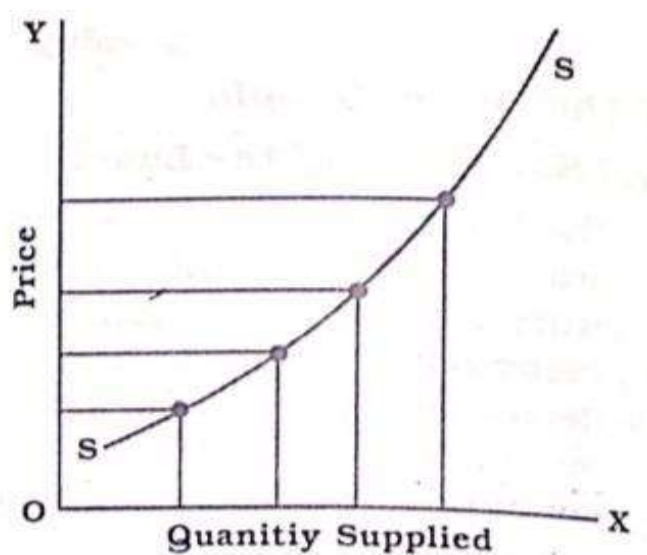
15	800
20	1000
25	1200

Here units supplied are increasing with increase in price

2. Supply Curve

When the supply schedule data is floated on a graph a supply curve is draw (bellow on the following). Diagram the supply continues to increase with increase in price.

Diagram of Supply Curve



Feature of Supply Curve

- It moves upwards to the right.
- There is direct relationship between price of the product and quantity supplied.

EXCEPTIONS TO THE LAW OF SUPPLY

(1) Expectations about Future Changes in Prices:

If the sellers anticipate that the price of a particular commodity is going to fall in future, then in order to avoid future losses they would try to sell as much as possible even at the prevailing low level of prices; in such a case, the fall in price does not lead to a fall in the supply of that commodity. Conversely if the sellers expect the prices to rise in future, then with a view to take advantage of the future price rise, they would restrict their sales even at the prevailing high level of prices.

(2) Rare Articles:

The law of supply does not apply in case of such rare articles like ancient coins and stamps, ancient historical documents, autographs of departed leaders etc. The supply of such articles is fixed and cannot be increased even if there is a substantial rise in their prices.

(3) Commodities whose supply is fixed in the short period:

There are certain articles whose supply is practically fixed in the short period and cannot be increased or decreased, although in the long run their supply can be changed. For example, vegetables, fruits, milk, flowers etc. A rise or fall in the prices of these articles will not, in the short period, result in an increase or decrease in their supply. However, in the long run, their supply can be increased or decreased with a rise or fall in their prices.

(4) Supply of Labour:

It has been said that the law does not apply in the case of factors of production like labour. Up To a point, an increase in the price of labour, that is, rise in wage rates would result in an increased supply of labour because workers would work for extra hours to get and increase wage rates. But after a certain point, they would prefer leisure to extra work, that is, an increase in wages beyond a certain point does not lead to an increase in the supply of labour. Conversely, a fall in wage rate would make the labourers work for extra hours to maintain their existing level of income. Thus, a fall in wage rate does not lead to a reduction but on the contrary an increase in the supply of labour. In such a case, we get a backward bending supply curve.

(5) Savings and Supply of Capital

Likewise, in the case of savings too, the law of supply proves to be an exception. We know that interest is the reward of savings and when the rates of interest rise, the volume of savings too rises. But after a certain point, a rise in interest rate may not induce people to save more. This is because of the high income which they get from high interest rates. In such a case, savings tend to decline even with a rise in the rate of interest. Here also get a backward bending supply curve.

UNIT 2

PRODUCER AND CONSUMER BEHAVIOUR (25%)

Topics

- **Theory of Production: Factors of Production, Production Function, Cobb-Douglas Production function, Law of Variable Proportions, Returns to Scale. Law of Diminishing Returns.**
- **Theory of Cost: Fixed Cost, Variable Cost, Total Cost, Average Cost, Marginal Cost and behavior of Curves in Short Run and Long Run.**
- **Theory of Revenue- Total revenue, Average Revenue, Marginal revenue and revenue curves**

[1] Theory of Production:

Production implies creation or addition of value. According to **Prof. Nicholson**, "*Production is the creation or addition. of those economic utilities which in general are the result of labour, possess exchange value and are appropriated.*" In this sense, production can be defined as **creation of values**. Such values may exist in the form of goods or in the form of direct services.

Production thus, does not mean creation of utilities but creation or addition of value. It essentially implies transformation of one set of goods into another; **production is an activity that transforms inputs into output**. Thus, for example, a textile mill uses such inputs like labour, raw materials like cotton, dyes, etc. and capital invested in textile machinery as also in factory building to manufacture cloth.

[2] FACTORS OF PRODUCTION

To produce a given output of goods and commodities, we require the use of productive resources and these are called factors of production. **Fraser** defines "*factors of production as a group or class of original productive resources.*" The term factor is used for a class of productive elements, the individual members of which are known as '**units**' of the factor and all the units of a factor are homogeneous and interchangeable.

[2.1] Classification of Factors of Production:

[2.1(1)] Land:

(A) Meaning of Land: Land is the first and primary factor of all the factors of production and the source of all material goods. In the ordinary sense, the term '**land**' means soil, but in economics it is used in a much wider sense. It refers to all natural resources like water, air, fisheries, forests, mountains, hills, mines and minerals etc. **The term land, thus, includes all that nature has created on the earth, above the earth and below the earth. In the words of Prof. Marshall, "Land means the materials and the forces which nature gives freely for man's aid in land and water, in air and light and heat."**

Land, thus, would include all gifts of nature in the form in which they exist before man begins to work upon them. It will also include all the natural resources: like rivers, mountains, oceans, climate, sunshine, air etc. In other words, land stands for all natural resources which yield an income and which are under some person's ownership and control.

(B) Characteristics of Land: Land as a factor of production possesses some important features which distinguish it from other factors of production. The following are its main features;

- (i) Land is a gift of nature.
- (ii) Supply of land is fixed.
- (iii) Land is not perishable.
- (iv) Land is an immobile factor of production.
- (v) Land differs in quality.

[2.1 (2)] Labour:

(A) Meaning of Labour: In the ordinary language, the term labour is used to mean "manual or "physical labour, but in Economics it is used in a much wider sense so as to include mental labour as well. Any work - whether physical or mental which is undertaken for a monetary consideration is called labour in Economics, while on the other hand, any work which is done for the sake of pleasure, love or hobby will not be considered as labour in Economics. According to **Dr. Marshall; Any exertion of mind on body undergone partly or wholly with a view of some good or aim other than the pleasure derived from it directly from the work is called labour".**

In other words, the term "labour" in Economics implies two things:

- a) Labour - whether manual or mental must be undergone not for its own sake but with a view to getting some reward out of it.
- b) Labour must result in the creation of wealth. that is, something which has exchange value.

(B) Characteristics of Labour: The following the main features of labour which distinguish it from other factors or production:

- (i) Labour cannot be separated from labourer.
- (ii) Labour is the most perishable commodity.
- (iii) Supply of labour changes slowly.
- (iv) Labour is much less mobile than capital.
- (v) Labour differs in efficiency:
- (vi) Supply of labour responds slowly to changes in its price.

[2.1(3)] Capital:

In Economics, the term capital is used in a special sense. According to some writers, “**capital in that part of man's wealth other than land, which yields an income.**” But this is not a correct definition of capital, because a person may lend some money to others and get an income, but this money will not be called as capital. Similarly, securities, bonds, stocks etc. possessed by a man give him an income but these too cannot be regarded as capital because they represent titles of ownership while capital is a factor of production.

The generally accepted definition of capital is that it is a **produced means of production**. This definition indicates two aspects of capital: (a) the original aspect (b) the acquired aspect.

Only that part of wealth which is used for further production or future production is to be regarded as capital.

(A) Characteristics of Capital.

The following are the main characteristics of capital as a factor of production:

- (i) Capital is man – made

- (ii) Supply of capital is elastic.
- (iii) Capital is productive.
- (iv) Capital is the result of saving.
- (v) Capital makes it feasible to have large scale production.

2.1(4)] Organisation or Enterprise:

(A) Meaning of Enterprise: In the foregoing pages, we have discussed about the three factors of production, namely, land, labour and capital. Now we shall study something about the fourth factor, that is, organisation or enterprise. Land, labour and capital are, no doubt, important factors of production, but, they by themselves cannot produce anything; they must combine, coordinated and directed so that production can take place. The person who performs this function is known as organiser or entrepreneur. Although organisation is only a kind of labour, yet it is such an important and peculiar type of labour that it must be treated separately. The organiser or the entrepreneur plays a very important role in modern production.

Functions of an Entrepreneur:

The following are the main functions of an entrepreneur

- (i) Choice of the enterprise.
- (ii) Planning and location of the enterprise.
- (iii) Co-ordination of the factors of production.
- (iv) Purchase of raw materials and marketing of finished products.
- (v) Directing and supervising the various productive operations.
- (vi) Rewards to the factors of production.
- (vii) Risk and uncertainty bearing.
- (viii) To adopt innovations - both product innovations and market innovations.

[3] PRODUCTION FUNCTION

3.1 Meaning:

The act of production involves the transformation of inputs into output. Production is a transformation of physical inputs into physical output. The output, thus, is a function of factors which are called inputs. The functional relationship between physical inputs and physical output of a firm is known as production function.

A production function expresses a relationship between quantities of input and output under conditions of given technology, that is, a production function exhibits a purely technical relationship which connects factor inputs and outputs. Thus, the relationship between quantities of inputs (factors of production) and output is known as production function; it includes all technically efficient methods of production.

Thus; given the technical conditions of production, the output of a particular type of goods depend on the quantity of two or more inputs. The production function can be expressed as follows:

$$Q = f(X_1, X_2, X_3, \dots)$$

Here, Q = quantity of output

X₁ = quantity of land

X₂ = units of labour

X₃ = units of capital. etc.

The above equation shows that the quantity (Q) of output depends upon the quantities of the factors used. The production function expresses the mathematical relationship between the quantity of output and the quantities of the various inputs used for production. Likewise in the words of **Prof. Douglas**, "production function is a technical specification of the relationship that exists between inputs and the outputs in the production process." Thus, for example, when we say that the quantity of x good is a function of labour and capital, we may write as follows:

$$Q_x = f(L, K)$$

Here, Q_x = quantity of x good

f = represents functional relationship

L = input of labour

K = input of capital

We can express this functional relationship explicitly in an equation form to find out the actual relationship between the input and the output.

- (i) The linear production function may be expressed as follows: $Q = a + bK + cL$
- (ii) The multiplicative production function (non-linear) may be expressed as below: $Q = a \cdot K^b \cdot L^c$
- (iii) The multiplicative power function becomes linear when expressed in a logarithmic form as below:
 $\log Q = \log a + b \log K + c \log L$ and for estimating the values of parameters in this equation, linear regression analysis is used.

Basically, the production function is a technological or engineering concept which can be expressed in the form of a table, graph and equation showing the amount of output obtained from various combinations of inputs used in production, given the state of technology.

Factor inputs are of two types:

- a) **Fixed Inputs:** Fixed inputs are those factors the quantity of which remains constant irrespective of the level of output produced by a firm. For example, land, buildings, machines, tools, equipment, senior category of personal, top management etc.
- b) **Variable Inputs:** Variable inputs are those factors the quantity of which varies with variations in the level of output produced by a firm. For example, raw materials, labour power, fuel, water, transport and communications etc.

It should be noted here that the distinction between fixed inputs and variable inputs holds good only in the short-run; in the long-run all factor inputs become variable in nature.

[3.2] Assumptions of Production Function:

The Production function is based on two main assumptions:

- 1) state of technology remains the same during a given period. If there is change in technology, it would result in an alteration of the input-output relationship depicted by the production function.
- 2) The firms utilise their inputs at the maximum levels of efficiency, that is, the production function includes all the technically efficient methods of production. It may be noted here that if a production function includes only a single technical efficient method, it is called a one **process production function** and if it includes two efficient processes, it is known as a **two-process production function**.

Besides the above two assumptions, the following two points also must be noted in respect of production function:

- 1) Production function like, the demand function is to be considered with reference to a particular period. Production function expresses a flow of output resulting in a flow of input during a specific period.

- 2) In the event of technological advancement, the production function changes resulting in greater flow of output which can be obtained from the given inputs or smaller quantities of input can be used for producing a given quantity of output.

SHORT-RUN AND LONG-RUN PRODUCTION FUNCTION

Short-run is period in which only the variable factors can be changed while fixed factors like plant, machinery, top management remains constant. Time available at the disposal of a firm to make changes in the quantum of factor inputs is very much limited in the short-run.

Thus, short-run production function is that where in the quantities of some inputs say land and capital are kept constant and the quantity of one input, say labour, is varied.

This kind of production function is known as short run production function. We know that in the short run, the technical conditions of production are rigid so that the various inputs required to produce a given output are in a fixed proportion. However, in the short-run, it is possible to increase the quantity of one input while keeping the quantities of other inputs constant to have more output. The short-run production function in the case of two inputs, say labour and capital with capital as fixed and labour as variable can be expressed as follows:

$$Q = f(L, C)$$

Here, Q = quantity of output

L = Labour

C = Capital (fixed).

In the short-run, we come across two kinds of production functions:

- a) Quantities of all inputs both fixed and variable are kept constant and only one variable input is varied. For example, law of variable proportions.
- b) Quantities of all factor inputs are kept constant and only two variable factor inputs are varied. For example, iso-quants and iso-cost curves.

Long-run is a period wherein the firm has adequate time to make any sort of changes in the factor combination. It is necessary to note that production function is assumed to be a continuous function it is assumed that a change in any of the variable factors leads to corresponding changes in the input.

Thus, in the long-run production function, all inputs are variable:

Production can be increased by changing one or more of the inputs. The firm can change the size of its plant as also its scale of operations. This can be expressed as:

$$Q = f(L, C, L_1)$$

Where, Q = quantity of output

L = Labour

C = Capital

L_1 = Land

FORMS OF PRODUCTION FUNCTION

There are three main forms of production function:

(a) Production Function Relating to Increasing Returns (or Economies of Scale): When the proportionate increase in output is greater than the proportionate increase in all inputs, it is said to be production function relating to increasing returns. To put it differently with the, given factors and technology, if more output can be obtained or if the same output can be obtained with the use of less quantity of factors than used earlier, it is known as production function with increasing returns. If the price of the factors remains the same, we get production function with diminishing cost.

(b) Production Functions Relating to Constant Returns: When the proportionate increase in all the inputs is equal to the proportionate increase in output, it is said to be production function with constant returns. If the factor prices remain the same, we get production function with constant cost.

(c) Production Function Relating to Diminishing Returns (or diseconomies of scale): When the proportionate increase in output is less than the proportionate increase in all inputs, it is said to be production function with diminishing returns. In other words, with the given factors and technology, if less output is obtained or if more factors are required to obtain the same output as earlier, it is known as production function with diminishing returns. If factor prices remain the same, we get production function with increasing cost.

Production function changes with the change in technology, state of technical knowledge, process of production or organisation of the firm. If all these factors are assumed as parameters or given, we get a stable production function.

[5.1] Importance of the Concept of Production Function:

The concept of production function proves to be very useful in taking business decisions. It is both logical and helpful and is of immense utility to the managers and executives in the decision, making process at the firm level. It offers guidance to the firm in two directions:

- a) How to obtain the maximum output from a given set of inputs?
- b) How to obtain a given output from the minimum aggregation of inputs?

There are several possible combinations of inputs and the decision makers must choose the most appropriate amongst them.

The following are some of the important uses of production function: -

- (i) It can be used to work out the least cost input combination for a given output or the maximum output-input combination for a given cost.
- (ii) The concept of production function also helps in working out an optimum and economic combination of inputs for getting a certain level of output. The utility of employing a given unit of variable factor input in the production process can be better judged with the help of production function. Additional employment of a variable factor input is desirable only when the marginal revenue productivity of that variable factor input is greater than or is equal to the cost of employing it in the organisation.
- (iii) Production function is also useful in making long-term decisions. Thus, for example, if returns to scale are increasing, it would be advisable to employ more factor units and increase production. However, if returns to scale are diminishing, it would not be advisable to employ more factor inputs and increase output. Likewise, if production is subject to constant returns to scale, the firm will be indifferent to increase or decrease production.

Thus, production function is a useful tool both in the short- run and long-run decision making process.

Of course, it is true that with the more complex problems and with large number of inputs and outputs, the mathematics of optimisation becomes rather complicated. However, the development of linear programming in recent years has considerably helped to deal with these complex problems: Besides, progress in the sphere of electronics computers has also gone a long way in facilitating the use of complex production functions in business decision-making.

[4] COBB - DOUGLAS PRODUCTION FUNCTION

The Cobb - Douglas production function is based on the empirical study of the American manufacturing industry made by **C.W.Cobb** and **Paul H Douglas**. It is linear homogeneous production function of the first degree which considers two inputs labour and capital for the entire manufacturing industry.

The Cobb Douglas production function can be expressed as follows:

$$Q = A L^a K^b$$

Where, Q = stands for output

L= stands for input of labour

K stands for input of capital and

A, a and b are parameters of the function.

The above equation explains that output depends directly on L and K, and that part of output which cannot be explained by L and K is explained by A which is the residual and is often called effect of technical change.

Suppose the Cobb-Douglas production function. found that 75 percent of the increase in manufacturing production was due to labour input and 25 percent was due to capital input. The function, therefore, can also be stated as:

$$Q = AL^{3/4} C^{1/4}$$

This shows constant returns to scale because the total of values of L and K is equal to one ($3/4 + 1/4 = 1$).

Properties of Cobb-Douglas Production Function:

The following are the main properties of Cobb-Douglas production function:

- (i) The sum of exponents of factors, that is, $a + b$ measures the returns to scale. Thus, if:
 - $a + b = 1$, returns to scale are constant.
 - $a + b > 1$, returns to scale are increasing.
 - $a + b < 1$, returns to scale are decreasing.
- (ii) The average product and marginal product of factors is a function of the ratio of factors. Thus, for example, the marginal product of labour depends on the amount of labour used.
- (iii) The exponents of labour and capital in this production function measure output elasticities of labour and capital respectively.
- (iv) The Cobb-Douglas production function can be extended to include more than two factors. Thus, for example, farm production depends not only on the amount of labour and capital used but also on the use of other inputs such as land, irrigation, fertilisers, pesticides etc.

- (v) When the sum of exponents (a+b) in the two factor Cobb- Douglas production function ($Q = A L^a K^b$) is equal to one, it would show constant returns to scale. Likewise, when the inputs of labour (L) and capital (K) are increased by a constant g, the output (Q) also increases by g.
- (vi) The elasticity of factor substitution of Cobb-Douglas production function is equal to unity and therefore this production function is homogeneous of the first degree.
- (vii) The Cobb-Douglas production function is multiplicative function, which means that if one input has zero value, the output too will be zero. This property implies that all inputs are necessary for producing a given output by the firm.

Usefulness of Cobb-Douglas Production Function:

The following are the main uses of Cobb-Douglas production Function:

- (i) This function is very convenient and useful for international and inter- industry comparisons.
- (ii) It has the advantage of simplification of calculations by transforming the function into a linear form with the help of logarithms.
- (iii) It can be applied to investigate the nature of long-run production function.
- (iv) The function can be extended to include more than two inputs. Thus, for example, agricultural output depends not only on the quantum of labour and capital used but also on the use of other inputs, say like, irrigation, fertilizers, pesticides, farm machinery etc. If we include all these inputs in Cobb-Douglas production function.

$$Q = A X_1^a X_2^b X_3^c \dots X_n^p$$

Where Q is the output and $X_1, X_2, X_3 \dots X_n$ are different inputs.

Limitations of Cobb-Douglas Production Function:

The Cobb-Douglas production function has been vehemently criticized by writers like Arrow, Chenery, Minhas and Solow. Some of the main limitations of this function are as follows: -

- (i) The function mainly emphasises the diminishing marginal product case. It does not explain the marginal product of an input to go through all the three stages, namely, increasing, constant and diminishing marginal returns.
- (ii) It assumes constant returns to scale which is hardly possible in general. Thus, for example, certain factor say like entrepreneurship, cannot be increased in the same proportion.
- (iii) There is the problem of measurement of capital. Thus, for instance, while labour is measured in terms of labour services per hour or per week or per month, in respect of capital it is difficult to measure capital services per hour as it involves depreciation over time. Besides, this function considers only the quantity of capital available for production. But the full utilisation of capital can be made only in times of full employment which is seldom found in the economy.

- (iv) The function emphasizes! more on the substitutability of factors and ignores the complementarity of factors.
- (v) The function assumes of perfect competition in the factor market which is unrealistic. If this assumption is dropped, we shall find that a and b do not represent factor shares.
- (vi) There is also the problem of aggregation. It arises when we try to apply this function to every firm in an industry and to all industries. In such a case there will be a number of production functions of high and low aggregation and the task of measuring all these functions would become extremely difficult.

However, inspite of above limitations the Cobb-Douglas function has been extensively used in empirical studies of manufacturing industries and in inter- industry comparisons.

[5] LAW OF VARIABLE PROPORTION

The law of variable proportions occupies an important place in economic theory and the barrier relationship with the production function. It is also known as the law of non-proportional output. The law expresses a functional relationship between the change in variable factors and the change in output. It states that when one factor of production is held constant and the quantities of other variable factors are increased, then the output would not respond in a proportionate manner.

In the beginning, production would increase at an increasing rate and after a certain stage, it would increase at a diminishing rate.

In other words, the relationship between the variable input and output would not be the same during the entire process of production. Thus, when more and more units of the variable factor are used, keeping the quantities of fixed factors constant, a point is reached beyond which the marginal product, then the average product finally the total product will diminish.

Some of the important definitions of the law of variable proportions:

- (i) **G. J. Stigler:** As "equal increments of one input are added to the inputs of other productive services being held constant; beyond a certain point the resulting increments of product will decrease that is, the marginal product will diminish.
- (ii) **F. Benham:** As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then average product of that factor will diminish.
- (iv) **P.A. Samuelson:** "An increase in some inputs relative to other fixed inputs will in a given state of technology, cause output to increase but after a point the extra output resulting from the same addition of extra inputs will become less.

(3.1) Assumptions of the Law:

The law of variable proportions is based on the following assumptions:

- (i) The state of technology should remain the same. if there is a change in technology, the law may not operate.
- (ii) There is at least one factor which should be held constant while other factors are variable.
- (iii) All the units or doses of the variable factors are identical or homogeneous. that is. They are the same size, Quality, Efficiency etc.
- (iv) Factor – combination is flexible.

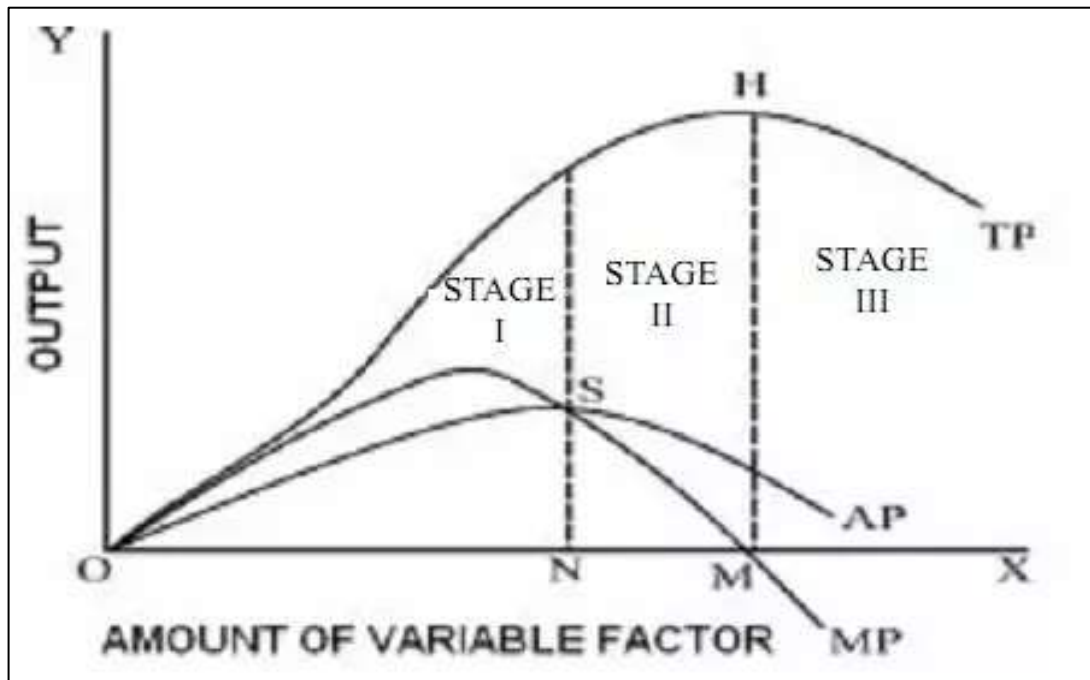
(3.2) Tabular and Graphical Representation of the Law:

The law of variable proportions can be illustrated with the help to a table and a curve as follows:

Combination	Fixed factor + Unit of variable factors	Total product	Marginal Product	Average Product
1	X+1	20	20	20
2	X+2	50	30	25
3	X+3	90	40	30
4	X+4	120	30	30
5	X+5	135	15	27
6	X+6	144	9	24
7	X+7	147	3	21
8	X+8	148	1	18.5
9	X+9	148	00	16.4
10	X+10	145	(- 3)	14.5

The following observations may be made from a study of the above table:

- 1) Increase in variable factors to the fixed factor (x). Leads to a continuous increase in marginal product up to the third combination (x+3).
- 2) Marginal product is maximum at the third combination (x+3) and thereafter it declines.
- 3) Marginal product is zero at the ninth combination (x+9); total product, however is maximum at this point.
- 4) Marginal product becomes negative after the ninth combination and the total product also begins to decline.
- 5) Average product increases up to fourth combination (X+3) and there alter it declines.



Graphical Representation

From the table given on the left side and the diagram, we can explain the interrelationship between marginal production (MP), average product (AP) and total product (TP) as follows:

- 1) When the marginal product goes on increasing, the total product increases at an increasing rate.
- 2) When the marginal product is zero, the total product is maximum.
- 3) When the marginal product becomes negative, the total product starts declining.
- 4) The average product rises as long as the marginal product lies above it.
- 5) The average product starts declining when the marginal product becomes less than the average product and therefore, the marginal product curve cuts the average product curve at its maximum point.

(3.3] Explanation of the Various Stages of the Law of Variable Proportions:

(i) First Stage: Stage of Increasing Returns:

During the first phase, there is simultaneous increase in marginal product, average product, and total product. All these go on increasing during this stage. However, the first stage draws towards its end, when the marginal product curve intersects the average product curve at its maximum point. At this point the average product is maximum; this phase is known as the phase of increasing returns.

The two main causes of increasing returns are:

- (a) **Indivisibility** of the factors of production.
- (b) Internal economies like technical economies. Managerial economies, marketing economies, financial economies, risk-bearing economies etc.

(ii) Second Stage: Stage of Diminishing Returns:

During her second stage. total product increases at a diminishing rate. Besides, both average output and marginal output also show a decline, though marginal output declines at a faster rate than average output. The total output is maximum and the marginal product is zero. In short, when the fixed factors reach the point of optimum utilisation, the increase in variable factors leads to diminishing returns. This is mainly because of two factors.

- (a) Diseconomies of scale.
- (b) Imperfect substitutability of the factors of production.

(iii) Third Stage: Stage of Negative Returns:

During the third stage. additional doses of variable factors lead to a fall in total production; that is, the marginal product becomes negative. Such a situation arises when the use of excessive variable factors adversely affects the efficiency of both the fixed as well as variable factors. Thus, for example when excessive fertilisers, that is, an overdose of fertilisers is used on a given plot of land to improve its quality, it may result in negative returns, that is, falling and productivity.

This is because, as more and more units of variable factors are added to a fixed factor, beyond a certain point, output increases at a diminishing rate and ultimately turn out to be negative. Disguised Unemployment in Indian Agriculture may be cited as an example of negative returns. Even if the surplus manpower is diverted from agriculture and other sectors, will not have any adverse effect on productivity, because the marginal productivity of extra labour engaged in agriculture is practically zero.

It may, however, be noted that the third stage is merely a theoretical possibility as no producer would desire to enter this stage. An idea of the behavioural pattern the total product, marginal product during the three stages of production, can head at a look at the following table.

Stage	Total product	Marginal product	Average product
stage I	increases of an increasing rate	increases and reach its maximum	increases, but at a lower rate, then marginal product and reach its maximum
stage II	increases at a diminishing rate and become maximum	start diminishing and become zero	start diminishing

stage III	reaches its maximum, become constant and then start falling	continues to decline and become negative	continues to decline but not up to zero level
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Conclusion

It is therefore to conclude that economic efficiency changes during the stage more and more output is open and per unit of product and variable factors. The form therefore will cross the first stage and work in the second stage during the stage, average product, and marginal product decline. But the total product continues to increase. The third stage is ruled out as all the three outputs, namely, total product, marginal product and average product are declining marginal product become negative. Hence, the firm will have to decline where exactly it should operate in the second stage the exact point however, will depend on the price ratio of land and labour which outside the scope of our present decision

(3.4) Causes of Initial Increasing Returns Then Diminishing Returns and Finally Negative Returns to a Factor:

We may now discuss in brief the main causes of initial increasing returns. then diminishing returns and the final negative returns factor.

(a) Causes of Initial Increasing Returns to a Factor: In the initial stages, the quantity of fixed factor is abundant as compared to quantity of variable factor and so when more and more units of variable factor are added to the fixed factor, there is more intensive and effective utilisation of the fixed factor, that is, efficiency increases as more and more additional units of variable factors are added to it. Besides, there is also the indivisibility of the fixed factor Indivisibility of factor implies that due to technological requirements a certain minimum amount of that factor must be employed whatever: the level of output. Thus, as more units of a variable factor are added to an indivisible factor, the output greatly increases due to fuller and effective utilisation of that factor.

(b) Causes of Diminishing Returns to a Factor: Once the point is reached when the amount of the variable factor is sufficient to ensure the fullest and effective utilisation of the fixed factor. then any further increase in the variable factor will cause marginal and average product of that variable factor to decline because a fixed factor then becomes inadequate relative to the quantity of the variable factor. Besides, here also the indivisibility of fixed factor works. Beyond a point, further increase in variable factor to fixed factor will cause the marginal product and average product to diminish because the indivisible factor is used intensively a n d used in non-optimal proportion.

(c) Phenomenon of Negative Returns to Factor: The explanation of negative returns in stage three lies in the fact that the use of variable factor becomes too large in number relative to the lived tractor so that they obstruct each other with the result that the total output falls instead of rising. In other words, as more and more units of a variable factor are added to a fixed factor. a stage is reached When the total product declines and the marginal product becomes negative.

[6] RETURNS TO SCALE

We shall now turn our discussion to returns to scale and study the difference between laws of returns and returns to scale.

(5.1) Distinction between Laws of Returns and Returns to Scale:

It would be interesting here to note the difference between laws of returns and returns to scale. These two are not one and the same, but have different meanings.

By returning to scale, we mean the behaviour of production scale or returns when all the factors are increased or decreased simultaneously in the same proportion. Thus, while discussing returns to scale we study the effects of doubling or trebling of all inputs (factors) on the Output of the product. The percentage or proportionate increase in output when all inputs are changed in the same proportion is known as returns to scale.

Returns to scale are due to an increase in the scale of operations, namely, increase in the size of the plant and machinery, recruitment of additional technical and managerial personnel etc.; in other words, all factors are changed. In short, an increase in scale means that all inputs or factors are increased simultaneously in a given proportion. The study of changes in output because of changes in all inputs is generally known as returns to scale.

On the other hand, In the law of variable proportions, one factor is kept constant while other factors of production are increased or decreased. Thus, for example, Indian agriculture or an entrepreneur in industry is a constant factor, while the proportion of other factors is changed and then we study how returns or output is affected. However, in the returns to scale, as said above, all the inputs or factors are increased or decreased in the same proportion.

(5.2) Three phases of Returns to Scale:

There are broadly three distinct phases of returns to scale:

(i) Increasing Returns to Scale: When the output increases in a greater proportion than the increase in input, it is known as increasing returns to scale. Thus, for example, if all the inputs are increased by 10 percent and the output increased by 15 percent. It is a case of increasing returns to scale. The main causes for increasing returns to scale are as follows:

- (a) Indivisibility of the factors.
- (b) Division of labour leading to specialisation.
- (c) Dimensional economics.

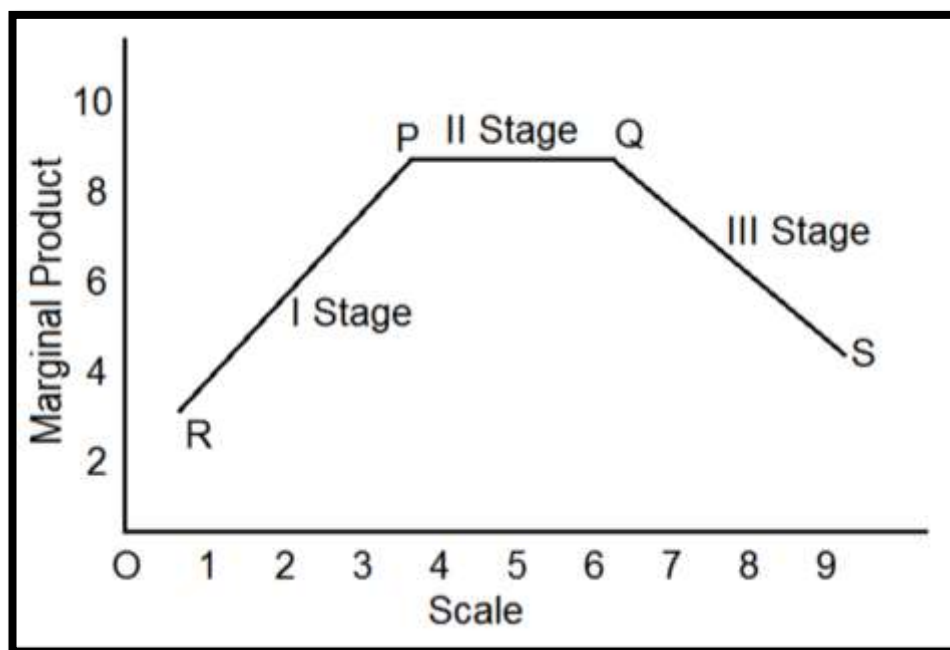
(ii) Constant Returns to Scale: When output increases in the same proportion as increase in all inputs, it is known as constant returns to scale. Thus, for example, if a two-fold increase in inputs (factors) results in a two-fold increase in output, returns to scale are said to be constant. The concept of constant returns to scale refers to a linear and homogeneous production function or homogeneous function of the first degree and is important in explaining Euler's theorem in the theory of distribution.

(iii) Diminishing Returns to Scale: When output increases in a smaller proportion than increase in all inputs, it is known as diminishing returns to scale. The main causes for this are: (a) The operation of the law of variable proportion which states that as more and more units of a variable factor are used, while keeping the quantity of fixed factor constant, beyond a point marginal product, then the average product and finally the total product start diminishing. (b) The increasing difficulties of management, supervision, co-ordination, and control. When the firm continues to expand and attains too gigantic a size, it becomes unwieldy and difficult to manage with the same efficiency. The Returns to scale can be illustrated with the help of a table and a diagram

Returns to scale

Sr. No.	Skill of product	Total returns	Marginal returns
1	One unit + 2 acres of land of labour	8 units	8 units
2	Two unit + 4 acres of land of labour	17 units	9 units
3	Three unit + 6 acres of land of labour	27 units	10 units
4	Four unit + 8 acres of land of labour	38 units	11 units
5	Five unit + 10 acres of land of labour	49 units	11 units
6	Six unit + 12 acres of land of labour	59 units	10 units
7	Seven unit + 14 acres of land of labour	68 units	9 units
8	Eight unit + 16 acres of land of labour	76 units	8 units

It would be clear from the above table that there has been an increase in the quantity of both the factors labour and capital simultaneously in a given proportion. The study of change in the total output as a result of change in all inputs is known as return to scale. This can also be shown with the help of diagram.



Stages of return to scale

Law of Diminishing Return

The **Law of Diminishing Returns** explains that when a producer increases only one factor of production while keeping other factors constant, the additional output produced by each extra unit of the variable factor will eventually start decreasing.

This law operates in the short run because at least one factor such as land, machinery, or space remains fixed. Initially, when more units of the variable factor like labour are employed, total output increases rapidly because the fixed factors are better utilized and division of labour becomes possible. As more labour is added, efficiency improves and production rises at an increasing rate. However, after a certain point, the fixed factor becomes a limitation. Too many workers have to share the same machinery or workspace, which leads to congestion and lack of coordination.

As a result, although total output may still increase, it increases at a decreasing rate and the marginal contribution of each additional worker starts falling. This situation is known as diminishing returns. If the producer continues to add more units of the variable factor beyond this point, marginal output may become zero or even negative, causing total output to fall due to overcrowding and inefficiency.

Therefore, the law shows that increasing only one input cannot increase output proportionately forever, and rational producers should use resources up to the level where production is most efficient.

Meaning

The Law of Diminishing Returns states that when additional units of a variable factor of production are added to fixed factors, the marginal product of the variable factor will eventually decline, after a certain level of output.

In simple words, using more and more of one input while keeping other inputs constant will not increase output proportionately forever.

According to economists:

“As more and more units of a variable factor are employed with a given quantity of fixed factors, the marginal product of the variable factor after a point will start diminishing.”

Assume:

- Land = Fixed (1 acre)
- Labour = Variable

Labour (Units)	Total Product (TP)	Marginal Product (MP)
1	8	8
2	20	12
3	36	16
4	48	12
5	56	8
6	60	4
7	60	0
8	56	-4

Causes of Diminishing Returns

1. Fixed factor limitation
2. Imperfect substitutability of factors
3. Lack of space and coordination
4. Managerial inefficiency
5. Overuse of variable factor

COST ANALYSIS

1. Fixed Cost

Fixed costs are the costs which are related with the size of the plant and not with the quantity of production. Fixed costs remains the same at a given capacity and do not vary with output. These costs will exist even if no output is produced.

Fixed costs are incurred by a firm in the short run, whether the output is small or large or nil. They will be maximum when output is zero and their incidence will go on decreasing. Or output is extended beyond zero level. **Fixed costs are also known as constant costs, supplementary costs or overhead costs.**

Examples of fixed costs are: rent on factory and office building, interest payments on bonds, depreciation/ wear and tear of plant and equipment, salaries to permanent staff, insurance premium etc.



The total fixed cost is graphically represented by a straight line parallel to x axis. TFC starts from a point on y axis meaning thereby that the total fixed cost will be incurred even if the output is zero.

It is important to note that fixed costs are not fixed permanently. In order to increase production in the long run, the firm will have to increase the size of its plant, invest more capital, recruit more technical and managerial personnel, etc. Thus, fixed costs become variable in the long run.

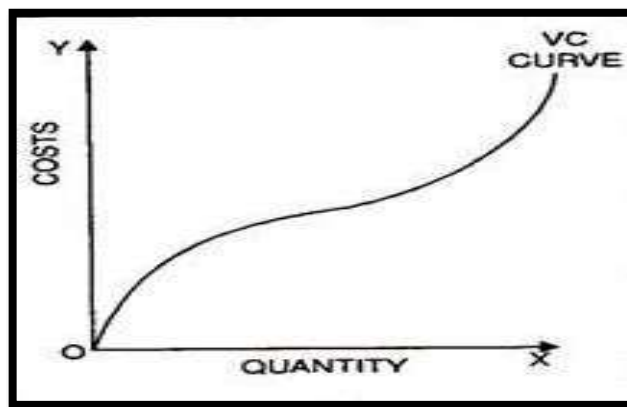
2. Variable Costs (VC)

Variable costs are also called direct or prime costs. Labour, raw material, chemicals are the factors which can easily be varied with the change in output. Such factors are called variable factors. Variable costs are those costs which are incurred on the variable factors of production.

The variable cost varies directly with output. In short run when output increases VC increases when output falls VC decreases, and VC becomes nil when output is zero. In fact, variable costs represent all those costs which can be altered in the short run as the output alters.

Examples of variable costs are

- (1) Price of raw material
- (2) Wages of labour
- (3) Fuel and power charges
- (4) Excise duties, sales tax
- (5) Transport expenditure, etc.



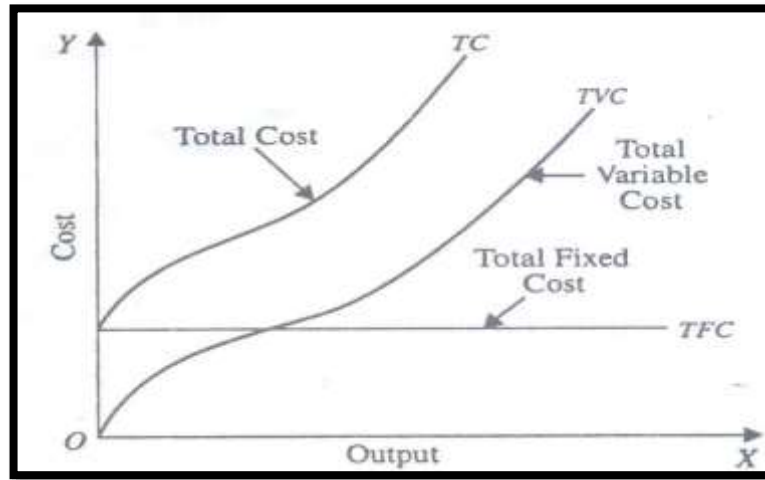
As there is no variable cost when the production is zero, the variable cost curve passes through the origin.

3. Total Cost

Total cost is the aggregate of expenditures incurred by the firm in producing a given level of output. Conceptually, total cost includes all kinds of money cost – explicit and implicit. In other words, total cost includes all cash payments made to the hired factors of production and for the owner's own factors of production, in acquiring or producing a good or service. For example, a shoemaker's cost will include the amount he spends on leather, thread, rent for his workshop, wages, interest on borrowed capital and salaries of employees, etc. and the amount he charges for his services and his own funds invested in the business.

Total cost is the total of fixed costs and variable costs. It is the total of all the cost of production.

Symbolically, $TC = \text{Total Fixed Cost} + \text{Total Variable Cost}$



Total Cost, Total Fixed Cost & Total Variable Cost

The concept of total cost, total variable cost and total fixed costs in the short run can easily be understood with the help of the following table.

Table 3.1: Total cost, Total Fixed cost, Total Variable cost

No. of units of output	Total Fixed cost	Total Variable cost	Total cost
0	50	0	50
1	50	20	70
2	50	35	85
3	50	60	110
4	50	100	150
5	50	145	195
6	50	190	240
7	50	237	287
8	50	284	334

In the above schedule it can be seen that,

1. Fixed cost is same at each level of output, even if output is zero, the firm has to bear fixed costs. It is 50 throughout in the above table.
2. Variable cost increases with increase in output throughout. It is increasing from 100 to 284.
3. Total cost is the sum of fixed cost and variable cost. It is vary directly with changes in output, because the variable cost is increasing when output is increasing.

4. Average Total Cost (AC)

It is also known as unit cost because it is cost per unit of output produced. ATC or Average cost is the total cost divided by total units of output.

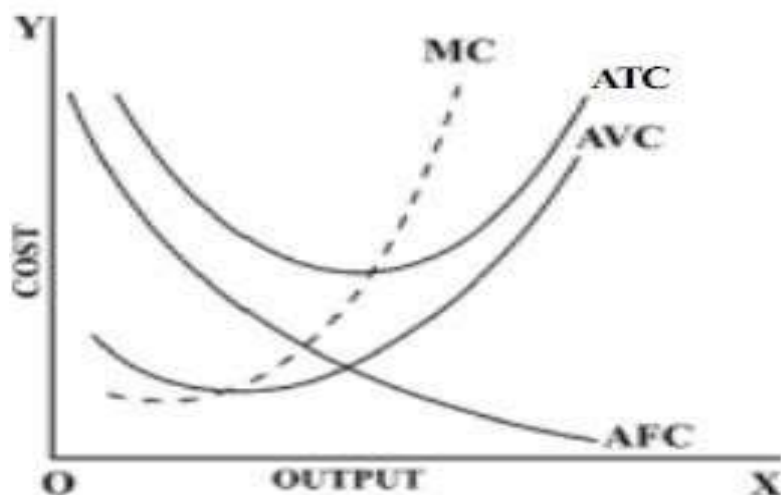
Thus, $ATC \text{ or } AC = TC / Q$

Since, in the short run, $TC = TFC + TVC$

- $ATC = TC / Q = TFC + TVC / Q$
- $TFC / Q + TVC / Q$
- $AFC + AVC$

Hence, the average cost can be calculated simply by adding average fixed cost to the average variable cost at each level of output.

Units of output	TFC	TVC	TC	AFC	AVC	AC
1	2	3	$2 \div 1$ 4	$3 \div 1$ 5	$5 + 6$ 6	7
0	120	0	120	-	0	-
1	120	100	220	120	100	220
2	120	160	280	60	80	140
3	120	210	330	40	70	110
4	120	240	360	30	60	90
5	120	400	520	24	80	104
6	120	540	660	20	90	110
7	120	700	820	17.14	100	117.14
8	120	880	1000	15	110	125



5. Total Variable Cost

It is obtained by summing up the cost of all variable factors of production.

When the quantities of variable inputs used in production are multiplied by its prices, we get total variable cost.

Symbolically, $TVC = \sum P.X_v$

Where, P = Price

X_v = Quantity of variable inputs

Also, $TVC = F(Q)$

i.e., Total variable cost is an increasing function of output. It varies with the level of output, when output increases TVC increases; when output falls TVC falls, when output is Zero TVC is zero.

6. Average Fixed Cost

Average fixed cost (AFC) is the fixed costs of production (FC) divided by the quantity (Q) of output produced. Fixed costs are those costs that must be incurred in fixed quantity regardless of the level of output produced.

$$AFC = TFC/Q$$

Average fixed cost is fixed cost per unit of output. As the total number of units of the good produced increases, the average fixed cost decreases because the same amount of fixed costs is being spread over a larger number of units of output.

7. Marginal Cost

Marginal cost is the extra cost of producing one additional unit of output.

Marginal cost means increase in the total cost of production due to production of one additional unit of output. When one unit more or less is produced, then the change in the total cost of production is called marginal cost.

Symbolically, $MC_n = TC_n - TC_{n-1}$

Where, MC = Marginal Cost

TC = Total Cost

n = number of units produced

This can be understood with the help of a following example

Example: Say if the producing cost of 100 ball point pen is Rs. 500, and the cost of 101 ball point pen is Rs. 503 then, the marginal cost of 101th pen is calculated as follows.

$$T_n = \text{Cost of 100 pens} = \text{Rs. 500}$$

$$T_{n+1} = \text{Cost of 101 pens} = \text{Rs. 503}$$

$$\text{The marginal cost of 101}^{\text{th}} \text{ pen} = \text{Rs. 503} - \text{Rs. 500} = \text{Rs. 3}$$

Thus, marginal cost is the difference between the total cost of producing n units and the total cost of producing $n-1$ units, where n denotes the number of units of a good produced.

[Note: It is also called “extra –unit- cost” or incremental cost, as it measures the amount by which total cost increases when output is expanded by one unit. It can also be calculated by dividing the change in total output by one unit change in output.]

Symbolically, $MC = \Delta TC / \Delta_1 Q$

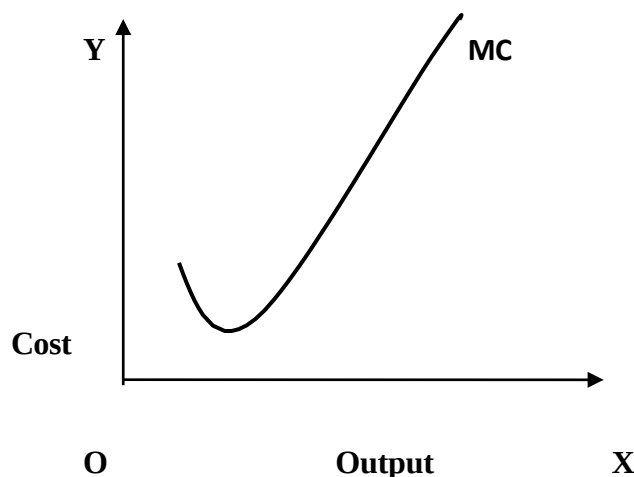
Where, Δ = Change

Δ_1 = Change in one unit of output.

The Shape of Marginal Cost Curve

The marginal cost curve also assumes U shape indicating that in the beginning, the MC declines as output expands, thereafter it remains constant for a while then it starts rising upwards.

In the short run, the marginal cost is independent (i.e. not affected by) of fixed costs. Hence, MC curve can be derived from TVC curve. It is the total variable cost for producing an additional unit of output which determines the marginal cost.

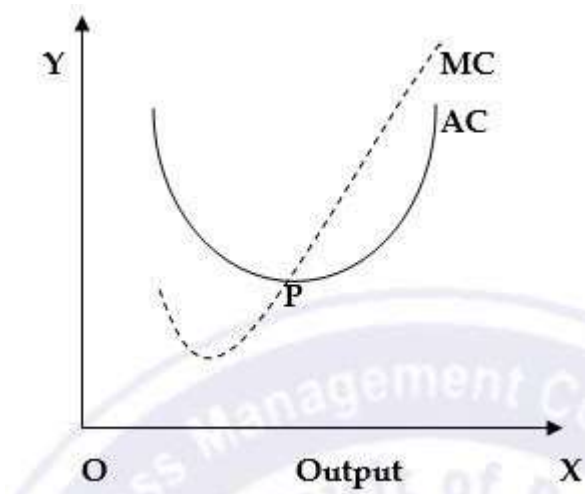


The fall in the beginning in MC curve is due to operation of the law of increasing returns and the rise in MC is due to the operation of the law of diminishing returns.

3.1.1 Relationship between AC and MC

The relationship is as follows:

1. When AC is falling, MC is lower than AC. Hence, MC curve is below the AC curve or when $MC < AC$, AC falls.
2. When AC is falling, MC is higher than AC; therefore MC curve is above the AC curve. i.e. when $MC > AC$, AC rises.
3. MC rises more rapidly than AC and also it falls more rapidly than AC.
4. When AC is lower $MC = AC$. The marginal cost curve cuts AC at its lowest point from below.



Relationship between FC, VC, TC and MC.

1. $TC = \text{Total fixed cost} + \text{Total Variable Cost}$
2. Total variable cost is the cumulative total of all the marginal cost.

Reason: Marginal cost is independent of the size of fixed cost in the short run. We all know that fixed costs do not change with the quality of production and remain constant throughout; therefore, it is obvious that the increase in total costs is entirely due to the variable costs. Hence marginal costs consist of variable cost only the change in Total Variable Cost (TVC) for producing an additional unit of output determines the marginal cost.

3. If the quality of production is zero i.e. in case of Nil production, the total cost of production will be equal to total fixed cost. Because at this level VC will be zero and MC will also be zero.
4. Total variable cost and total cost will increase with an increase in output. i.e. volume of production.
5. If marginal cost is increasing, Total cost will increase at an increasing rate.
6. If marginal cost is decreasing, total cost will decrease at a decline rate.

Example:

Total Output	TFC	TVC	TC	MC
0	500	0	500	0
1	500	270	770	$770 - 500 = 270$
2	500	510	1010	$1010 - 770 = 240$
3	500	720	1220	$1220 - 1010 = 210$
4	500	920	1420	$1420 - 1220 = 200$
5	500	1175	1675	$1675 - 1420 = 255$
6	500	1470	1970	$1970 - 1675 = 295$

In the above table,

- When total output is zero both TVC and MC are zero.
- At all levels of production, total cost (TC) is equal to the total variable cost and total fixed costs.
- Cumulative of all the marginal costs is equal to total variable cost, e.g. when production is 6 units $TVC = 1470$, and Total marginal cost for all six units = 1470.

BEHAVIOUR OF COST CURVES IN SHORT RUN **OR****U SHAPE OF AVERAGE COST CURVE IN SHORT RUN**

To understand and explain the behavior of AC curve let us first understand the behavior of Average Fixed Cost curve and Average Variable Cost curve.

Average Fixed Cost Curve

$$AFC = TFC / Q$$

AFC curve is in the shape of a rectangular hyperbola. It falls continuously as output expands but never becomes zero. Reason – As output expands the total fixed cost spreads over more and more units, as a result AFC becomes less and less.

Average Variable Cost

AVC is the variable cost per unit of output. $AVC =$

$$TVC / Q$$

The AVC curve is somewhat U shaped i.e. AVC first declines, reaches a minimum and then rises sharply. The reasons explain as under:

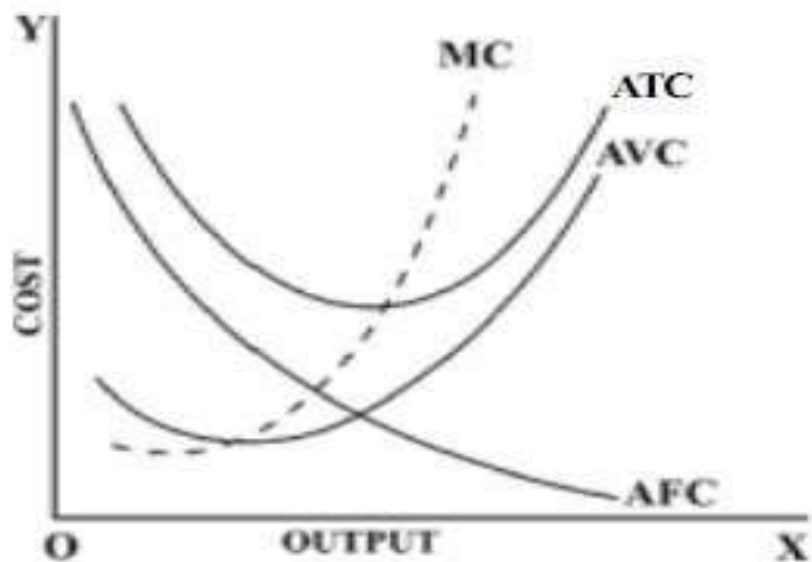
1. The AVC keeps on falling as long as the output is below the normal capacity. This happens because of operation of laws of increasing returns. At this stage there is operation of internal economics and efficient and effective use of indivisible factors of production.
2. AVC reaches its minimum/ lowest when output reaches the normal capacity. At this stage there is most efficient use of all factors of production. The AVC becomes stabilized on account of operation of law of constant returns.
3. AVC starts increasing sharply when output crosses the normal capacity, it continues to increase with every increase in output. It happens because there being no change in fixed factors of production, there is overstrain on variable factors resulting in lack of supervision, wastages and downfall in the efficiency. At this stage the law of diminishing returns sets in.

Average Total Cost or AC

$$ATC = AFC + AVC$$

The average total cost curve is U shaped as it falls sharply in the beginning, becomes constant for a while and then registers a sharp increase. The behaviour of AC curve is determined by the combined influence of AFC and AVC curves. The behavior of AC is given below:

1. ATC falls sharply in initial stages.
 - In this initial stage when output is below the normal capacity, since both AFC and AVC fall, the ATC curve falls sharply.
 - At a point where AVC begins to rise, then also ATC continues to fall because, the falling effect in AFC is stronger than the rising effect of AVC.
 - At this stage the law of increasing return operates.
2. The ATC becomes constant when normal capacity of output is reached.
 - At this point AVC exactly nullifies the fall of AFC.
 - The law of constant returns operates at this stage.
3. The AC curve registers a sharp rise after the normal capacity of production is reached.
 - It is because, although AFC is falling, the rise in AVC is stronger than the fall in AFC.
 - The law of decreasing returns operates at this stage. Also, there is imperfect substitutability between fixed and variable factors and due to indivisibility of fixed factors.



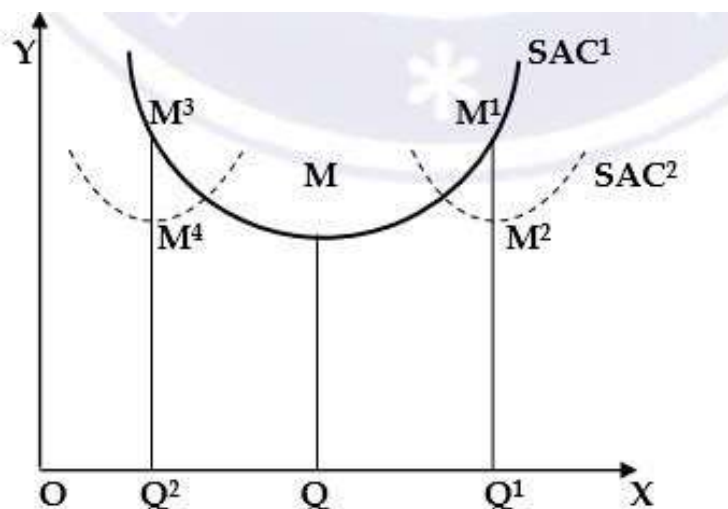
Thus, the negative and positive slopes of AC curves are due to the combined influence of AFC and AVC. The economic reason underlying the U shape of the average cost curve is that there is a greater importance of fixed cost in any firm till normal capacity is exhausted. Hence, AC declines in the beginning. But, beyond the normal capacity of production when more and more variable factors are employed, the law of diminishing returns set in due to the difficulties of management, limitations of plant space etc. leading to

a sharp rise in variable cost. And ultimately ATC also starts moving with AVC. This is how the AC curve assumes U shape in the short run.

BEHAVIOUR OF COST CURVE IN THE LONG RUN

Economic costs

In the long run, varying the size of plant and the scales of its operations, the firm can produce a given output at a lower average cost than in the short run. In the long run, each time the scale of operation is changed a new short run average cost curve will appear.

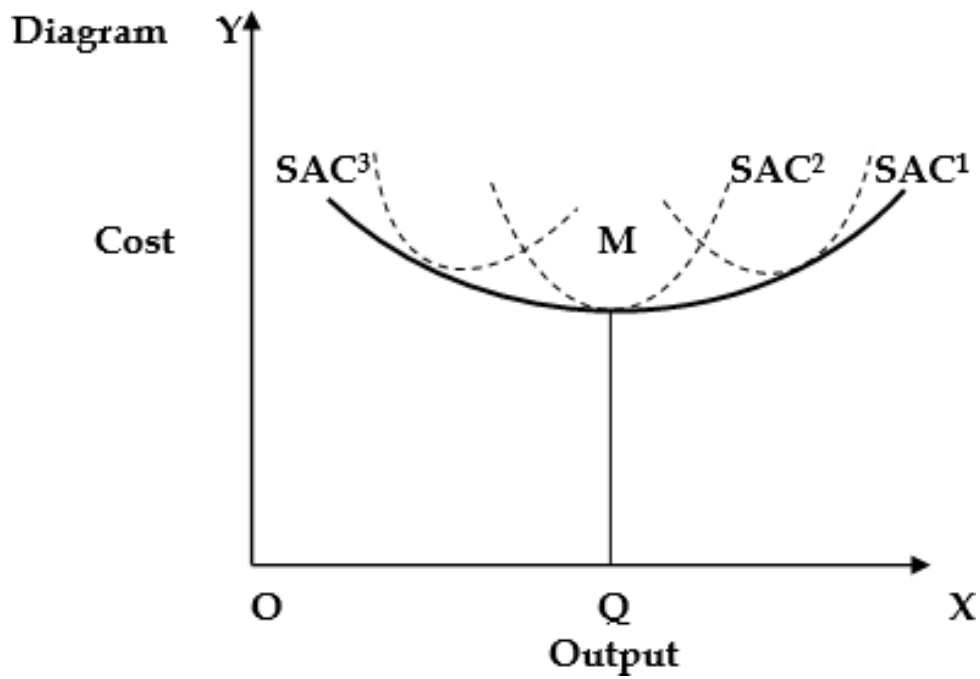


Let us assume that in the above diagram, SAC_1 is the short run average cost curve. Here at point M average cost is minimum hence, output OQ will be produced. Now, for producing OQ_1 output the AC will be QM_1 . Here the average cost is higher than QM. But in case of long run, by changing the scale of operation the firm can produce output OQ_1 at a lower cost. i.e. Q_1M_2 , here the firm's new AC curve will become Q_1M_1 .

Similarly, will be case for reduction in output from OQ to OQ_2 . Again the new AC will be greater than QM.

But this will not be so in the long run. The SAC_3 curve shows that by making changes in various fixed and variable factors of production, and by adopting a new plant size OQ_2 quantity can be produced at Q_2M_4 cost, which is lower than Q_2M_3 because in the long run economies of scale operate.

The long run cost of producing different level of output is obtained by drawing tangent to various short run curves obtained by the firm every time it alters its scale of production. Since it covers various short run AC curves it is called an envelope curve or planning curve.



Optimum output is obtained at point M when LAC is minimum. The shape is flatter because even fixed cost tend to become variable; divisibility of factor of production becomes possible in long run.

REVENUE ANALYSIS

Meaning of Revenue

Revenue means sales receipts of output produced by the firm. Revenue or sales receipts depend on the price.

A firm's revenue is of three types:

- (i) Total Revenue
- (ii) Average Revenue
- (iii) Marginal Revenue

Total Revenue

Total revenue is the total sales receipts of the output produced over a given period of time. It is obtained by multiplying total number of output by its per unit price.

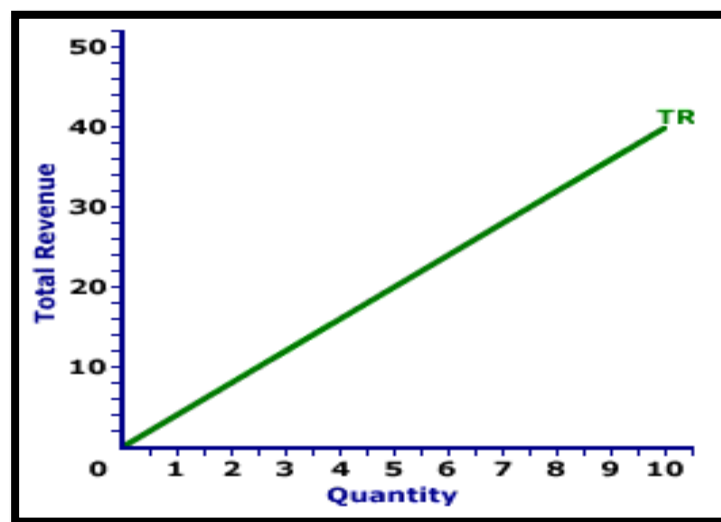
Formula: Total Revenue = Price Per Unit $\times$ Total Quantity of Output Sold.

Symbolically, $TR = PQ$ Where, $TR =$

Total Revenue

$P =$ Price per Unit

$Q =$ Total Output



Average Revenue

Average revenue is the sales receipt per unit of output produced. It is obtained by dividing total revenue by total number of units sold.

Formula: Average Revenue = Total Revenue / Total Number of Units Sold.

Symbolically, $AR = TR / Q$

Where,

AR = Average Revenue, and

Q = Total Output

By definition, AR is the price. Since sellers receive revenue according to price, the price and average revenue are one and the same thing.

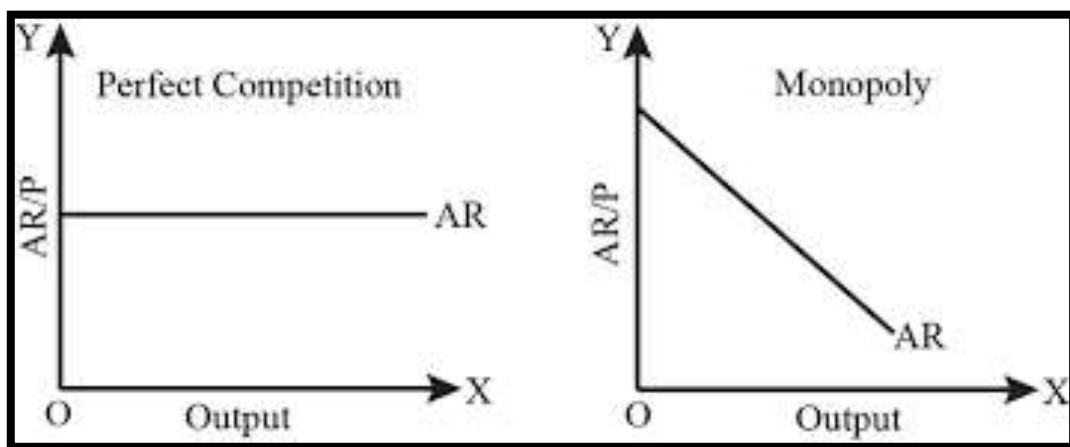
Symbolically,

$P = AR$

Where,

P = Price

AR = Average Revenue



Marginal Revenue

Marginal Revenue is the net revenue earned by selling an additional unit of the product. In other words, it is the net addition to total revenue made by selling an additional unit of the product.

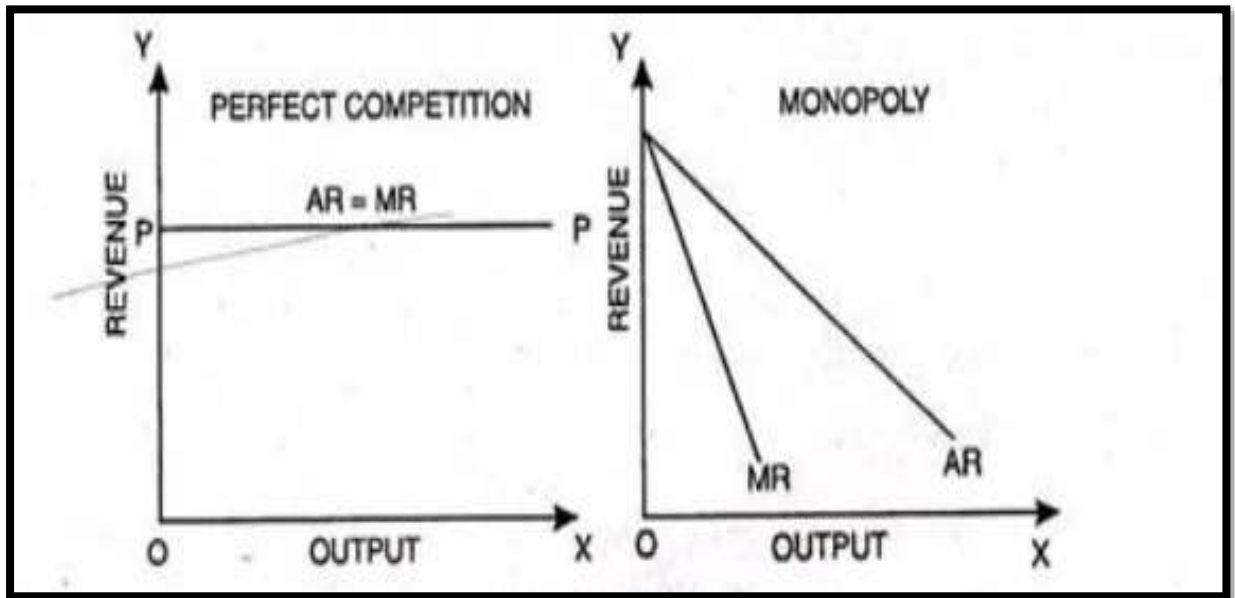
Marginal revenue is the difference between total revenue when 'n' units are sold and when n + 1 units of a product are sold.

Where, n is any number

Symbolically, $MR_n = TR_{n+1} - TR_n$,

Here, MR = Marginal Revenue

TR = Total Revenue



To illustrate the point, let us assume that a firm produces and sells 10 units of a product at a price of Rs. 120 per unit. Its total revenue is thus, Rs. 1200. Now if the firm decides to sell 11 units of a product by reducing the price to 115 then,

$$MR_n = TR_{n+1} - TR_n, \text{ (here } TR_n = 120 \times 10 \text{ (and } TR_{n+1} = 115 \times 11 \text{))}$$

$$MR = (115 \times 11) - (120 \times 10)$$

$$= 1265 - 1200$$

$$= \text{Rs. } 65$$

Relationship between AR, MR and TR

1. When AR curve is parallel to X axis (Perfect Completion)

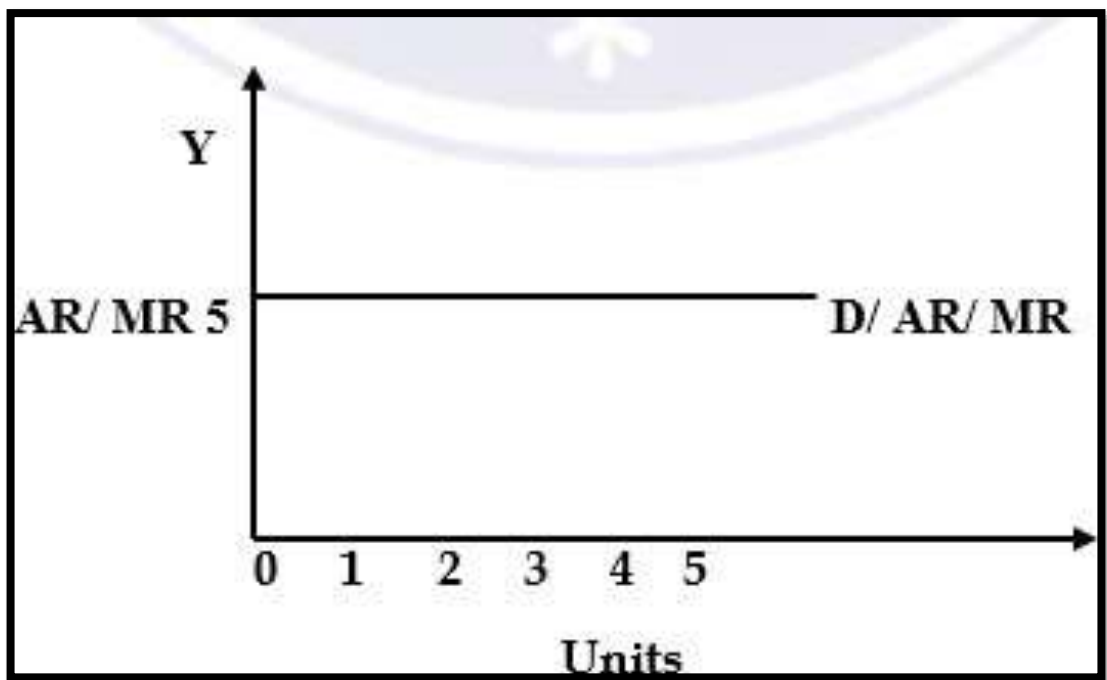
When average revenue (AR) is constant i.e. parallel to x axis, marginal revenue (MR) is always equal to it. The MR curve coincides with AR curve. This will be under **perfect competition**. This is so because additional units are sold at the same price as before, and no loss is caused

On the previous units which would have resulted if the sale of the additional units had forced the price down.

Example

Price per Units (in Rs.)	Units	TR	AR	MR
5	1	5	5	-
5	2	10	5	5
5	3	15	5	5
5	4	20	5	5

In the above table it can be seen that $AR = MR$ at all the units sold.



1. When AR curve is falling (Monopoly Completion)

The relationship between AR, MR and TR is given below:

1. When the price falls as additional unit is sold, Marginal Revenue is less than price.
2. When price remains the same as additional unit is sold, as under perfect competition, then, $MR = AR$. In this case, no loss is incurred on the previous units sold because the price is unchanged.
3. When AR falls, $MR < AR$

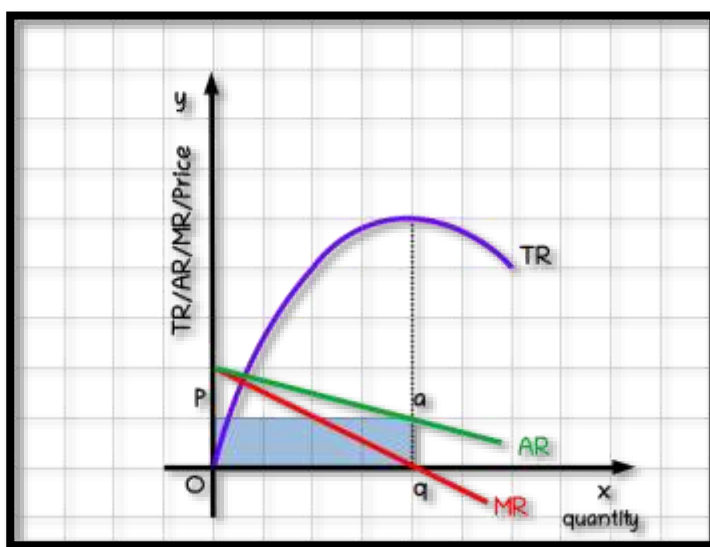
When AR remains the same $MR = AR$

To illustrate the three types revenue and their relationship let us take a hypothetical example

Example

No. of units Sold	Price per unit	Total Revenue	Average Revenue	Marginal Revenue
1	10	10	10.0 (10/1)	10
2	9.5	19	9.5	9 (19-10)
3	9	27	9.0	8
4	8.5	34	8.5	7
5	8	40	8.0	6
6	7.5	45	7.5	5
7	7	49	7.0	4
8	6.5	52	6.5	3
9	6	54	6.0	2
10	5.5	55	5.5	1
11	5	55	5.0	0
12	4.5	54	4.5	-1
13	4	52	4.0	-2

From the above table we find that as the firm sells more and more units, its total revenue (TR) goes on increasing with the sale of every additional unit. The average revenue (AR) and the marginal revenue (MR) both decline with increase in the sales of additional unit. However, the MR declines more rapidly than average revenue (AR). In the above table it can be seen that the rate of decline of AR is by 0.5 and MR is by 1 unit.



There is a precise relationship between the Average Revenue and Marginal Revenue curves. So long as the average revenue curve is falling the marginal will be less than average revenue. The MR curve may be rising, falling or horizontal but normally it falls downwards.

Unit 3: Analysis of Market

[25%]

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[1] Market

The study of the market structure generally is made on the basis of the extent of competition prevailing therein. A firm produces its output with the purpose of selling it in the market. However, the price it can charge per unit of output price depends crucially on the type and structure of the market in which the firm operates. In other words, the determination of price and output of various products depends on the type of market structure in which these are produced, sold and purchased.

(i) Perfectly competitive market.

(ii) Monopoly market.

(iii) Monopolistic competitive market

(iv) Oligopoly market.

Meaning of Market

The widely accepted definition of market is as follows: **“Market implies the whole area over which buyers and sellers are in such touch with each other, directly or through middlemen, that the price of the commodity in one part influences it in the other parts of it.”**

Table 1**Classification of market Structure**

Firm of market Structure	Number of Firms	Nature of Product	Entry conditions	Degree Monopoly power	Degree of control over price
Perfect Competition	Very large	Homogenous Product	Free entry and Exit	Zero	None (Firms is a price - taker)
Monopoly	One	Unique Product without close substitute	Strong barriers to entry	Absolute	Very large (Firms is a price maker)
Monopolistic Competition	Fairly large	Differentiated Products which are closed Substitutes situation of each others.	Free entry in the sense that new firms can produce only close substitutes.	Limited	Some control over Prices
Oligopoly	Few firms	Homogenous Product or differentiated product which are closed substitutes of each others	Entry barriers due to Product differentiation and by a few firms dominating the Market	Considerable	High

3.1 Perfect Competition Market

[1] Perfect competition and Pure competition

There is a distinction is made between perfect competition in pure competition. According to American economist the three conditions of perfect competition mentioned such as **Perfect Knowledge, Perfect mobility of the factor of production and the absence of transport cost** are difficult to realise practice. Therefore, they have used term “**Pure competition.**” As Joel Dean as rightly remarked, “Perfect competition is probability does not never as exist and never can exist.” Perfect competition in fact is just **concept, suggestive norms. In real life actual competition is always imperfect.**

The term “Pure competition” has been used in restricted sense. It is said to be exist when Monopoly is absent, on the other hand perfect competition is used in wider sense involves absence monopoly and the existence of other marketing imperfections.

Thus, the fulfilment of the first three conditions namely existence of **very large number of sellers (firms) and buyers, Homogeneous products and Free entry and free exit of firms makes for pure competition in the market.** These conditions ensure the non-existence of any monopoly element in the market. Such pure competition substantiates the norm of perfect competition without fully attaining it. Thus, **pure competition does exist in reality, it is just a rare phenomenon.** Perhaps, agriculture under free trade serves as the best example of pure competition for example such as in the markets for wheat, rice, cotton, bajra and other food grains as also in the markets for fruits, vegetables, eggs, etc. there are a large number of buyers and sellers and for all practical purposes the products are identical. But outside agriculture, pure competition is rarely found.

In short, the term **perfect competition is used in a wider sense**, while **pure competition is used in a restricted sense.** Thus, pure competition implies that the first three conditions mentioned below are met with, while perfect competition implies that all the seven features mentioned below are fulfilled.

[2] Features of Perfect Competition

a) Many Buyers and Sellers

There exist a large number of buyers and sellers in a perfectly competitive market. The number of sellers is so large that no individual firm owns the control over the market price of a commodity. Due to the large number of sellers in the market, there exists a perfect and free competition. A firm acts as a price taker while the price is determined by the ‘invisible hands of market’, i.e. by ‘demand for’ and ‘supply of’ goods. Thus, we can conclude that under perfectly competitive market, an individual firm **is a price taker** and not a price maker.

b) Homogeneous Products

The product or service produced by the buyers in a perfectly competitive market should be homogenous (similar/identical) in all respects. There should be **no differentiation between them in terms of quantity, size,**

taste, etc., so that the products are perfect substitutes for each other. If a seller tries to charge a higher price for products that are so similar, they will lose their customers immediately.

c) Free Entry and Exit for Firm

Another condition of a perfectly competitive market is that no artificial restrictions prevent a firm's entry or compel an existing firm to stay put when they want to leave. There is no any legal, technical or any other barriers to their entry. It is their decision to enter, stay or leave the market depends purely on economic factors.

d) Perfect Knowledge

The buyers and sellers have perfect knowledge about the market. The buyers are aware of the details of the product sold as well as its price. At the same time, the sellers know about the potential sales of their products at different price points. Since the buyers are already informed about the product, there is **no need for advertising or sales promotion**. So firms don't have to invest a single penny in these activities. It also helps sellers save on advertising or other marketing activities which keeps the price of their products low.

e) Perfect Mobility of Factors of Production

The factors of production like **labour, raw materials and capital should have total mobility** under perfect competition. The labour should have the freedom to move from one place (industry, market or production unit) to another depending on their remuneration. Even the raw materials and capital should not have any restrictions in movement.

f) Transport Cost

In the perfectly competitive market, the costs for transporting goods, services or factors of production from one place to another is either **zero or constant** for all sellers. The assumption is that all sellers are equally near or farther away from the market. Thus, the transport cost is uniform for all of them. The result is that the overall costs for production and the selling price are the same across the board.

g) Absence of Artificial Restrictions

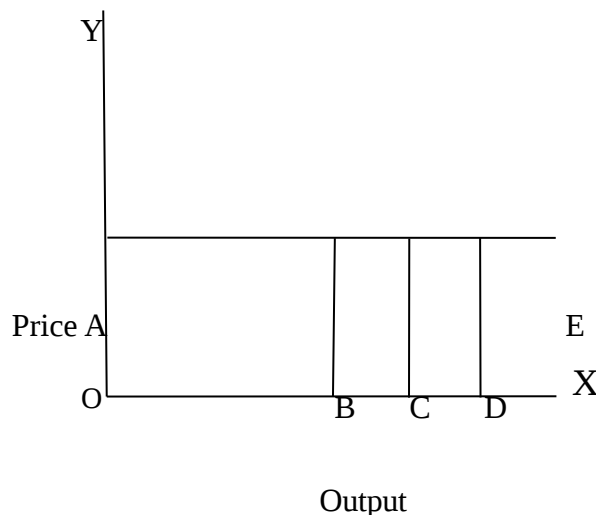
There is **no interference from the government** or any other regulatory body to hinder the smooth functioning of the perfect competition. There are no controls or restrictions over the supply or pricing and the price can change solely based on the demand and supply conditions.

h) Uniform Price

There is a single uniform price for all products and services in a perfectly competitive market. The forces of demand and supply determine it. Thus, Perfect competition is one of the most smoothly functioning markets, with many buyers and sellers working together in total harmony. Unfortunately, it is a **hypothetical situation that does not exist in reality**. But markets should aim to be as close as possible to this form of market to ensure a fair price for all goods and services.

[3] Demand curve of a firm under perfect competition

- The first two conditions (features) of perfect competition ensure that a single price must prevail (superior) under perfect competition and the demand curve or average revenue curve faced by an individual firm under perfect competition is **perfectly elastic** at the ruling price in the market.
- **If the firm raises its prices slightly above the ruling price, it will lose all its customers to its rivals.** Because it can sell as much as it likes at the prevailing price it has no incentive to lower it.
- Without being able to raise the price and having no incentive to lower it, the firm is content to accept the ruling price in the market.
- Once the in the market is established, the firm accepts price as a given demand and adjust its output level which gives maximum profits.
- The Average Revenue (AR) Curve is the demand curve of the firm as it can sell any quantity it wants at the market price. Since **average revenue (AR) is constant, marginal revenue (MR) will be equal** to it. If the prices changes, the demand curve facing the firm will change but it will be perfectly elastic at the new price.
- **Perfectly elastic demand curve** signifies that the firm does not exercise any control over the price of the product but can sell any amount of the product as it likes at the ruling price.
- The demand curve of firm in perfect competition is **perfectly elastic** it is a straight line parallel to x-axis this will be clear from the following diagram.



- In this diagram, Price is on the Y-axis and Quantity on the X-axis. At OA price is constant the firm can sell OB, OC or OD numbers of units. AE is the demand curve of the firm which is parallel to x-axis

[4] Equilibrium of a Firm under perfect competition

- The term equilibrium refers to a "state of balance", "position of rest" or "position of no change".
- An equilibrium is a **situation in which economic forces have no tendency to change**. Thus, whenever any economic unit- say a consumer or a producer or a business firm-attains equilibrium, it means that it does not want any further change in this position.
- A firm is said to be in equilibrium when it has no tendency to change the proportion in which the factors of production are combined or to change its level of output, that is to say, **when it has no tendency to change its organisation or to increase or decrease its level of output**.
- Such an equilibrium of firm will occur when **it earns maximum profit**, for it is only then that the firm will have **no desire to change the level of its output by adding or reducing factors of production**.

[4.1] There are two important basic conditions of equilibrium of a firm under perfect competition

(a) Marginal cost must be equal to marginal revenue ($MC = MR$)

(b) The marginal cost curve should cut the marginal revenue curve from below

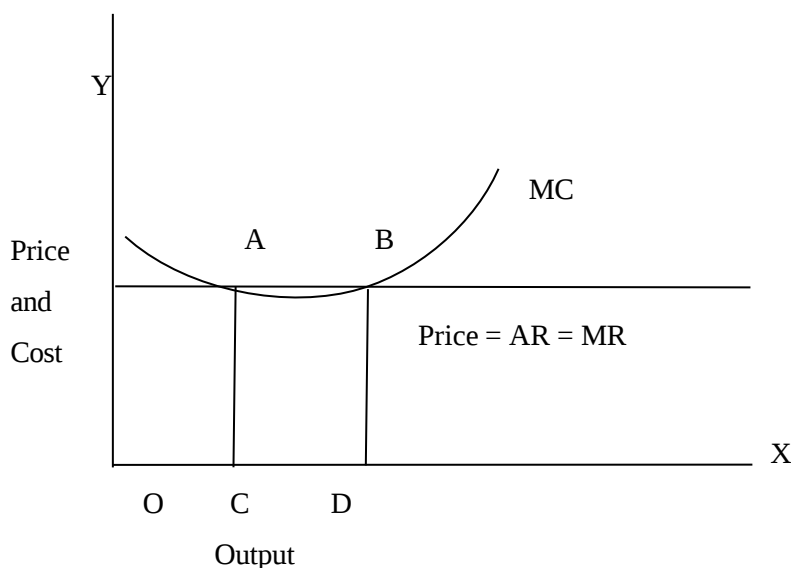
(a) Equality of marginal cost and marginal revenue ($MC = MR$)

- The first basic condition of equilibrium of firm is that its marginal cost must be equal to its marginal revenue.
- **Marginal revenue** means the addition made to total revenue by producing and selling an additional unit of output. **Marginal cost** means the addition made to the total cost by producing an additional unit of output.
- A marginal revenue is **greater than** marginal cost, it will pay the firms and will be in the interest to increase the output since by doing so it will add more to its total revenue than to its total cost.
- On the other hand if marginal revenue is **less than** marginal cost, the firm will reduce the output since by doing it will gain more in the shape of cost reduction than lose in the firm total reduction than lose in the firm of reduction in total revenue.
- Thus a firm will continue its output upto that point where its marginal revenue is equal to its marginal cost. If the firm stops before this point it will not be able to attain a maximum profit. Thus, there will be a point of maximum profits where a firm's $MR = MC$.

(b) Marginal cost curve should cut the marginal revenue curve from below

- The second condition of equilibrium of the firm is that its marginal cost curve should cut the marginal revenue curve from below.

- If the marginal cost curve cuts the marginal revenue curve from above, the firm will not be earning maximum profits and hence it will not be in equilibrium. Equilibrium point is that at which the marginal cost curve cuts the marginal revenue curve from below.
- In this diagram, marginal cost curve cuts marginal revenue curve at two points A and B. At point A it cuts from above and at point B it cuts from below.
- The point A cannot be the equilibrium point since beyond this point, marginal cost is lower than marginal revenue and it will pay the firm to increase the output beyond OA. It is at B when marginal cost curve cuts the marginal revenue curve from below that the firm will be in equilibrium.
- This is because, if the firm increases its output beyond point, marginal cost becomes higher than marginal revenue. This equilibrium point will be B where the firm will be producing OD output and earning maximum profits.



[4.2] Equilibrium of a firms in the short run

- Short run is a period during which the firm can change the level of its output in response to change in demand only by changing the amount variable factor like labour, raw material etc. and by intensive utilisation of its existing productive capacity.
- **It shall not increase a decrease the size of a plant, machinery and other fixed equipments.** Thus, the firm shall not alter the fixed factor; it shall only change amount of variable factor in the short run can change the scale of its operations but not its size.
- The demand curve of a firm under perfect competition is **perfectly elastic**, it is a straight line parallel to X – axis. Now, the firm can sell the additional units of output at the prevailing price, marginal revenue is equal to price or average revenue of the product.
- Therefore, marginal revenue curve of the firm will coincide with average revenue curve or the demand curve.

The firm is considered to be equilibrium when,

- Marginal cost must be equal to marginal revenue. ($MC = MR$)
- The marginal cost curve should cut the marginal revenue curve from below.

However, the fulfilment of the above two conditions do not give any indication about the absolute profit or loss position of the firm.

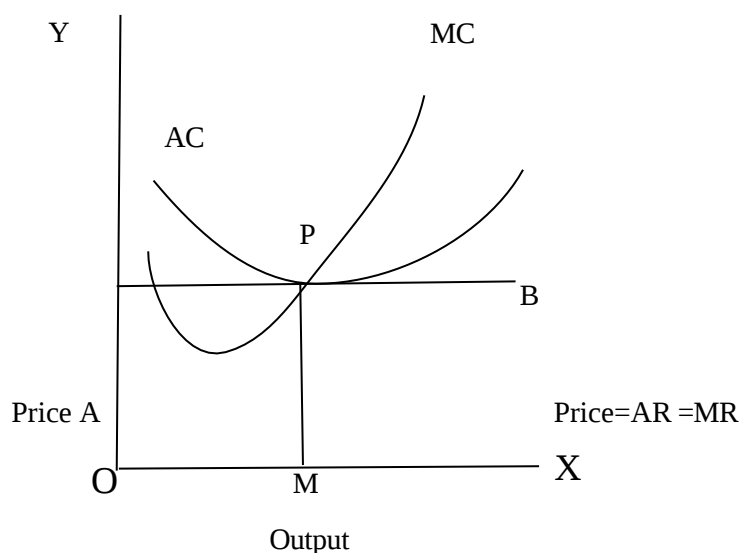
In order to know this, we have to take into account the **average cost of the firm**. Marginal cost and marginal revenue may be equal, but it is not necessary that marginal cost and average cost are also equal. In the short run, the average cost may be more or less than the price.

- (1) When Average cost is equal to Price and the firm is earning normal profits.
- (2) When Average cost is lower than the Price and the firm is earning abnormal or super normal profits.
- (3) When Average cost is higher than the Price and the firm incurring losses.

Let understand three situations

(1) When Average cost is equal to Price the firm earn only normal profits.

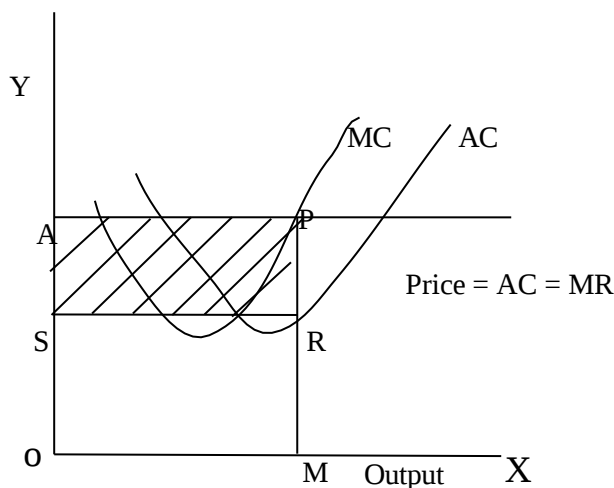
- In the short run when average cost is equal to the price. The firm earns only normal profit.
- In short run, the average cost curve is tangent (a straight line that touches a curve at a single point) to the average revenue curve. This situation represents full equilibrium of industry even in the short run all parts are earning only normal profit this will clear from this diagram.



- In this diagram the price is OA and the horizontal straight line AB represent the average revenue curve and since there is a perfect competition, it is also the marginal revenue curve the average cost and price equal at point P which indicates the firm is earning normal profits.
- The firm will be in equilibrium producing OM output.

(2) When the Average cost is lower than the Price and the firm is earning supernormal profit.

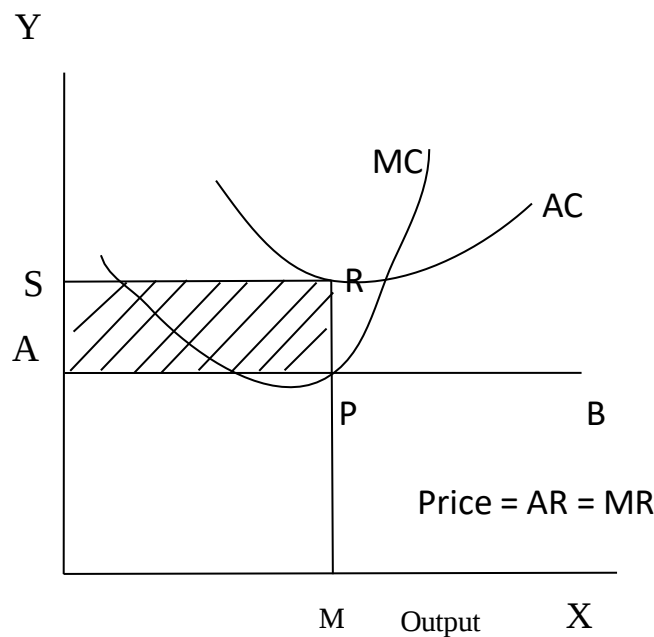
- In the short run when average cost is lower than the price, the firm earns super normal profits.
- The reason for this is that the period of time being short, new firms do not enter the industry and therefore the existing firms continue to earn super normal profit. This will clear from the following diagram.



- In this diagram the firm produces OM output at OA price. P is the equilibrium point at which marginal cost and managerial revenue are equal.
- But it should be noted here that at this point P, average cost and price are not equal; in fact price is higher than average cost therefore the firm and super normal profits to the tune of APRS which is shown in the shaded rectangle.
- In short run, under perfect competition, it is possible for firms to be equilibrium and earns super normal profits. The reason for this is that as said earlier, the period of time being short, these super normal profits are not competed away by the entry of new firms in the industry.
- It may also be pointed out here that in the short-run, although all the firms are in equilibrium producing OM output and earning super normal profits, the industry as a whole is not in equilibrium, the reason being that not all the firms are earning super normal profits.
- But as we know that one of the conditions for the equilibrium of industry is that all the firms comprising it should earn normal profits.

(3) When Average cost is higher than Price and the firm and losses

- In the short run we can also considered of a situation where the average cost of the firm is higher than the price and show the firm is not able to and normal profits that is it incurs losses.
- The equilibrium position of the firm here, therefore indicates the position of the minimum losses



- The firm will be equilibrium at point P where its marginal cost is equal to its marginal revenue. Producing. It will be producing OM output at OA price.
- It is seen in diagram, that average cost is higher than the price OA and therefore the firm incurs losses to the extent of APRS which is shown on the shaded rectangle and this is loss incurred by it.
- Thus at the price OA, the firm is, no doubt, in equilibrium but the industry as a whole cannot be said to be in equilibrium because not all the firms are incurring losses.
- One of the conditions for the equilibrium is that all the firms comprising it must earn normal profits.
- The firms here are no doubt in equilibrium but are only in short run equilibrium.
- They are certainly not in long run equilibrium, because in the long run period, the firms will leave the industry until those who remain are able to earn normal profits.
- It should be mentioned here that in the short run the firm will continue to remain in the industry even if it does not make a normal profit the short run if the price in the market is not sufficient to cover the total average cost and the firm incurs losses it has to attend before it.

(1) Either to leave the industry

OR

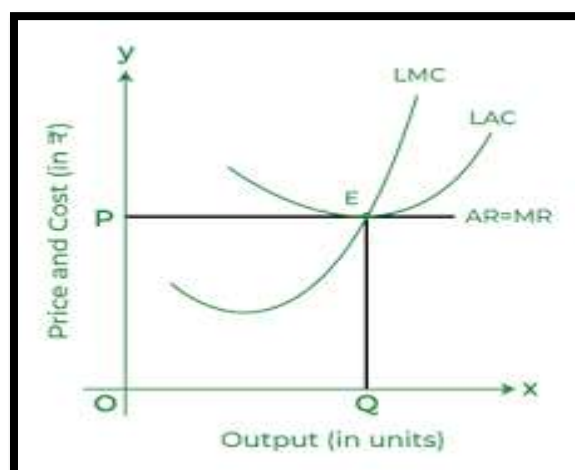
(2) To remain in the industry

- Thus in the short run period of time the firm will not opt for the first alternative, that is it will not leave the industry because demand conditions are likely to improve in the long run.
- The firm therefore, will remain in the industry and continue to produce also because if the firm stops production in the short run it will have fixed cost like the rent of the building, interest charges, salary of managerial and technical personal etc.
- The firm will have to bear these cost even if it stop production in the short run.

- If it's stop production, it will lose its contact with the market and the consumers. Thus under these circumstances the firm in the short run will remain in the industry and continue its output up to that level which covers the whole of the variable firm and if possible part of the fixed cost under this situation the objectives of the firm is not maximize profit but Minimise losses this will be more than making the best of bad job.
- The price in the short run falls so low as not to cover even the variable cost, the firm will have no alternative except to close down. In short, the firm will continue to stay in the industry in the short period as long as the market price covers at least the variable cost.
- To sum up, it is possible for the firms in the short run to attain equilibrium position at that level of output which maximises profits or minimises losses. But the industry will not be in equilibrium because as we have said earlier, one of the conditions for equilibrium of the industry is that all firms must be earning normal profits.

[4.3] Long-Run Equilibrium of the Firm under perfect competition

- The long run is a period of time in which the firm can change its plant and scale of operations i.e., it may double size or reduce it to half. Thus in the long-run all costs are variable and there are no fixed costs.
- It must install new machinery and equipment and also recruit new technical and managerial personnel and it may dismantle that machinery and equipment and retrench (another way of Terminating employees, where the reasons is not the employee's performance but the company's financial position) surplus staff.
- The firm is in the long-run equilibrium under perfect competition when it does not want to change its equilibrium output.
- It is earning normal profits. If some firms are earning supernormal profits, new firms will enter the



industry and supernormal profits will be competed away. If some firms are incurring losses, some of the firms will leave the industry till all earn normal profits.

- Thus, there is no tendency for firms to enter or leave the industry because every firm must earn normal profits.
- In the long-run, firms are in equilibrium when they have adjusted their plant so as to produce at the minimum point of their long-run AC curve, which is tangent (at this point) to the demand (AR) curve defined by the market price, so that they earn normal profits.

[3.2] Monopoly Market Competition

The term monopoly is derived from two Greek words "mono" which means "one" and "polist" which means "seller". Monopoly refers to **a market situation where there is only one seller or one firm with complete monopoly power**, he does not face any competition. **A monopolist has a complete control over the supply of the product for which there are no good or close substitutes.**

A monopoly firm is itself an industry and as such the distinction between firm and industry disappears under monopoly. Thus, when there is only one seller of the product for which no good or close substitutes are available and there is no competition at all, the situation is known as **monopoly situation**.

When there is only one single seller of the product in the market and there is no competition at all, the situation is known as pure or perfect or absolute monopoly. However, **pure monopoly rarely exists in reality.** It is merely a **theoretical concept**, because even the product of a monopolist has to compete indirectly with all other products of which are competing for the consumers' income. All the same pure monopolies are found in developing countries like India in the form of state monopolies such as Gujarat Electricity Board, Indian Railways, Post and Telegraph Department of the Government of India, Coal India, IOCL, BHEL, GAIL, ONGC, SAIL, IEX, Pidilite, CDSL, Hindustan Zinc, etc.

[1] Price and Output Determination under Monopoly

As in perfect competition, also in monopoly the aim of firm is to earn maximum profits. Under perfect competition we have seen that an individual firm has no control over the price; it has to take the market price as given; it cannot change it, that is, under perfect competition the firm is a **price taker** and it has to adjust its output accordingly.

A competitive firm, thus it is a **price taker and output adjuster**. This, however, is not so in the case of a monopoly firm. A monopolist has completely control over the supply of the product because there are **no rival firms and therefore he has control over the price also**. A monopoly firm, thus has to decide not only the total volume of output which it has to produce, but also the price which it should charge for the product

It would, appear from the foregoing discussion that monopolists have control over the supply of the product as well as over its price. But in fact it is not so.

A monopolist cannot have it both ways, he cannot fix both the price of the product as well as the output to be sold. He can either fix the price of the product or the quantum of the product; he cannot

fix the price as well as the quantum of output simultaneously. Thus, for example, the Indian postal Department as a sole monopolist for the supply of postal envelopes in the country may either decide to sell one million envelopes per year or it may be the price of the envelopes at Rs. 5 each. The department can take either of the decisions. But it cannot fix the supply of envelopes at one million and at the same time expect the people to buy all the one million envelopes at the price Rs 5/- per envelope. In short, a monopolist can either fix the price of his product or its output but he cannot fix both the price and the output simultaneously. In other words, he is bound by the relation between price and demand.

[2] Characteristics of Monopoly

1. There is a single producer or seller of the product

This single producer may be in the form of an individual owner or a single partnership or a joint stock company. There are no rivals or direct competitors of the firm and so there is absence of competition. Eg. Coal India, Indian Railways, BHEL, IEX, etc.

2. There are no good or close substitutes available for the monopolist's product

This means that there are no other firms producing similar products which differ only slightly from that of the monopolist. In technical language, we may say that, in a monopoly the cross elasticity of demand between the product of the monopolist and the product of any other producer is zero.

3. Monopoly can exist only when there are strong barriers to the entry of rivals

The monopolist can maintain his position as the sole producer or seller of a product only if the rival firms are prohibited from entering his line of production. The barriers which prevent the entry of rival firms may be either economic or institutional or artificial in nature. But the existence of strong barriers to the entry of rival firms is an essential condition of monopoly.

4. A monopoly firm is itself an industry

The distinction between firm and industry disappears in monopoly.

5. Pure monopoly is a single firm industry

Where the cross elasticity of demand between its product and the products of other industries is zero.

6. A monopolist is a price maker and not a price taker

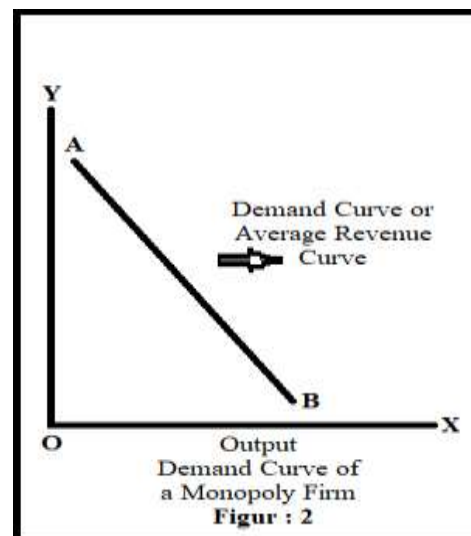
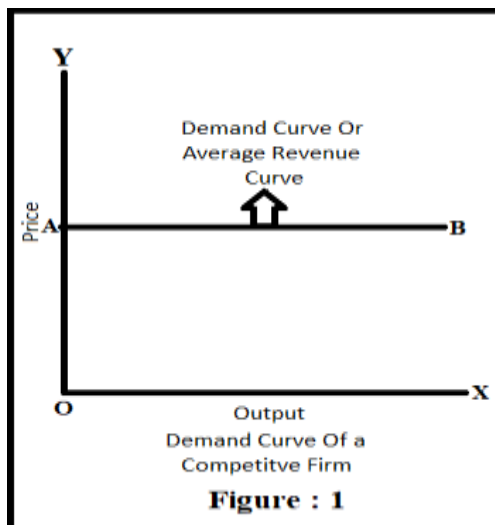
Since a monopolist has complete control over the supply of its commodity. He exercises control over its price as well. He tries to take the best of whatever demand and cost conditions exist without the fear of new firms entering to compete away his profits. Of course, a monopolist cannot have control over both the price and the supply of the commodity. If he wants to sell more, he must lower its price. Thus, a monopoly firm faces a downward sloping demand curve for its product.

[3] Causes of Monopoly

1. **Patents and copyrights** for the products give legal monopoly rights to firms.
2. **Government policies such as granting licences to only a few firms** or imposing tariff restrictions like import quotas result in limiting the number of firms. (Eg. Coal India, Indian Railways)
3. **Exclusive knowledge of technology** by the firm.
4. **Ownership and control** of some strategic raw materials.
5. In certain cases, the size of the market is such that **there is a scope for the operation of only a single firm and where only a large output can reap the economies of scale**. In such a case more firms will mean that none of the firms would be able to exploit the economies of scale; it would also result in unnecessary duplication of facilities. Such a monopoly is known as 'natural monopoly'. Examples are railways, natural gas companies, telephone firms etc.
6. **Monopoly also came into existence due to prevention of pre-venting new entry of firms**. This policy is further supplemented by large scale advertising and continuous product differentiation so as to make the new entry unattractive.

[4] Nature of the Demand Curve (Average Revenue) under Monopoly

Under perfect competition, the demand curve or the average revenue curve is perfectly elastic: it is a horizontal straight line parallel to X-axis Indicating that the firm can sell any number of units at the prevailing market price, it has not have to lower its price to sell additional units. The reason being that an individual firm under perfect competition is but one amongst the very many firms operating in the industry and so its output firms a very small part of the total output.

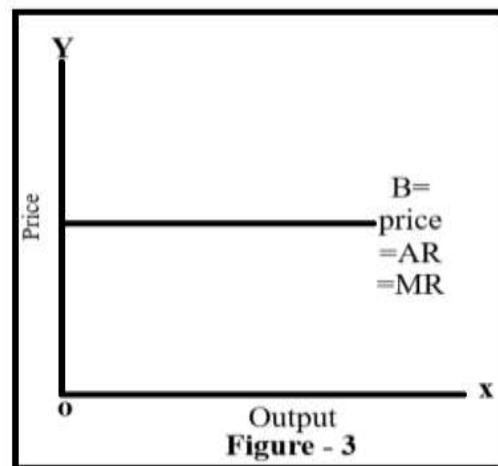


The case of a monopoly firm, on the other hand, is quite different. Here, the distinction between the firm and industry does not exist, there is only one firm which by itself constitutes the industry and its output firms the entire output. This means that a monopoly firm cannot sell any number of units at the prevailing price: if it wants to sell more units it has to lower its price. **The demand curve or the average revenue curve of a monopoly firm is not perfectly elastic but is less than perfectly elastic indicating that the firm can sell additional units only by lowering its price. This will be clear from Figure No. 2.**

[4] Nature of the Marginal Revenue Curve under Monopoly

Under perfect competition, we have seen that average revenue and marginal revenue are equal because the demand curve being perfectly elastic, the firm can sell additional units at the prevailing price; it is not required to lower its price in order to sell the additional units. This would be clear from the following table and graph:

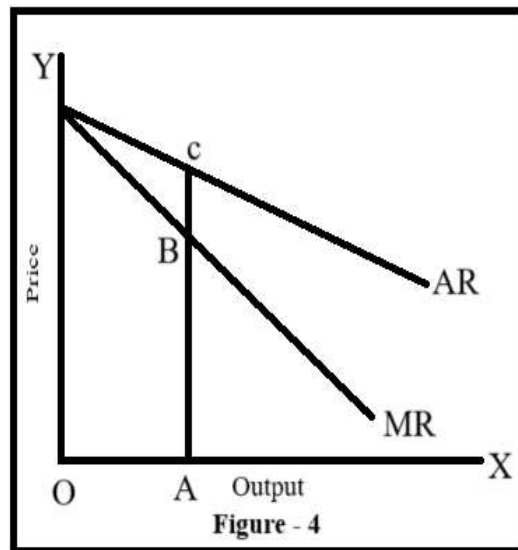
Units	Price	Total Revenue	Marginal Revenue
10	Rs. 2	RS. 20	-
11	RS.2	RS. 22	RS. 2
12	RS.2	RS. 24	RS. 2



Under monopoly, however, the demand curve average revenue of the firm is less than perfectly elastic indicating that the firm can sell additional units only by lowering its price, and this lower price is applicable not only for the marginal unit but for all the marginal units as well.

And therefore the marginal revenue is less than the price and the marginal revenue curve lies below the average revenue curve. This will be clear from the following table and graph.

Units	Price	Total Revenue	Marginal Revenue
10	RS. 2	Rs. 20	
11	RS. 1.90	Rs. 20.90	0.90
12	RS. 1.80	Rs. 21.60	0.70



It would, thus, be seen from the above tables and curves that while in perfect competition price or the average revenue and marginal revenue are equal, in monopoly price or average revenue is more than the marginal revenue or marginal revenue is less than the price.

Another thing to be noted is that since the average revenue of a monopoly firm is always falling, the marginal revenue also falls, but it falls more rapidly than the average revenue. Therefore, under monopoly conditions the marginal revenue curve lies below the average revenue curve and normally slopes downwards more swiftly than the average revenue curve.

The implication of the marginal revenue curve lying below average revenue curve is that under monopoly the marginal revenue is less than the price or the average revenue. In order to increase his sales, a monopolist has to lower its price.

Therefore, the marginal revenue must be less than the price. In the above diagram, AR is the average revenue curve which slopes downwards and MR is the marginal revenue curve which lies below the average revenue

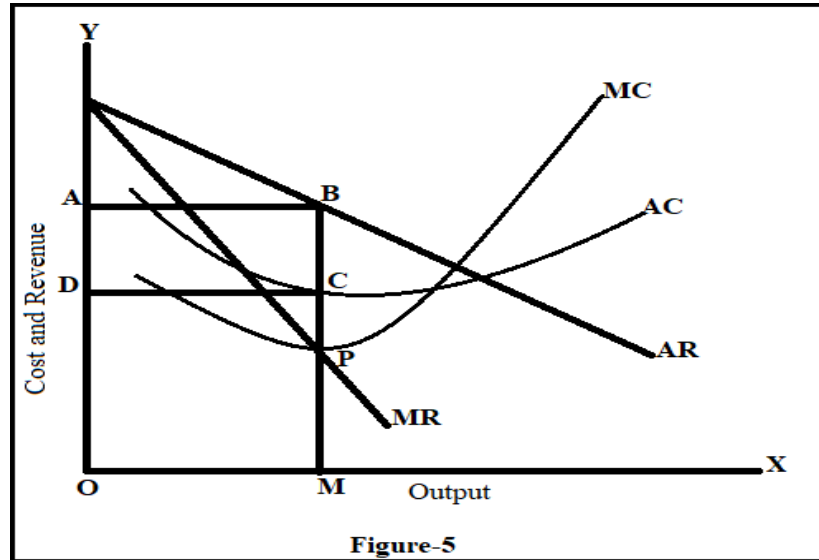
curve. Thus, when the quantity OA is produced, the average revenue or price is AC: while the marginal revenue is AB which is less than AC.

[5] Price and Output Determination under Monopoly

[Equilibrium of a Firm under Monopoly]

- As said earlier, the aim of a monopoly firm like that of a perfectly competitive firm is to earn maximum profits and therefore a monopolist will adjust his output and fix a price which will give him maximum profits.
- A monopoly firm will earn maximum profit at that level of output where its marginal revenue is equal to marginal cost.
- As long as marginal revenue is greater than marginal cost, the firm will go on expanding its output because thereby it adds more to its revenue than to its cost.
- Thus, a monopoly firm will continue to expand its production so long as its marginal revenue exceeds marginal cost.
- The firm would earn maximum profits and will attain equilibrium at that level of output where marginal revenue is equal to marginal cost.
- If the firm stops its output before this point, it would be unnecessarily foregoing some profits which otherwise it could have earned; on the other hand if the firm increases its output beyond this point marginal revenue would be less than the marginal cost and so the firm would be incurring losses.
- In short, a monopoly firm would be in equilibrium at that level of output where its marginal revenue is equal to its marginal cost. This would be clear from the Figure - 5
- In this diagram, AR is the average revenue curve or the demand curve of the monopoly firm, MR is the marginal revenue curve which lies below the average revenue curve, AC is the average cost curve and MC is the marginal cost curve.
- Marginal revenue and marginal cost are equal at point P where the firm produces OM output. The monopoly firm, therefore, is in equilibrium at OM level of output where marginal revenue is equal to marginal cost.
- It will also be seen from the AR curve that the firm will be getting the price MB or OA by selling OM output. But the average cost of OM output is MC only. Hence CB is the per unit profit. The total profit earned by the firm is indicated by the area ABCD.
- It would be interesting here to note an important difference and the equilibrium condition of a firm working under perfect competition and the one under monopoly. In perfect competition, when the firm is in equilibrium, the price is equal to marginal revenue and since marginal revenue and marginal cost-

are equal, price is equal to marginal revenue and marginal cost. Thus under perfect competition, when the firm is in equilibrium :



$$\text{Price} = \text{Marginal Revenue} = \text{Marginal Cost}$$

$$P = MR = MC$$

- However, in the case of a monopoly firm, under equilibrium conditions marginal revenue is equal to marginal cost, but price is greater than these two. The main reason for this is that the demand curve or the average revenue curve of a monopoly firm is a downward sloping curve and its marginal revenue curve lies below the average revenue curve.
- Therefore, in equilibrium, while marginal revenue is equal to marginal cost, it is less than the price or average revenue. Thus, under monopoly condition: Price is greater than marginal revenue and marginal cost, the latter two being equal $P > MR = MC$

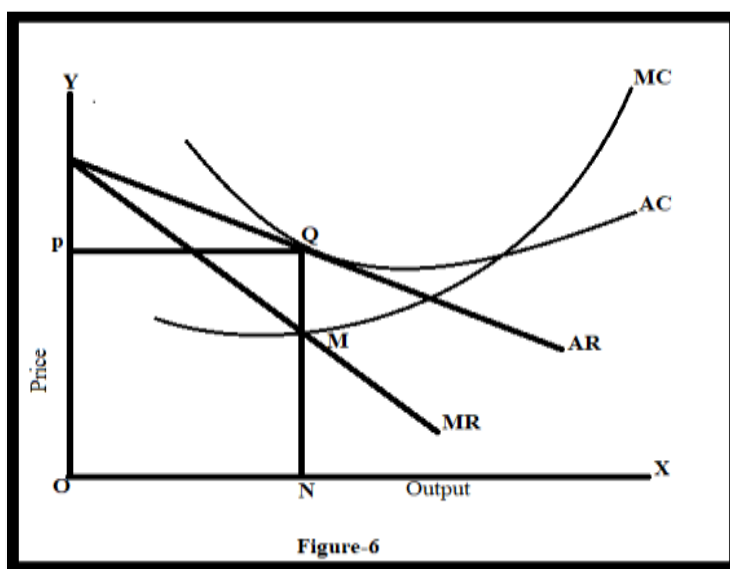
[6] Short-run Equilibrium of a Monopoly Firm

- Short run is a period during which the firm can change the level of its output in response to a change in demand only by changing the amount of variable factors. It cannot change the size of its plant or other fixed equipment. The firm in the short run can change the scale of its operations but not its size.
- A monopoly firm will, therefore, be in short-run equilibrium at that level of output where its marginal revenue is equal to its marginal cost and the monopoly price is equal to its average cost or more than the average cost or less than the average cost. We can, therefore, conceive of a situation where in a monopoly firm in the short-run equilibrium:
 - **earns normal profits** when the monopoly price is **equal to average cost**.
 - **earns super normal profits** when the monopoly price is **higher than the average cost**.

- **does not even earn normal profits**, that is, the firm incurs **losses**. However, a monopoly firm in the short run will continue to produce even if the price is less than the average cost, that is, it is incurring losses. But in this case, the firm will try to minimise its losses so long as it is able to cover the whole of its variable costs and a part of its fixed costs. It will, of course, go out of business if it is not in a position to cover even the variable cost in the short run. In the long run, however, the monopoly firm must cover both the fixed and the variable costs.
- However, in all the three above mentioned cases, the basic condition of equilibrium, that is, equality of marginal revenue and marginal cost continues to operate. In case of (b) above, the firm gets maximum monopoly profit, while in (c) the aim of the firm is to Minimise losses.

This can be illustrated with the help of following diagrams:

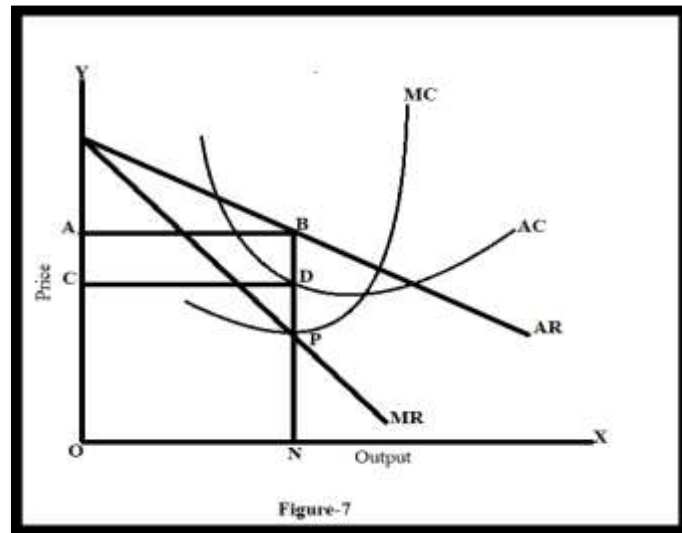
(A) Monopoly Firm Earning Normal Profit:



- In this diagram, at point M, marginal revenue and marginal cost are equal and the firm produces ON output.
- The price is OP or NQ which touch the average cost- and average revenue curves at point – Q.
- As the price is equal to average cost at – Q, the monopoly firm earns only normal profits.

(B) Monopoly Firm Earning Super-normal profits OR Monopoly Profits

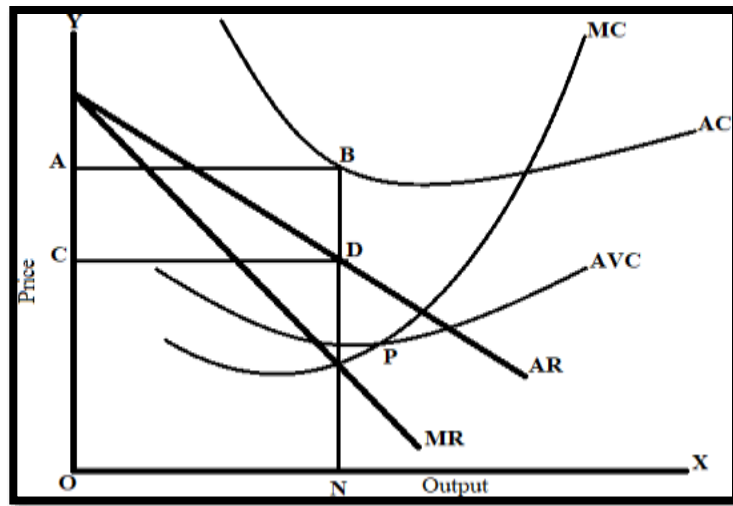
- In this diagram, at point P marginal revenue and marginal cost are equal and the firm produces ON output.



The price is OA or NB and the average cost is ND, in other words the monopoly price NB is higher than the average cost ND and so the firm is able to earn monopoly profit as represented by the area ABCD

Monopoly Firm Incurring Losses

- In this diagram, the monopoly firm is in equilibrium at ON level of output, because the marginal revenue and marginal cost are equal at point P.
- The price is OC or ND which covers only the average variable cost. But the total average cost is NB and therefore the firm will be incurring losses to the extent of ABCD.
- This is the minimum loss which it has to suffer in case. However, the price AND falls below the average variable cost or if the loss represented by ABCD continues in the long run, the firm will go out of business.



- The price is OC or ND which covers only the average variable cost. But the total average cost is NB and therefore the firm will be incurring losses to the extent of ABCD. This is the minimum loss which it has to suffer in case.
- However, the price AND falls below the average variable cost or if the loss represented by ABCD continues in the long run, the firm will go out of business.

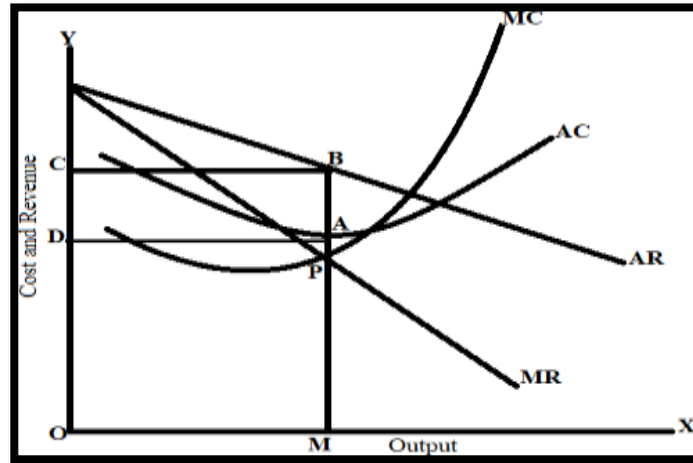
[7] Long-run Equilibrium of a Monopoly Firm

- The long run refers to that period of time which is sufficiently long enough to enable the firm to adjust its output to changes in the conditions of demand.
- A monopoly firm, in the long run can change the size of its fixed equipment, it can vary the output not only by changing the amount of variable factors but also by changing the amount of fixed factors like plant, machinery, other fixed equipment etc.
- Thus, in the long run, it is possible for a monopoly firm not only to change the scale of its operations but also its size
- The long run equilibrium of a monopoly firm will be attained at that level of output where its marginal cost is equal to its marginal revenue.
- It should also be noted here that in the long run equilibrium of a monopoly firm, the monopoly price may either be equal to its average cost or more than the average cost.
- But in no case, it can be less than the average cost, for this would imply that the monopoly firm is incurring losses even in the long run which cannot happen.
- However, the greater probability is that the monopoly price is higher than the average cost even in the long run and this enables the firm to earn supernormal profits or monopoly profits.
- An important reason for this is that there is no free entry for other firms to enter this field. Thus,

while in perfect competition, super normal profits in the long run are competed away by the free entry of other firms, a monopoly firm can continue to earn supernormal profits even in the long run.

The long run equilibrium of a monopoly firm can be illustrated as follows:

- In this diagram, the monopoly firm is in long run equilibrium at OM Level of output. because marginal cost and marginal revenue are equal at point P.
- The monopoly price is OC or MB and the average Cost is MA. The monopoly price MB is higher than the average cost MA and as such the firm earns a monopoly profit as represented by the area ABCD.



[8] Price Discrimination

- A monopoly firm which adopts the policy of price discrimination is known as "discriminating monopoly."
- Price discrimination means charging different prices from different customers or different groups of customers for a similar product or service.
- When a monopoly firm sells the same product or service at different prices to different customers it is known as **discriminating monopoly or price discrimination**.
- In the words of **Mrs. Robinson**, the act of selling the same article produced under a single control at different prices to different buyers is known as price discrimination.
- According to **Stonier and Hague**, Discriminating monopoly or price discrimination occurs when a monopolist charges different prices for different units of a commodity even though these units are in fact homogeneous in so far as their physical nature is concerned.
- To be noted here that a perfectly discriminating monopoly rarely exists because it is difficult to come across a situation where a monopoly firm charges different prices for different units of the

same commodity from the same consumer. In actual practice, when we speak of price discrimination, we

usually refer to discrimination between groups of buyers rather than discrimination between units of homogeneous product.

- Price discrimination is not possible under perfect competition, because in the first place. There are a large number of firms in the industry producing identical or homogeneous products. Besides, both the firms as well as the consumers have a perfect knowledge of the market and therefore, if any firm charges even a slightly higher price than the ruling market price. It would lose its sales and the customers would make their purchases from the rival firms. Thus, as pointed out by Stonier and Hague, "discrimination between customers is in compatible with perfect competition."
- Price discrimination is possible only when the manufacturer of a product or the availability of a service is in the hands of a monopolist who can fix his own price. This power enables him to charge different prices from different consumers or groups of consumers or in different markets. This policy of price discrimination of a monopolist is also known as discriminating monopoly.

[9] Forms of Price Discrimination

(i) Personal Discrimination

Personal discrimination occurs when different prices are charged from the different buyers according to their incomes or the intensity of their desire. Thus, for example, a surgeon may charge a high operation fees

from a rich patient and lower fees from a poor patient. Likewise, lawyers may charge different fees from different types of clients depending on their income status. A teacher also discriminates between rich and poor students as regards his tuition fees.

(ii) Age Discrimination

Price discrimination may also be practiced on the basis of the age of the buyers. Usually, buyers are grouped into children, adults, senior citizens, physically handicapped etc. Thus, for example, hair dressers generally charge lower rates for children's hair cut than those for adults. Likewise, in railways and bus transport services, children up to 5 years of age are allowed free travel, upto 12 years half the rates are charged and soon. In Indian Railways, senior citizens i.e, persons above the age of 60 are given 40 to 50 percent concession in ticket fares.

(iii) Local Discrimination

When a monopolist charges different prices in different markets located at different places, it is known

as location or geographical discrimination. "Dumping" is the best example of local discrimination, under which a producer sells his goods at a lower price in the foreign market than in the domestic market. Likewise, A film producer may sell distribution rights of his pictures to different firms in different territories at different prices.

(iv) Trade Discrimination

Trade discrimination is also known as use discrimination under which a monopolist may charge a lower price for one trade or use than for another trade or use. Thus, for example, an electricity distributing company may charge lower rates for industrial use and a higher rate for domestic use.

(v) Time Discrimination

On the basis of the time of service, different rates may be charged. Thus, for instance, the owner of a cinema house may charge lower rates for morning and matinee shows than for evening and night shows. Likewise, air transport companies offer discounts on air tickets during slack season.

(vi) Size Discrimination

On the basis of the size of the product, different prices may be charged. For example, an economy size tooth paste tube is usually available at a lower price than the small size tube.

(vii) Quality Variation Discrimination

When different prices are charged for the same product on the basis of some quality differences it is known as quality variation discrimination. Thus, for instance, the deluxe edition of a particular book is available at a higher price than its paper – back edition.

[10] Essential Conditions for Price Discrimination to be Possible and Profitable

(i) Price discrimination is possible under monopoly

The discriminating firm must be a monopolist. Of course, under other firms of imperfect competition like oligopoly and monopolistic competition, if the firms agree on following a common price policy. Price discrimination will be possible under such conditions also.

(ii) A monopolist can indulge in price discrimination successfully only when he has before him at least two or more than two markets for his product or service

If there is only one market or one group of buyers for the product, price discrimination will not be possible. In other words, price discrimination can take place only if it is possible for the seller to split up the total demand of the product into different markets. It is important to state here that the different markets should be completely segmented from one another so that buyers of one market cannot go to the other market. Thus, for example, the owner of a cinema house has different markets or groups of buyers like balcony, first class, second class and so on. Likewise, railways too have different markets,

all conditioned, first class, second class, etc.

(iii) The elasticity of demand for the product should be different in different markets

If this happens, only then the seller would be able to charge a higher price in the market where the demand for the product is inelastic and a lower price in the market where the demand is elastic. However, if the elasticity of demand is the same in different markets at the single monopoly price, he will not be benefitted from price discrimination. It is only when elasticity of demand is different in markets, the monopolist will be benefitted from price discrimination.

(iv) The cost of keeping the different markets separate must not be too high in proportion to the differences in the elasticities of demand

If this cost is unduly high price discrimination may be possible but it would not be profitable. Thus, for example, if the owner of a cinema house has to spend a large amount of money in keeping the various classes separate, price discrimination may be possible but not profitable.

The demand for the product or service must not be transferable from the high - priced market to the low - priced market. This usually happens when the markets are segmented on the basis of income and wealth. Thus, for example, a rich man will not pause to be poor in order to avail of the benefit of paying lower fees to a surgeon. Likewise, if persons in the higher income groups do not buy deluxe editions of certain popular books and wait for the paper-back editions to come out, price discrimination in books will not be possible.

(v) There should not be any possibility of resale of the product or service from the consumers in the low-priced market to the consumers in the high-priced market.

If it is possible to resell the product from the low-priced market to high-priced market, the firm will not be able to carry on with its policy of price discrimination. Thus, for example, if industrial users of cheaper electricity can resell it for direct consumption to domestic users, there will not be a difference in rates for the electricity consumption.

(vi) Price discrimination becomes possible on account of ignorance or laziness of the buyers.

Many times, it so happens that buyers are not aware that prices in one part of the market are lower than in another part. And even where the customers are aware of this fact, they may rather avoid going to the cheaper market because of their laziness.

(vii) Let-go Attitude of the Buyers

When price differences between the different markets are very small, the consumers do not think it worthwhile to consider such discrimination. Many times. The buyers have a tendency to ignore small differences in prices.

(viii) Consumers' Illusion

Price discrimination becomes possible when consumers have an irrational feeling that because they are paying a higher price for the product, they receive a better and a high quality product. Obviously, there is hardly any difference between seeing a film from the last row of the second class stall and the first row of the first class stall and yet a cinegoer of the first class derives greater pleasure from occupying a higher – priced seat. Preferences and prejudices, thus, make price discrimination possible.

(ix) Price discrimination is often noticed when markets are separated by distance or tariff barriers, so that it becomes expensive to transfer goods from a cheaper market to be resold in the dearer market.

A monopolist may sell the same product at a higher price in Ahmedabad and at a lower price in Rajasthan or Punjab. Likewise, a producer may sell his product at a higher price in the home market which is protected by tariff and where there is no competition for his product at a lower price in the foreign market where he has to face stiff competition. This kind of price discrimination is known as dumping and is often noticed when markets are protected by tariffs on imports.

(x) Nature of the Commodity or Service

Price discrimination is also based on the nature of the commodity or service, so that it is possible for the seller to charge different prices from different customers. This happens, particularly, when the commodity in question is a direct service. In case of direct personal services, price discrimination is easily followed due to their non-transfer ability characteristic. Obviously, a rich person cannot go on behalf of a poor man to get cheaper medical treatment from a doctor. Similar, is the case with personal services of a lawyer, a teacher, an engineer, an architect, etc. Since resale of such direct services is not possible, differences in their prices can exist for different customers. Thus, for example, a surgeon may charge different fees from rich and poor patients for performing similar surgical operations.

(xi) Legal Sanction

There may be legal sanction for price discrimination. For instance, Gujarat Electricity Board charges a lower rate of power-tariff for agricultural use and a higher tariff rate for industrial and domestic use. Likewise, there are different freight rates charged by railways for transporting different types of goods.

[3.3] Monopolistic Competition

Introduction:

The concept of monopolistic competition which is a leading form of imperfect competition has been developed by the eminent American economist **Prof. E. H. Chamberlin** in his book. "**The Theory of Monopolistic Competition**". The concept is more realistic than the concept of either pure competition or pure monopoly. According to Prof. Chamberlin, in real life there exists neither pure competition nor pure monopoly, but an admixture of both competition and monopoly to which he calls monopolistic competition. **Most economic situations are composites of both competition and monopoly.**

[1] Main Characteristics of Monopolistic Competition

The main characteristics of monopolistic competition are as follows:

(i) Existence of Fairly Large Number of Firms:

In monopolistic competition there are large number of firms, but not so large as in perfect competition. As a result, no one firm controls a significant proportion of the total market supply. The output decision of an individual firm does not affect the output decision of any other firm. Here, each firm decides about its price- output policies independently without considering the possible reactions of the rival firms. In other words, since there are a large number of firms any action by an individual firm either in price- cut or price rise or in increasing or decreasing output will have no effect on other firms. Action of an individual firm does not influence other firms in any significant way. Each firm controls only a small part of the total output and as such any action on its part to increase or decrease the output and the price will have little or no effect on the rival firms. In short, the existence of fairly a large number of firms represents the element of competition.

(ii) Product Differentiation:

Another important characteristic of monopolistic competition is the existence of product differentiation. According to **Chamberlin**, the distinguishing feature of monopolistic competition which makes it a blending of both **competition** and **monopoly** is the differentiation of products. This means that various firms produce **not identical or homogeneous products, but differentiated products which are closely related to each other**. Thus, the various products are **close substitutes and not perfect substitutes to each other**. Product differentiation means that products are different in some ways, but not altogether so. In short, under monopolistic competition **the products of the various firms are similar but not identical or homogeneous**. Thus, for example, different brands of toilet soaps like Lux Rexona, Nirma, Cinthol different brands of toothpastes like Colgate Close-up, Promise, Babul etc. are some of the examples of product differentiation.

Methods of Product Differentiation:

A product may be differentiated in several ways:

- a) Characteristics of the product itself such as exclusive patented features, trade mark, trade name, etc. Similarly, special types of packing and wrapping, differences in quality, design, color or style of the product also bring about such differentiation.
- b) Product differentiation may exist with respect to the conditions surrounding the sale of the product. Thus. factors such as the convenience of the seller's location the general appearance of his shop or attractive display of the product, his way of doing business. his reputation for fair dealing courtesy, efficient handling of sales display of the product, his way of doing business. his reputation for fair dealing, courtesy, efficient handling of sales Price Determination Under Monopolistic Competition and all the personal links which create the attachment of the customers either to himself or to those employed by him. Likewise, offer of supplementary services to the customers like home-delivery of goods, guarantee of repairs and servicing, acceptance of sold goods, credit facilities etc. also bring about product differentiation.
- c) Product differentiation is also brought about through advertisement, salesmanship, publicity and propaganda. This is known as "sales promotion". These create real or imaginary differences in the minds of the customers about the different products and they differentiate the product of one firm from that of other firms.

(iii) Selling Costs:

Along with product differentiation, firms under monopolistic competition must undertake sales promotional activity. Expenditure on this activity is known as selling costs. Such costs are not necessary in perfect competition because of homogeneous products and perfect knowledge of the market; likewise, under monopoly, because of the existence of one firm and the non-availability of good or close substitutes for the product, selling costs are not necessary. But under monopolistic competition, as there are large number of firms and there is product differentiation, it becomes essential for the firms to incur selling costs. **These costs are incurred to alter the position or shape of the demand curve for a product.** Selling costs are incurred to persuade the buyers to buy a particular firm's product in preference to that of other firms. These costs include all media advertisements and publicity through radio, television, slides, press-publicity, hoardings, demonstrations, exhibition, displays, etc. It is interesting to study various ways of sales promotion by different producers of "similar" products like tooth pastes, washing powders, toilet soaps, talcum powders, etc.

(iv) Different Prices for Differentiated Products:

Under perfect competition there cannot prevail more than one price of the product. But under monopolistic competition, each firm produces a differentiated product and through repeated advertisements and publicity, each firm tries to create an impression on the minds of the customers that its product is superior to that of its rival firms. The differences may be real or imaginary, but the fact remains that consumers come to regard the product of one firm as superior to that of other firms. And when once this happens. **the firm gets a partially independent market for its product and can charge even a slightly higher price than that of its rivals.** That is why we find different prices prevailing for different brands of tooth pastes, washing powder, toilet soaps, talcum powder etc. The extent of this price differential depends on the degree of

product differentiation. If the consumers think that there is a high degree of product differentiation, differences in the price of the products will be large and if there is a less degree of product differentiation, price differences will be small.

(v) Control over Price:

In monopolistic competition because of product differentiation, each firm has a partially independent market and therefore it has some control over the price, which a firm in perfect competition does not have. Product differentiation, thus, attaches a group of buyers to the product of a particular firm irrespective of slight price differences. Under monopolistic competition, therefore, an individual firm can exercise some control over the price: it can charge a higher price without fear of losing all its customers. It is only when price differences are very large that the customers of one firm may be attracted towards other firms by the prospects of lower prices.

In short, an individual firm under monopolistic competition enjoys some sort of monopoly power. In that it has the power to fix the price, but at the same time it is also subject to the competition of differentiated products of the rival firms. Now, since each firm is monopolist at least in the restricted sense and yet has competitors. The situation is known as monopolistic competition.

(vi) Free Entry and Exit of Firms:

Under monopolistic competition, new firms can and do enter the industry without any restrictions whatsoever or existing firms may leave the industry as and when they like. Those firms which continue to incur losses leave the group in the long run, whereas existence of super normal profits attracts new firms in the group.

(vii) Concept of Group:

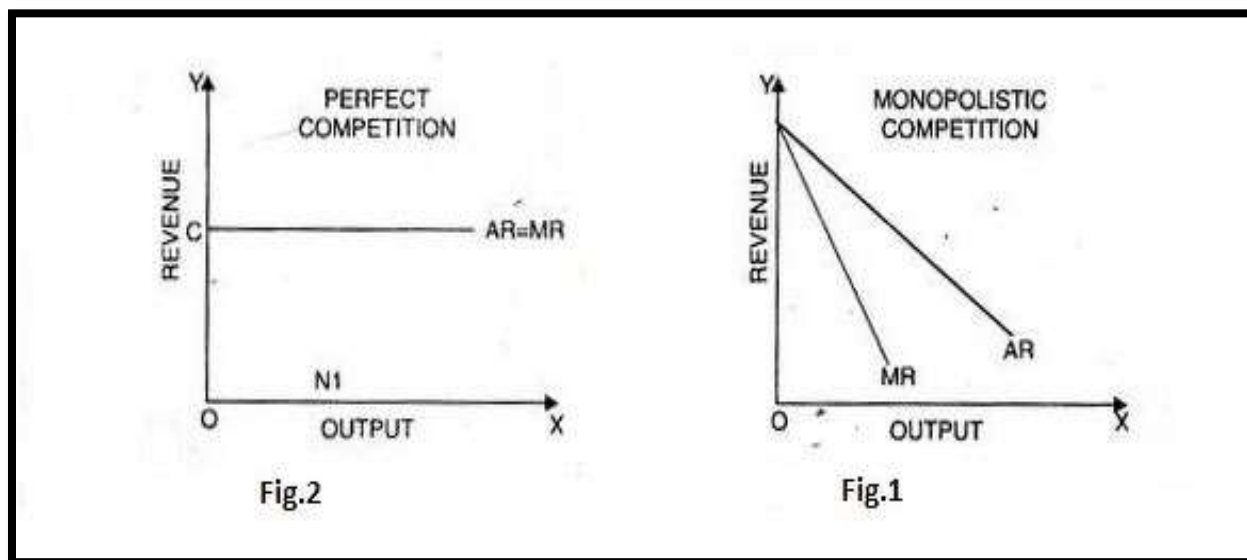
Professor Chamberlin has used the word "**group**" instead of industry. Industry refers to a number of firms producing homogeneous and identical products under perfect competition. Under monopolistic competition, as we have seen, different firms produce not identical products but **similar or differentiated** products which are close substitutes to each other. Professor Chamberlin, therefore, has used the concept of group to imply a collection of firms producing closely-related but not homogeneous products.

[2] Demand Curve of a Firm under Monopolistic Competition:

We have seen that the demand curve of firms working under Perfect competition is perfectly elastic. It is a straight line parallel to X-axis, which indicates that the firm can sell any number of units at the prevailing market price. It has not to lower the price in order to sell additional units.

But the demand curve of an individual firm under monopolistic competition is not a horizontal straight line parallel to X-axis, it is neither perfectly elastic as in perfect competition nor rigidly inelastic as in monopoly. The demand curve of a firm under monopolistic competition is less than perfectly elastic. This implies that the firm cannot sell any amount of the product at the current ruling price; If it wants to sell more, it must lower the price. Thus, the demand curve AR does not run parallel to X-axis: it is a downward sloping elastic MR curve to the right, though its downward slope is rather Output gradual. Whether the demand curve of a firm under monopolistic competition would be more elastic or less elastic

would depend upon the degree of product differentiation. If the degree of product differentiation is small, the demand curve would be more elastic: and if the degree of product differentiation is large, the demand curve would be less elastic. The marginal revenue curve of the firm would lie below the average revenue curve. The slope of both these curves would be gradual and slight. The average and marginal revenue curves do not coincide, nor do they run parallel to X-axis.



In the diagram, AR is the average revenue curve or the demand curve. It has a continuous downward slope throughout its length. MR is the marginal revenue curve which lies below the average revenue curve.

[3] Equilibrium of a Firm under Monopolistic Competition:

As in other market situations, the equilibrium of a firm under monopolistic competition is also attained at that point where marginal revenue is equal to marginal cost. However, in order to maximize profits, a firm under monopolistic competition has to consider three variables:

(i) Price of the product (ii) Nature of the product (iii) Advertising outlay (selling costs)

(i) Price of the Product:

We have seen that a firm under monopolistic competition exercises some control over price through product differentiation. It may raise the price of its product and still not lose all customers. Likewise, if it lowers the price of its product, it may attract some customers of the rival firms but cannot get all the customers. Thus, price-output adjustments become necessary for a firm under monopolistic competition. It must choose that price-output combination which gives maximum profits. Let it be remembered that a firm under perfect competition has no such price-output adjustment problems.

(i) Nature of the Product:

The total sales of a firm under monopolistic competition also depend upon the extent to which its product is different from the products. Here product variation refers to a change in the quality of product such as technical improvement or superiority, new design, use of superior materials etc. Besides prompt and courteous service and other facilities to the customers. As in price-output combination the firm will choose that type of product differentiation which will ensure

maximum profits Thus monopolistic competition involves not only the problem of price equilibrium but also the problem of equilibrium with product differentiation.

(iii) Advertising Outlay: (Selling Costs):

In monopolistic competition a firm tries to influence the volume of its sales by incurring advertising outlay or selling costs. This additional expenditure by the firm increases both its cost and the demand for its product. A firm therefore, has to adjust its advertising outlay and the demand for its product in such a way as to ensure maximum profits.

Monopolistic competition thus, involves the problems of price- equilibrium with product differentiation and equilibrium with selling costs.

[3.1] Equilibrium of a Firm under Monopolistic Competition in the short-run:

Equilibrium of a firm under monopolistic competition can be studied in the short run and in the long run. It is based on the following assumptions:

- a) There are many firms and each firm is having some monopoly power due to its product differentiation.
- b) Each firm has a demand curve average revenue curve) which is less than perfectly elastic.
- c) There is free entry and exit of firms (of course not in the short period).
- d) The short run cost curves of each firm differ from each other.

[3.1] Short-run Equilibrium of the Firm:

Prof Chamberlin, has used the word individual to connote short run equilibrium of a firm under monopolistic competition. Given the assumptions discussed above each firm will aim at that level of price output which gives it maximum profits. The equilibrium price and output of the firm in monopolistic competition will be determined at that point where its marginal cost is equal to its marginal revenue.

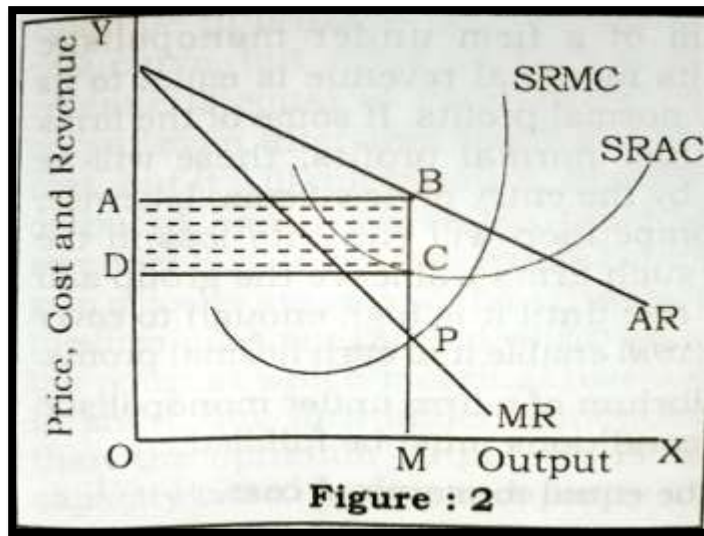
Another point to be noted is that in the short run equilibrium of a firm under monopolistic competition a firm may earn supernormal profits or it may incur losses or it may earn simply normal profits. Thus, for example, a firm in the short run may earn supernormal profits because other rival firms are not able to produce closely competitive substitutes, nor can new firms enter the group in the short period. Likewise, some of the firms may incur losses in the short run, but still, they will remain in business and continue production as long as they are able to cover whole of their variable costs and part of the fixed costs. Similarly, we can also conceive of a situation wherein the firm in the short run earns only normal profits. This would be clear from a study of the following diagrams:

(i) Individual Firm Earning Super Normal Profits in the Short-run:

In this diagram P shows the equilibrium point of the firm where short run marginal cost is equal to marginal revenue; and it produces AN output at OD price. The average revenue BM is greater than the average cost BC and which is indicated by the rectangle ABCD. This is the super normal profit which the firm earns in the short period. As said earlier, the reason for this is that in the short-run, other firms find it difficult to bring about closely similar products and the new firms do

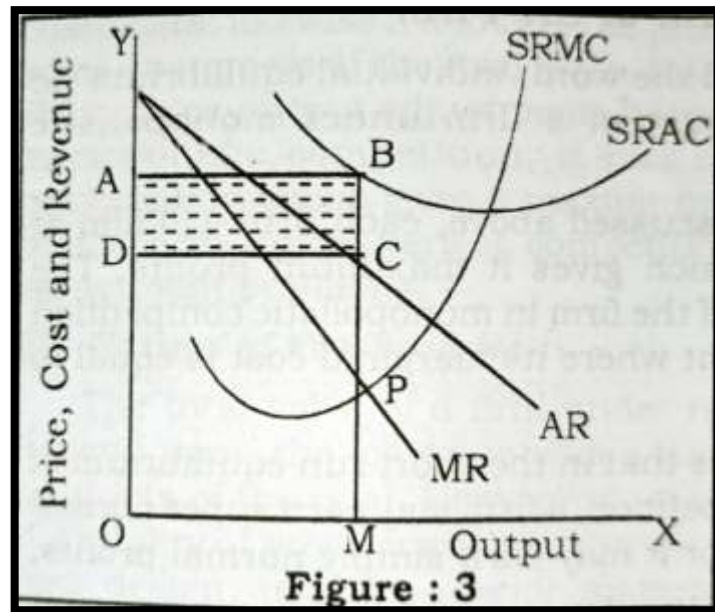
not enter the group in the short period.

However, it is not necessary that all firms in the industry must earn supernormal profits. Since, by assumption, the cost curves of the firms differ from each other some firms may be even incurring losses because of higher costs, while some others may be earning only normal profits.



(ii) Individual Firm Incurring Losses in the Short-run:

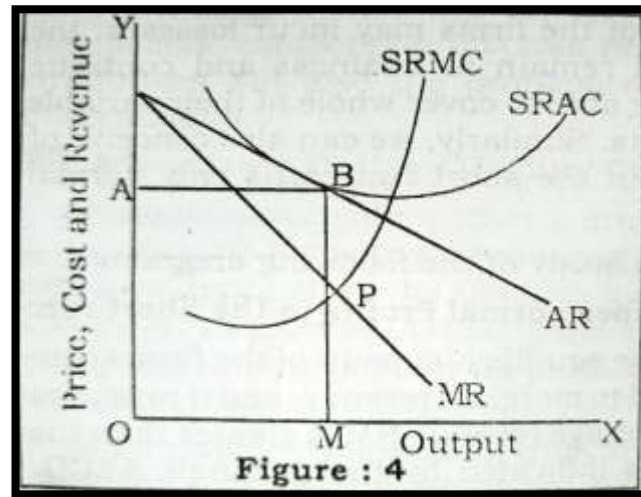
In this diagram at point P, the short-run marginal cost curve is equal to marginal revenue and the firm produces OM output at OD price. But as this price OD or CM is less than the short-run average cost at the equilibrium level of output, the firm incurs a loss of BC which is shown by the rectangle ABCD.



(iii) Individual firm earning only normal profit in the short-run:

In this diagram, at point P, the short-run marginal cost curve is equal to marginal revenue and the firm produces OM

output at OA price. The demand curve or the average revenue curve is a tangent to the short-run average cost curve at point B at the level of OM output. The firm, here, earns only normal profits.



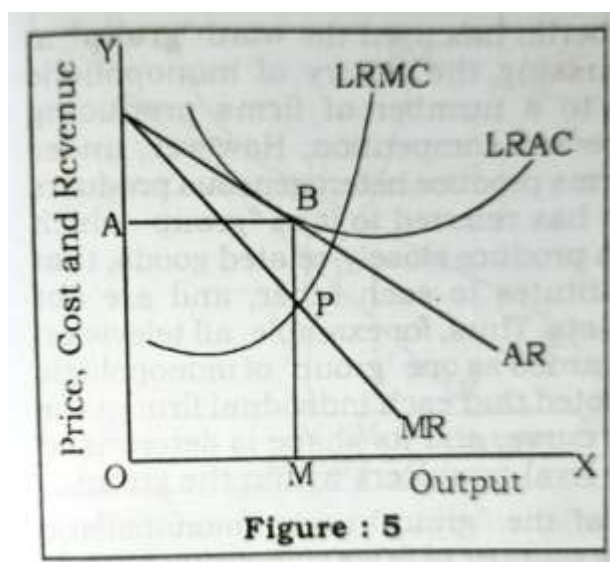
[3.2] long run equilibrium of the firm under monopolistic competition:

The long run equilibrium of a firm under monopolistic competition is attained when its marginal revenue is equal to its marginal cost and it earns only normal profits. If some of the firms in the group are earning supernormal profits, these will be competed away in the long run by the entry of new firms. Likewise, no firm under monopolistic competition will run into loss in the long run, because in that case such firms will leave the group and so the price of the product will rise until it is high enough to fully cover the average cost of the firm and enable it to earn normal profits.

Thus, in the long run equilibrium of a firm under monopolistic competition, the following two conditions must be fulfilled:

- a) Marginal revenue must be equal to marginal cost.
- b) Average revenue must be equal to average cost

This would be clear from the following diagram:



Marginal revenue and marginal cost are equal at point P and therefore OM is the equilibrium output OA or MB is the long run equilibrium price. The demand curve or the average revenue curve is a tangent to the long run average cost curve at point B, that is, at point B average X revenue is equal to average cost and therefore the firm earns only normal profits.

It should, however, be pointed out here that the long run equilibrium of a firm under monopolistic competition is similar to that of a firm under perfect competition in one respect, namely, in both these conditions, a firm can earn only normal profits in the long run. But then there is one important difference also. Under perfect competition, when the firm is in equilibrium, it is producing its output at the minimum average cost because the average revenue curve (demand curve) of the firm is a horizontal straight line parallel to X-axis. But in monopolistic competition, the firm does not produce its output at the minimum average cost. This is because the firm's average revenue curve (demand curve) is not a horizontal line but slopes downwards to the right and hence it is impossible for it to be a tangent to a give U-shaped average cost curve at its minimum point.

In other words, under monopolistic competition, equilibrium output is smaller than the optimum output. The firm does not continue to produce till the minimum or lowest point of average cost curve, but stops production at the point where its marginal revenue is equal to its marginal cost. The firm can produce the output even after this point and that too at the reduced average cost, but it will not produce, because in order to sell the additional output it has to lower the price as the demand curve (average revenue) is a downward sloping curve towards the right. Thus, the gain of lower average cost is offset by reduction in price and therefore the firm does not think it worthwhile to increase its output beyond the point at which marginal revenue and marginal cost are equal. In short, the firm under monopolistic competition produces less than the optimum output. Thus, there remains some unutilized capacity called excess capacity under monopolistic competition.

REVIEW EXERCISES 2

Q. 1. What is monopolistic competition? State its main features and explain the process of price determination in monopolistic competition.

Q. 2. What is meant by "group equilibrium"? How does a "firm" and "group" achieve an equilibrium position in

monopolistic competition?

Q.3. Examine the following statements:

- (a) Product differentiation and selling costs are important features of monopolistic competition.
- (b) In monopolistic competition, the firm is not of the optimum size.

Q.4. In order to earn maximum profits in monopolistic competition, would the firm prefer price-cutting or selling costs? Why?

Q.5. Write short notes on:

- (i) Features of monopolistic competition
- (ii) Product differentiation
- (ii) Group equilibrium

SHORT QUESTIONS WITH ANSWERS

Q. 1. State the main features of monopolistic competition. OR

Give the definition of monopolistic competition. State any four characteristics of monopolistic competition. OR (April, 2015, April, 2017)

The main features of monopolistic competition are as follows: 1) There are a large number of firms in monopolistic competition. Not so large as in perfect competition. 2) There is product differentiation. 3) There is the existence of selling costs. There are different prices for differentiated products. 4) The firm has some control over the price. 5) There is free entry and free exit of firms.

Q. 2. What is product differentiation? On what factors does it depend?

Product differentiation means various firms in monopolistic competition do not produce identical or homogeneous goods, but those which are close substitutes to each other. Its characteristics are different in some ways, but not altogether factors on which product differentiation depends are as follows: Characteristics of the product itself like exclusive patented feature, trade mark, trade name, etc. #Conditions surrounding the sale of the product, like convexity of the seller's location, his reputation for fair dealing. #Course of offer of supplementary services like home delivery of goods, acceptance of sold goods, credit facilities, etc. (Advertising and salesmanship, publicity, propaganda etc. known as sales promotion.

Q. 3. What is the nature of the demand curve of a firm under monopolistic competition? Why is it so?

The demand curve of a firm under monopolistic competition is neither perfectly elastic as in perfect competition nor is it rigidly inelastic as in monopoly. It is less than perfectly elastic which means that the firm cannot sell any amount of the product at the current ruling price: if it wants to sell more, it has to lower the price. Thus, the demand curve does not run parallel to X-axis; it is a downward sloping elastic curve to the right.

Q.4. Explain the difference between price competition and non-price competition.

When the firms enter into competition with each other by changing the price of their products. It is known as price competition. But when they compete by improving the quality of their products or through product differentiation or

through incurring selling costs, it is known as non-price competition.

Q.5. When do firms attain equilibrium under monopolistic competition in the short run?

In monopolistic competition, the firms attain equilibrium in the short run at that point where marginal cost is equal to marginal revenue. Besides, in the short run, the firm may earn supernormal profits or it may incur losses or it may earn only normal profits. The firm may be able to earn supernormal profits in the short-run, because other rival firms are not able to produce closely competitive substitutes, nor can new firms enter the "group" in the short period. Likewise, some of the firms incur losses in the short run, but they will remain in business and continue production as long as they are able to cover all of their variable costs and if possible, part of the fixed costs. The equilibrium position here will be of minimum losses. Similarly, we can also conceive of a situation where some firms in the short run are earning only normal profits.

Q. 6. What is meant by "group"? State the conditions of group equilibrium.

Prof. [Chamberlin](#) has used the word 'group' in place of industry while discussing the theory of monopolistic competition. Group refers to a collection of firms which produce closely-related goods, that is, goods which are close substitutes of each other. Thus, for example, all refrigerator manufacturing units may be regarded as a group of monopolistic competitors. The important conditions of long run equilibrium of group are as follows:

- (i) All firms in the group earn only normal profits.
- (ii) The size of the group remains the same: that is new firms have no incentive to enter the group and the existing firms have no reason to leave the group.
- (iii) The marginal cost and marginal revenue of each of the firms in the groups is equal. However, the average revenue or price is greater than marginal revenue
- (iv) Firms in the group do not produce up to the minimum average cost. They stop production at the point where marginal cost is equal to marginal revenue. The firms, therefore, are not of the optimum size: there is some unused capacity called excess capacity.

QUESTIONS ASKED AT THE VEER NARMAD SOUTH GUJARAT UNI. EXAMINATION

Q.1. State the features of monopolistic competition market. Explain the short-run and long-run equilibrium of a firm under monopolistic competition. **(October, 2011)**

Q.3. State the features of monopolistic competition. Explain how a firm under monopolistic competition attain equilibrium under the long run. **(October, 2012)**

Q. 4. Write a note on: (a) Product differentiation. **(October, 2013, April, 2017).**

(b) Features of monopolistic competition. **(October, 2013, October, 2015)**

Q.5. Write a short note on: Wastages under monopolistic competition. **(April, 2014, October, 2015)**

Q.6. Illustrate the equilibrium of a firm under monopolistic competition in the short run. **(October, 2015)**

[3.4] Pricing Under Oligopoly

Introduction:

The term "oligopoly" is derived from the Greek word "oligos" which means few and the latin word "polis" which means seller. Oligopoly, thus, refers to a situation where there are few sellers or few firms in the market and which produce either homogeneous products or products which are close substitutes to each other. It is also known as competition among the few."

Oligopoly is different from both perfect competition and monopoly. The number of firms in perfect competition as also in monopolistic competition is quite large and the size of each firm is small and therefore its behavior has no influence on the decisions of other firms in the market. In the case of monopoly, there is only one firm in the industry and therefore the question of reaction from other firms does not arise. In oligopoly, however, there are only a few of these firms every firm influences and is influenced by firms of large size which compete against each other and therefore. There is an element of interdependence in the decision making of the behavior of other firms. Oligopoly is generally found in such industries like automobiles, steel, cement, aluminum, petroleum products, etc.

[1] Characteristics of Oligopoly:

The main characteristics of oligopoly are as follows:

1. Few Firms (Sellers):

Oligopoly is a market-situation where there are few firms producing either homogeneous products or differentiated products. Sometimes, it is also referred to as "competition among the few." Because of the small number of firms, each firm accounts for a substantial part of the total output of the industry and hence its policies have a notable impact on the market. particularly on the price and the output.

2. Interdependence of Firms:

As said earlier, both in perfect competition and in monopoly. the question of interdependence of firms does not arise. This is because while in perfect competition there are a large number of firms of small size and each one produces a very small part of the total output of the industry, in a monopoly there is only one firm and so the question of interdependence does not arise.

But in oligopoly, however, there are only a few firms of large size and each firm accounts for a large part of the market demand and therefore, it is in a position to influence the price and output of the industry in a significant manner. Each firm, as such. has to take into account the action and reaction of its rival firms while deciding on its price and output policies. There is. therefore, a great deal of interdependence of firms under oligopoly. The price and output decisions of one firm are taken into consideration by other competing firms. The cross elasticity of demand is very high between the

products of the various oligopoly firms because the products are close substitutes and so there is always a fear of retaliation by rival firms to each other.

3. Importance of Advertising and Selling Costs:

Advertising and selling costs have a strategic importance to oligopoly firms. Given the high-cost elasticity of demand for products and price rigidity in oligopoly, the only way open to an oligopoly firm to increase its sales is by advertising or by improving the quality of its product. Various aggressive and defensive marketing techniques must be used by the firm to gain a larger share of the market or to survive. As Baumol has put it, "it is only under oligopoly that advertising comes fully into its own." He further adds, "under oligopoly, advertising can become a matter of life and death, where a firm fails to keep up with the advertising budget of its competitor. may find its customers drifting to rival products. This fact is amply borne out by the large-scale advertisements for products like automobiles, rubber tyre, electrical and electronic goods like T.V. Refrigerators, A.C. etc.

4. Indeterminate Demand Curve:

The demand curve of a firm working under oligopoly conditions is indeterminate, that is, it is not definite because it is difficult for the firm to predict the reactions of its rival firms pertaining to its price and output policy. Thus, no firm under oligopoly can be sure of the results of its price-output decisions. For example, it cannot say with any degree of certainty that if it reduces the price of its product say by 5 percent or increases its advertising outlay by 10 percent, what would be the effect on its sales. This is, because the rival firms may not reduce the price or reduce it to the same extent or they may also increase their advertising outlay. As such, the demand curve of the firm cannot be definite or determinate. What we generally find is that a firm under oligopoly may not have a single determinate demand curve, but rather it may have a "family of such curves", each curve being based on one possibility. (v) Presence of Monopoly Element:

In oligopoly, if the products are differentiated, the firms enjoy some sort of monopoly power as each product will have some loyal customers attached to it. In other words, product differentiation attaches a group of buyers to a particular firm irrespective of slight price differences. The firms in oligopoly, thus, get a partially independent market for their products, and thus enjoy the freedom to fix price and output at the desired level. Besides, when firms enter collusion with each other, they can work together to raise the price and earn some monopoly income.

5. Conflicting Attitudes of the Firms:

Another important feature of oligopoly is the existence of two conflicting attitudes on the part of the firms, one is that of cooperation and unified action and the other is that of conflict and antagonism. On the one hand, the rival firms realize the disadvantages of mutual competition and accordingly enter into a collusion and tacit agreement about price, output, and market. They work together to serve their common interest. It, thus, leads to monopoly within oligopoly. On the other hand, the desire of each firm to earn maximum profit tends to create conflict and antagonism enjoying the rival firms. These conflicting attitudes of firms under oligopoly create an atmosphere of uncertainty and makes it difficult to predict any regular pattern of pricing behavior in such markets. (i) Price Rigidity:

Under oligopoly, prices tend to be sticky or rigid. If any firm resorts to price-cutting, it will attract the customers of the

rival firms. The rival firms, therefore, will retaliate by cutting down their prices. This will result in a price-war which will not benefit any firm. Hence a firm under oligopoly will not take recourse to price-cut. On the other hand, if any firm increases its price to earn more profits, the rival firms will not follow it and so the firm which has raised the price may find itself out of the market. Hence, firms under oligopoly have no tendency to change the price.

[2] Price Determination Under Oligopoly:

Due to the indeterminate nature of the demand curve under oligopoly as also because of the conflicting attitudes of the firms. There is no single and simple solution to the problem of price determination under oligopoly. There are many possible solutions of which the main ones are as follows:

1. Kinked-demand curve model.

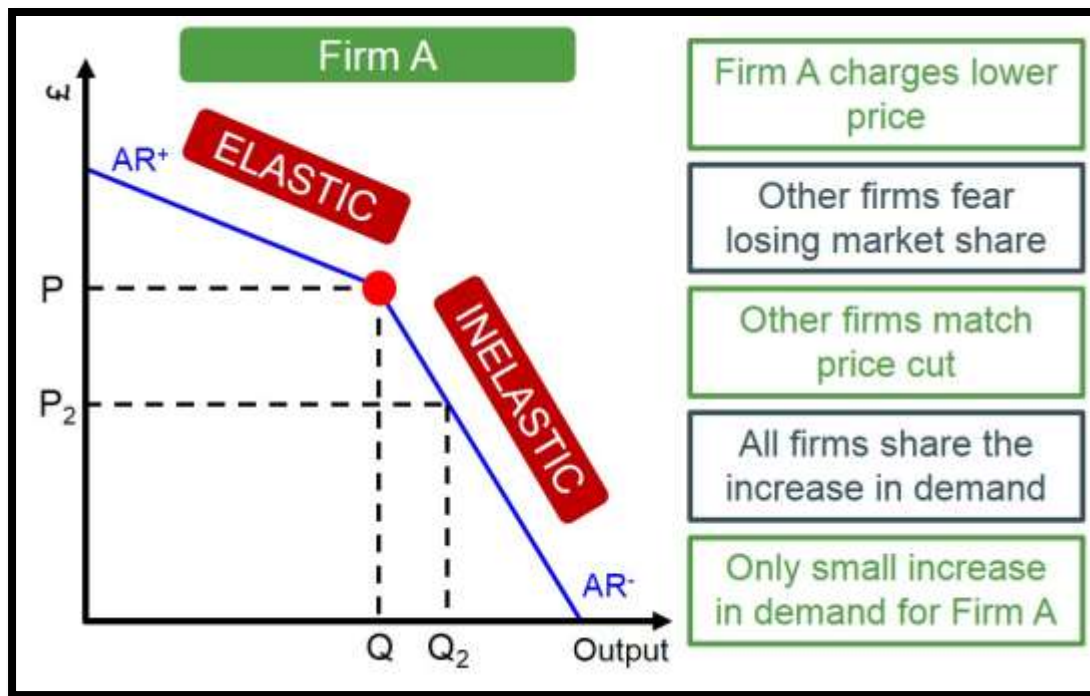
2. Price leadership model

(1) Kinked - demand curve model

The kinked demand curve model was first used by Paul M. Sweezy in 1939 in his article "Demand Under Conditions of Oligopoly" to explain price rigidity under conditions of oligopoly. The assumption behind the theory of kinked demand is that each firm under oligopoly will act and react in a way that keeps conditions tolerable for all the firms in the industry. The kinked demand curve represents the pattern of business behavior of a firm which has no incentive either to lower or to raise its price. The firm believes that if it lowers the price of its product, the rival firms will also react and lower their price; on the other hand if it raises the price, the rivals will not follow suit. The oligopoly firm, therefore, has every incentive to hold prices where they are. Reduction in prices would be matched quickly by the rivals and so nobody would gain, while increased prices would not be matched by the rivals and so the firm which has raised the price would lose.

In other words, under conditions of oligopoly, the firm finds that when it raises the price, its rivals do not follow it, but when it reduces its price, the rivals immediately follow it. The firm, therefore, prefers to stick to the existing price.

Paul Sweezy in 1939 introduced a theory of pricing in oligopolistic industries which is based on the concept of a kinked demand curve. An oligopoly firm faces a kinked demand curve on the assumption that if it decides to raise its price, its rivals will not raise their prices, but if it lowers its price, they will definitely react to its action and will lower their prices. The kink in the demand curve indicates stickiness of prices. At this kink, prices are sticky which shows that price reduction by a firm is followed by its rivals, but price increase is not. The firm, therefore, will not like to move away from this kink. This will be clear from the following diagram:



It will be seen from this diagram that the kinked demand curve ABC is made up of two segments which are separated at the price that has been established in the industry. The demand segment corresponding to lower prices is less elastic than the demand segment corresponding to higher prices. The reason is that price reduction by the firm is followed by its rivals, while price increase is not followed by the rival firms.

Thus, for example, the above diagram shows a kinked demand curve that may be faced by a firm in an oligopolistic industry. The original price is OD where the sales are equal to ON. Now, if the firm raises the prices from OD to OE, but as other rival firms do not follow this price rise, the sales are reduced from ON to OM. Thus, the AB part of the demand curve appears more elastic. Conversely, if the firm reduces its price from OD to OF, but as other rival firms also follow this price reduction, there is only a slight increase in sales from ON to OP. Hence, the BC part of the demand curve appears less elastic.

Price Leadership Model:

Price leadership model explains the upward adjustment of prices in oligopoly markets. Under this model, one of the oligopoly firms acts as price leader which determines and fixes the price and this price is accepted by all other firms in the industry. The firm taking the leadership in fixing a higher price willingly takes the risk of being the first to adjust its price and it expects other firms to follow it. If the firm taking the leadership reduces its price, it expects other firms also to reduce their prices.

In short, price leadership is said to exist when firms fix their prices in accordance with the price charged by one of the firms in the industry. The firm which takes the initiative in announcing its price changes is called the "price leader." All other firms in the industry for are termed as price followers. Thus, for example. General Motors is considered the price leader of the American Car Industry.

[4.1] Types of Price Leadership: Price Leadership mainly is of three types:

(i) The Barometric Price Leadership:

In barometric price leadership, all firms agree to follow the price changes made by a firm which is supposed to have a good knowledge of the market conditions and thus can forecast future happenings in the market better than others. Thus, an experienced firm which possesses an ability to accurately predict demand conditions and knowledge of market supply, takes leadership in fixing the price. The firm chosen as leader in this manner is a kind of barometer which reflects the changes in the market. The barometric firm is not necessarily a low cost or a large firm. Generally, a firm which has earned the reputation of a good forecaster is assigned the role of a leader and other firms in the industry follow it.

(ii) The Dominant Firm Price Leadership:

The dominant firm is a relatively large firm in the sense that it accounts for a very part of the market output. Other firms are small in comparison and as such accept the price leadership of the dominant firm. These small firms are unwilling to take the risk of being the first to make any change in price or are under fear that they may be driven out of the industry by the dominant firm. In other words, the dominant firm sets from its own point of view a profit maximizing price and allows the small firms to sell all they wish at that price. The small firms are merely price-takers; they accept the price fixed by the dominant firm and adjust their output to get maximum profit. The dominant

firm fully knows that the small firms will follow its price and therefore it chooses that price where it can itself earn maximize profits.

(iii) The Low-Cost Price Leadership:

In the oligopoly market sometimes the price is set by the most efficient or the low cost firm, and although other firms are not in a position to maximize their profits at this price, yet they have no choice but to accept it. This is known as price leadership by the low cost firm. In other words, when one firm has a substantial cost advantage over the other firms, it assumes the role of a price leader. If other firms try to wage a price-war and fix their prices at a still lower level, they will lose the battle and go bankrupt because their average cost is much higher than that of the leader firm. They, therefore, choose to become price-followers.

SHORT QUESTIONS WITH ANSWERS

9. 1. Give the definition of oligopoly.

Oligopoly refers to a situation where there are few sellers or few firms in the market and which produce either homogeneous or products which are close substitutes to each other. It is also known as "competition among the few". Here each firm influences and is influenced by the behavior of other firms. Each firm accounts for a substantial part of the total output of the industry.

9.2. State the main features of oligopoly.

- 1) In oligopoly there are a few firms which produce either homogeneous products or differentiated products.
- 2) Because of the small number of firms, each firm accounts for a substantial part of the total output of the industry and so its policies have a notable impact on the market.
- 3) There is interdependence of firms in oligopoly. The price and output decisions of one firm are considered by other firms.
- 4) Advertising and selling costs have a strategic importance in oligopoly.
- 5) The demand curve of a firm under oligopoly is indeterminate.
- 6) There is the presence of a monopoly element.
- 7) There is a conflicting attitude of firms, one of mutual cooperation and another of conflict.
- 8) Prices tend to be sticky or rigid in oligopoly.
- 9) Firms in the oligopoly market have a kinked demand curve.

9. 3. What is price leadership? State its main conditions.(April, 2012)

Price leadership is said to exist when firms fix their prices in accordance with the price charged by one of the firms in the industry. The firm which takes the initiative in announcing its price changes is called the price leader and other firms as price followers. The following are the main essential conditions for price leadership:

- (i) Low production cost and adequate financial resources.
- (ii) Substantial share of the market.
- (iii) Reputation for sound pricing decisions.
- (iv) Initiative.
- (v) Aggressive pricing policy.

QUESTIONS ASKED AT THE VEER NARMAD SOUTH GUJARAT UNI. EXAMINATIONS:

- 1 Explain the kinked demand curve model of oligopoly market. (April, 2012, October, 2016)
- 2 **Write a short note on:**
 - (i) Price Leadership. October, 2011, April, 2013, October, 2012, April, 2014
 - (ii) Kinked demand curve. October, 2012, October, 2013, April, 2016

- 3 State the features of an oligopoly market. Explain the kinked demand curve model with the help of a diagram.(April, 2013)
- 4 What is oligopoly? Explain how price and output decisions are taken under conditions of oligopoly. (Oct., 2013)
- 5 State the characteristics of oligopoly market.(October, 2014)
- 6 Explain price rigidity under oligopoly in terms of kinked demand curve.

4.1 NATIONAL INCOME

Content

Meaning and Definitions Basic Concept of National Income: Gross National Product (GNP) Gross Domestic Product (GDP) - Net National Product (NNP) - Personal Income (PI) - Disposable Income (DI).

Methods of Measuring National Income: Census of Product Method or Output Method or Commodity Service Method - Census of Income Method or Factor Cost Method-Census of Expenditure Method or Total Outlay Method.

Circular Flow of Economic Activity: Four Sector Model.

Meaning of National Income:

National income is the money value of all the final goods and services produced in the country during a specific period of time. We know that in an economy different types of goods and services are produced but it is not possible to physically add them.

Thus, for example, food grains are measured in kilograms and quintals, milk is measured in litres, and cloths is measured in metres. Besides, there are different types of services rendered such as those doctors, lawyers, teachers, artists etc. However, national income cannot be stated as so many million tonnes of food grains, so many million litres of milk, so many million metres of cloth etc. Therefore, these goods and services are measured in terms of money. **The value of different goods and services produced during a given year is found out or represented in terms of money and added together to find the value of national income or national output.**

According to Marshall: "The labour and capital of a country, acting on its natural resources, produce annually a certain net aggregate of commodities, material and immaterial, including services of all kinds. This is the true net annual income, or revenue of the country, or the national dividend."

According to Pigou: National income is that part of the objective income of the community, including income from abroad, which can be measured in money.

CONCEPT OF NATIONAL INCOME:

1. Gross Domestic Product (GDP):

Gross Domestic Product (GDP) measures the total monetary value of all **final goods and services** produced within a country's **borders**, regardless of whether the producer is a national or foreign entity.

Types of GDP:

- **Nominal GDP:** Calculated at current market prices, without adjusting for inflation. It reflects the actual prices people pay for goods and services at the time.

- **Real GDP:** Adjusted for inflation, Real GDP reflects the true value of goods and services in constant prices, making it a better indicator for comparing economic performance over time.

Components of GDP:

- **Consumption:** Spending by households on goods and services (e.g., groceries, cars, healthcare).
- **Investment:** Spending on capital goods that will be used for future production (e.g., factories, machinery).
- **Government Spending:** Expenditures by the government on goods and services (e.g., infrastructure, defence).
- **Net Exports:** Exports minus imports. It shows the value of goods a country exports versus what it imports.

Example:

If a car is produced in the U.S., its value is included in U.S. GDP. It doesn't matter if a foreign company manufactured the car, as long as production happened within U.S. borders.

Formula:

$$\text{GDP} = C + I + G + (X - M)$$

Where:

- C = Consumption
- I = Investment
- G = Government Spending
- X = Exports
- M = Imports

2. Gross National Product (GNP):

Gross National Product (GNP) measures the total economic output produced by the **nationals (residents)** of a country, both within the country and abroad, over a specific period, typically a year.

Components of GNP:

- **Domestic Production:** Goods and services produced within the country by its residents.
- **Income from Abroad:** Income earned by nationals from investments, businesses, or employment outside the country.
- **Exclusion of Foreigners' Income:** It **excludes** income generated by foreign nationals or companies inside the country.

Example:

Suppose a U.S. citizen owns a factory in Mexico, and that factory generates income. That income will be counted in the U.S.'s GNP but not in its GDP (since the production took place outside the U.S.). Similarly, if a foreign company operates in the U.S., its income won't be counted in GNP but is included in GDP.

Formula:

$$\text{GNP} = \text{GDP} + \text{Net Income from Abroad}$$

Where "Net Income from Abroad" is the difference between income earned by nationals abroad and income earned by foreigners domestically.

3. Net National Product (NNP):

Net National Product (NNP) is derived from **GNP** by subtracting **depreciation** (also called capital consumption), which represents the wear and tear on machinery, buildings, and other fixed assets used in production.

Why Deduct Depreciation?

Depreciation reflects the loss of value over time of the economy's stock of capital. It recognizes that machinery, equipment, and infrastructure wear out or become obsolete. Thus, NNP gives a more accurate picture of an economy's "net" production—what remains after maintaining and replacing worn-out assets.

Example:

If a country's GNP is \$2 trillion but \$200 billion is spent on repairing or replacing capital goods (depreciation), the NNP would be \$1.8 trillion.

Formula:

$$\text{NNP} = \text{GNP} - \text{Depreciation}$$

4. Personal Income (PI):

Personal Income (PI) represents the total income received by individuals in a country before taxes. It includes not just the wages and salaries earned from employment but also other forms of income like rent, dividends, and transfer payments.

Components of PI:

- **Wages and Salaries:** The income from employment.
- **Interest and Dividends:** Income from financial investments like stocks and bonds.
- **Rents:** Income from leasing property or land.
- **Transfer Payments:** Payments individuals receive from the government or other sources that are not related to current production (e.g., pensions, unemployment benefits, social security).

Personal Income vs. National Income:

- **National Income** is the total income earned by factors of production (land, labour, capital, and entrepreneurship) from producing goods and services.
- **Personal Income** also includes **transfer payments** (e.g., pensions, unemployment benefits), but **excludes corporate profits not distributed as dividends**.

Example:

If a person receives a salary, dividends from stock ownership, rental income from property, and unemployment benefits, all these will be added together to calculate their personal income.

5. Disposable Income (DI):

Disposable Income (DI) is the amount of personal income left after individuals pay personal taxes. It represents the money available to individuals for **spending or saving**.

Importance of DI:

Disposable income is a crucial factor in determining the level of **consumer spending** in an economy. It reflects the amount households have to spend on goods and services or to save for the future.

Example:

If an individual earns \$50,000 in personal income but pays \$10,000 in personal taxes, their disposable income would be \$40,000. This \$40,000 is available for the individual to spend on living expenses, luxuries, or save for future use.

Formula:

$DI = PI - \text{Personal Taxes}$

Summary:

- **GNP:** Measures the total production by a country's nationals, including income from abroad.
- **GDP:** Measures total production within a country's borders, regardless of who produces it.
- **NNP:** Net value of GNP after accounting for depreciation of capital goods.
- **PI:** The total income received by individuals, including wages, rents, dividends, and transfer payments.
- **DI:** The portion of personal income left after taxes, available for consumption and savings

Methods of measuring National Income

National income represents the total value of goods and services produced by an economy over a given period. Measuring national income is essential to gauge a country's economic performance and guide policy decisions. The three main methods to measure national income are the **Income Method**, **Expenditure Method**, and **Production Method**. Below is a detailed explanation of each method, with examples in Indian Rupees (INR).

1. Census of Income Method or Factor Cost Method

The **Income Method** calculates national income by summing up all the incomes earned by individuals and businesses in a country. These incomes come from wages, rent, interest, and profits, which are the rewards for the four factors of production: labour, land, capital, and entrepreneurship.

Components of Income Method:

1. **Wages and Salaries:** Income earned by employees and workers.
2. **Rent:** Income earned from the use of land or property.
3. **Interest:** Income from capital investments, such as savings and loans.
4. **Profits:** Income earned by business owners after paying costs.
5. **Net Factor Income from Abroad (NFIA):** The difference between income received from abroad and income paid abroad.

Formula:

National Income (NI) = Wages + Rent + Interest + Profits + Net Factor Income from Abroad.

Example:

Suppose an economy has three sectors: **agriculture, manufacturing, and services**. The income earned in each sector is as follows:

- **Agriculture Sector:**
 - Wages: ₹500 crore.
 - Rent: ₹100 crore.
 - Interest: ₹50 crore.
 - Profits: ₹70 crore.
- **Manufacturing Sector:**
 - Wages: ₹700 crore.
 - Rent: ₹150 crore.
 - Interest: ₹100 crore.
 - Profits: ₹200 crore.
- **Services Sector:**
 - Wages: ₹1,000 crore.
 - Rent: ₹200 crore.
 - Interest: ₹150 crore.
 - Profits: ₹300 crore.

Net Factor Income from Abroad (NFIA): Assume the income received from abroad is ₹200 crore, and the income paid abroad is ₹100 crore, so **Net Factor Income = ₹100 crore.**

National Income Calculation:

National Income (NI) = Wages + Rent + Interest + Profits + Net Factor Income from Abroad.

$NI = (500+700+1000) + (100+150+200) + (50+100+150) + (70+200+300) + 100$

$NI = 2200 + 450 + 300 + 570 + 100 = 3620$ crore.

Thus, the **national income** using the Income Method is **₹3,620 crore.**

Advantages:

- Provides a clear view of how income is distributed across the economy.
- Helps to assess income inequality.

Limitations:

- Hard to capture all informal sector incomes.
- Small businesses and self-employed individuals may underreport their income.

2. Census of Expenditure Method or Total Outlay Method:

The **Expenditure Method** measures national income by adding all expenditures made on final goods and services produced within the country. This method assumes that income earned in the economy is eventually spent on goods and services.

Components of Expenditure Method:

1. **Consumption (C):** Household spending on goods and services (e.g., food, healthcare, housing).
2. **Investment (I):** Business spending on capital goods (e.g., machinery, equipment, infrastructure).
3. **Government Expenditure (G):** Government spending on services, defense, education, and infrastructure.
4. **Net Exports (X - M):** The difference between the value of exports and imports.

Formula:

National Income (NI) = $C+I+G+(X-M)$

Example:

In an economy, the following expenditures are made:

- **Consumption (C):** ₹3,000 crore.
- **Investment (I):** ₹1,500 crore.
- **Government Expenditure (G):** ₹2,000 crore.
- **Net Exports (X - M):** Exports are ₹1,000 crore, and imports are ₹800 crore, so **Net Exports = ₹200 crore.**

National Income Calculation:

$$\text{National Income (NI)} = C + I + G + (X - M)$$

$$\text{NI} = 3000 + 1500 + 2000 + (1000 - 800) = 6700 \text{ crore}$$

Thus, the **national income** using the Expenditure Method is **₹6,700 crore**.

Advantages:

- Provides insight into the structure of spending in the economy.
- Useful for understanding the impact of fiscal policies and consumer behavior.

Limitations:

- Expenditure data can be difficult to track in an informal economy.
- Investments in the informal sector may be underreported.

3. Production or Output Method or Commodity Service Method:

The **Production Method** (or **Value-Added Method**) calculates national income by measuring the total value of goods and services produced in the economy. This method subtracts the value of intermediate goods used in production to avoid double-counting.

Components of Production Method:

- **Primary Sector:** Includes agriculture, mining, and forestry.
- **Secondary Sector:** Includes manufacturing and construction.
- **Tertiary Sector:** Includes services like banking, education, and retail.

Formula:

$$\text{National Income (NI)} = \text{Gross Value of Output} - \text{Value of Intermediate Goods}$$

Example:

Consider the economy with three sectors: **agriculture, manufacturing, and services**. The output and intermediate consumption in each sector are as follows:

- **Agriculture Sector:**
 - Total output: **₹1,000 crore**.
 - Intermediate consumption (e.g., seeds, fertilizers): **₹300 crore**.
 - **Value Added:** $1000 - 300 = 700$ crore
- **Manufacturing Sector:**
 - Total output: **₹2,000 crore**.
 - Intermediate consumption (e.g., raw materials, components): **₹800 crore**.
 - **Value Added:** $2000 - 800 = 1200$ crore
- **Services Sector:**
 - Total output: **₹3,000 crore**.

- Intermediate consumption (e.g., utilities, office supplies): **₹1,000 crore.**
- **Value Added:** $3000 - 1000 = 2000$ crore

National Income Calculation:

National Income (NI) = Value Added in Agriculture + Value Added in Manufacturing + Value Added in Services

NI = $700 + 1200 + 2000 = 3900$ crore

Thus, the **national income** using the Production Method is **₹3,900 crore.**

Advantages:

- Avoids double counting by focusing on value added at each stage of production.
- Useful for understanding which sectors contribute most to the economy.

Limitations:

- Difficult to measure value-added in informal sectors.
- Complex to gather accurate data across diverse industries, particularly services.

Comparison of Methods

Method	National Income (in ₹ crore)
Income Method	₹3,620 crore
Expenditure Method	₹6,700 crore
Production Method	₹3,900 crore

Conclusion

The **Income Method**, **Expenditure Method**, and **Production Method** offer different approaches to measuring national income. While the **Income Method** focuses on the income earned by the factors of production, the **Expenditure Method** examines how income is spent. The **Production Method** looks at the value added during the production process.

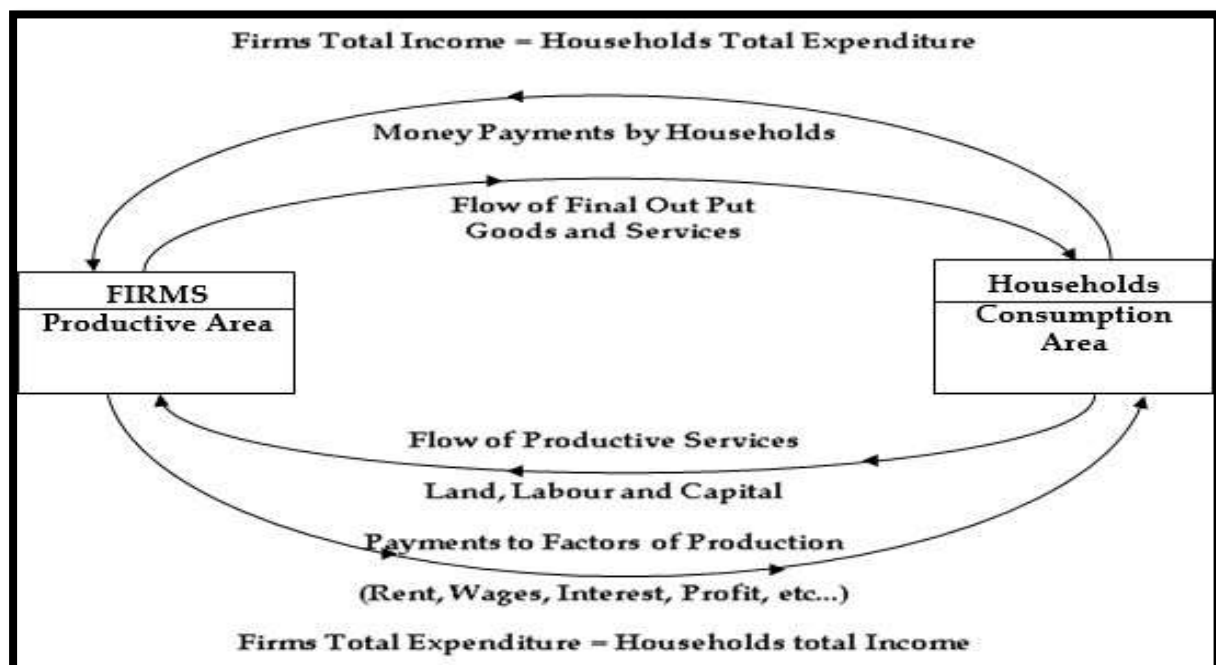
Although each method approaches national income measurement differently, they aim to provide an estimate of a country's total economic activity. Ideally, all three methods should give a similar figure for national income, but differences may arise due to data limitations, tax adjustments, and informal sector activities.

Circular Flow of Economy Models

1. Two Sector Circular Flow of Economy Model

- The circular flow of income/ economic activity is based on the concept that production creates income, which leads to spending which in turn, results in production. Thus, circle is completed. The economy is made up of two sectors – the business sector and household sector. The business sector is made up of firms while household sector is made up of consumers.
- The firms purchase or hire the services of the factors of production from households.
- The household sell their productive services as factor of production to the firms. In return for their services the firms pay wages, interest, and profits to the household. The firms then use factor services to produce goods, which are sold to the household; the household spend their earned income to buy goods and services produced by the firm. In this way money flows from firm to households and from households to the firms.
- Thus, income leads to expenditure, expenditure creates demand for goods. This demand in turn leads to production. In this way, the flow is from production to income generation, from income generation to expenditure and from expenditure to production.
- National income is therefore, the total flow of wealth produced, distributed and consumed by the economy as a whole during the course of a year.
- This can be made clear with the help of the following diagram.

Diagram of Flow of National Income:



2. Four Sector Circular Flow of Economy Model

The **Four Sector Circular Flow of Economy Model** is an extension of the basic circular flow model that incorporates four key sectors of the economy: households, businesses, government, and the foreign sector. This model illustrates how money flows through these sectors and highlights the interdependence of different economic agents.

Key Sectors in the Four Sector Circular Flow Model

1. **Households:** This sector consists of individuals and families who provide labour to businesses in exchange for wages. Households consume goods and services produced by businesses and receive income in the form of wages, rent, interest, and profits.
2. **Businesses:** This sector includes firms that produce goods and services. Businesses hire labour from households and use capital and resources to create products. They sell these goods and services to households, the government, and foreign markets.
3. **Government:** The government collects taxes from households and businesses and uses these funds to provide public goods and services, such as education, healthcare, and infrastructure. The government also injects money back into the economy through public spending.
4. **Foreign Sector:** This sector includes all economic interactions with other countries. It encompasses exports (goods and services sold to other countries) and imports (goods and services purchased from other countries). The foreign sector influences domestic income and consumption patterns.

Circular Flow of Income

The circular flow model illustrates the continuous movement of money and resources between these sectors. Here's how it works:

1. **Income Generation:**
 - Households provide labour to businesses and receive wages (income).
 - Businesses generate revenue from selling goods and services to households, the government, and the foreign sector.
2. **Consumption Expenditure:**
 - Households spend their income on goods and services produced by businesses. This spending is a crucial component of the overall economy.
 - Government purchases goods and services from businesses (e.g., infrastructure projects) and provides public services to households.
3. **Taxation and Government Spending:**
 - The government collects taxes from households and businesses. This revenue is used for public expenditure, creating a flow of funds back into the economy.
 - Government spending on public goods and services increases overall demand in the economy.
4. **International Trade:**
 - The foreign sector introduces exports and imports. When households or businesses buy imported goods, money flows out of the domestic economy. Conversely, when goods are exported, money flows into the economy.

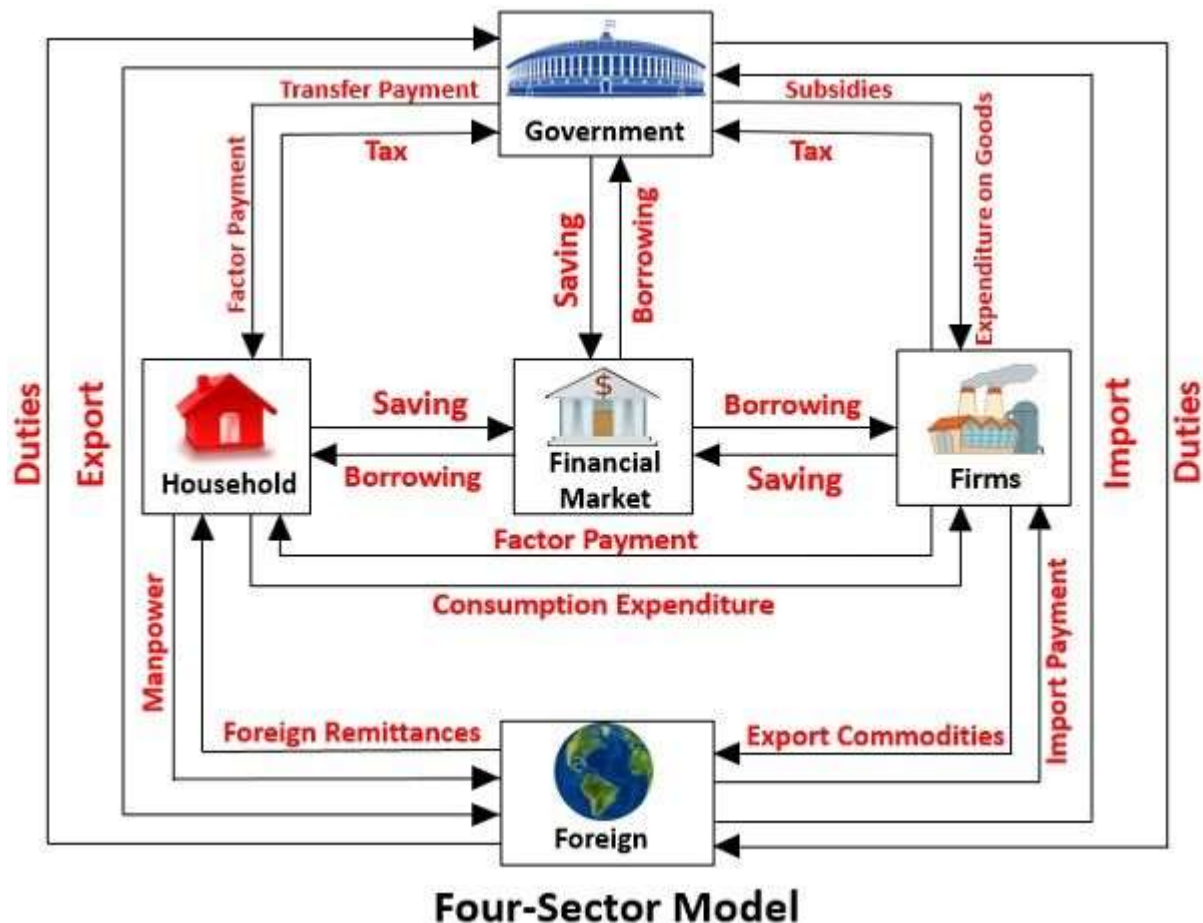
Visualization of the Model

The circular flow can be visualized as follows:

- **Households** → Provide labour → **Businesses**
- **Businesses** → Provide goods/services → **Households**
- **Households** → Pay taxes → **Government**
- **Government** → Provides public goods/services → **Households**
- **Households and Businesses** → Engage in trade → **Foreign Sector**
- **Foreign Sector** → Exports → **Businesses**
- **Businesses** → Imports → **Households**

Flow of Money

1. **Wages and Income:** Money flows from businesses to households as wages.
2. **Consumption Expenditure:** Money flows from households to businesses in exchange for goods and services.
3. **Taxes:** Money flows from households and businesses to the government in the form of taxes.
4. **Government Spending:** Money flows from the government to businesses and households for goods and services.
5. **Exports and Imports:** Money flows between the domestic economy and the foreign sector through trade.



A Brief Introduction of Indian Economy: Pre and Post-Independence

Introduction

The Indian economy refers to the system through which resources are produced, distributed, and consumed in India. The structure of the Indian economy has changed significantly over time. Before independence, the economy was shaped by British colonial policies that led to exploitation and underdevelopment. After independence in 1947, India adopted planned economic development to rebuild the nation and achieve economic growth and social justice.

Indian Economy before Independence (Pre-1947)

1.1 Nature of the Pre-Independence Economy

Before independence, the Indian economy was primarily underdeveloped and stagnant. It was structured to serve the interests of the British Empire rather than the needs of the Indian population. Economic activities were largely traditional and unorganized.

- Colonial and exploitative economic structure
- Low per capita income
- Limited industrial and technological development

1.2 Agriculture Sector

Agriculture was the backbone of the Indian economy during the pre-independence period. A large proportion of the population depended on agriculture for livelihood, but productivity remained very low due to outdated techniques and lack of investment.

- About 70–75% population dependent on agriculture
- Use of traditional tools and methods
- Heavy dependence on monsoon rainfall
- Frequent food shortages and famines

1.3 Industrial Sector

Industrial development was very limited during British rule. Traditional cottage and handicraft industries declined due to competition from cheap British manufactured goods. Modern industries existed but were insufficient to support economic growth.

- Decline of handicrafts and cottage industries
- Limited modern industries like cotton and jute
- Lack of capital and government support

1.4 Foreign Trade

India's foreign trade was controlled by the British government. India exported raw materials and imported finished goods, which benefited British industries. Though India often had a trade surplus, it did not benefit the Indian economy.

- Export of raw materials such as cotton and jute
- Import of manufactured goods from Britain
- Drain of wealth from India to Britain

1.5 Infrastructure

Infrastructure development during British rule was aimed at strengthening colonial administration rather than economic development. Railways, roads, and ports were developed mainly for transporting raw

materials.

- Development of railways and ports for British interests
- Limited connectivity for internal trade
- Poor social infrastructure like education and health

1.6 Poverty and Unemployment

Widespread poverty and unemployment were major features of the pre-independence economy. Due to low income and lack of industrial opportunities, people suffered from poor living standards.

- High poverty levels
- Large-scale unemployment and underemployment
- Poor standard of living

Indian Economy after Independence (Post-1947)

1.7 Economic Challenges after Independence

At the time of independence, India faced several economic challenges such as poverty, illiteracy, food shortages, and lack of industrial development. The government took responsibility for economic planning to overcome these problems.

- Low national income
- Poor infrastructure
- High population pressure

1.8 Objectives of Economic Planning

India adopted centralized economic planning through Five-Year Plans to promote economic growth and development. These plans focused on long-term national objectives rather than short-term profits.

- Economic growth
- Self-reliance
- Reduction of poverty
- Social justice and equality

1.9 Agricultural Development

After independence, several reforms were introduced to improve agricultural productivity. Special emphasis was given to irrigation, use of modern inputs, and land reforms.

- Land reforms and abolition of zamindari system
- Expansion of irrigation facilities
- Green Revolution increased food grain production

1.10 Industrial Development

Industrialization was considered essential for economic growth. The government focused on developing heavy and basic industries through the public sector.

- Growth of public sector undertakings (PSUs)
- Development of steel, power, coal, and machinery industries
- Increase in employment opportunities

1.11 Economic Reforms of 1991

In 1991, India introduced economic reforms to overcome economic crisis and improve efficiency. These reforms are known as Liberalization, Privatization, and Globalization (LPG).

- Reduction in government controls
- Encouragement to private and foreign investment

- Integration with the global economy

1.12 Growth of Service Sector

The service sector emerged as the largest contributor to India's GDP after economic reforms.

Rapid growth was seen in information technology and financial services.

- Expansion of IT and software services
- Growth of banking, insurance, and telecom
- Increased employment in services

1.13 Improvement in Social Indicators

Post-independence economic development led to improvements in social conditions. Though challenges remain, progress has been made in education, health, and poverty reduction.

- Increase in literacy rate
- Improvement in healthcare facilities
- Decline in poverty levels

Current Challenges Facing the Indian Economy

Introduction

The Indian economy has shown significant growth over the past few decades; however, it continues to face several structural and emerging challenges. Rapid population growth, globalization, technological change, and environmental concerns have created new economic pressures. Addressing these challenges is essential for achieving inclusive and sustainable economic development.

- India is a fast-growing developing economy
- Economic growth is accompanied by social and structural challenges
- Effective policy intervention is required for long-term stability

1. Human Capital Formation

Human capital formation refers to the development of skills, knowledge, health, and abilities of people that enhance their productivity and contribution to economic growth. India has a demographic advantage due to its large young population, but this potential is not fully utilized because of issues related to education quality, skill mismatch, and healthcare access. Strengthening human capital is essential for sustaining long-term economic growth and global competitiveness.

- Poor quality of education in many public institutions
- Skill mismatch between graduates and industry requirements
- Limited vocational and technical training opportunities
- Inadequate healthcare facilities affecting worker productivity
- Regional, gender, and rural–urban disparities in education and skills
- Brain drain due to lack of high-quality domestic opportunities

2. Poverty

Poverty remains a persistent challenge despite rapid economic growth in recent decades. A significant portion of the population still lives with limited access to basic necessities such as food, clean water, healthcare, education, and housing. Poverty in India is multidimensional, influenced by unemployment, low wages, inflation, and unequal distribution of income and resources.

- High dependence on informal and low-paying jobs
- Rural poverty due to low agricultural income
- Urban poverty in the form of slums and informal settlements
- Regional imbalance in development across states
- Rising cost of living affecting low-income groups
- Intergenerational poverty due to lack of education and assets

3. Dynamic Business Environment

The Indian business environment is highly dynamic due to rapid technological change, globalization, policy reforms, and shifting consumer preferences. While these changes create growth opportunities, they also create uncertainty and challenges for businesses, particularly small and medium enterprises (SMEs) that lack resources to adapt quickly.

- Frequent changes in government regulations and tax policies
- Impact of digitalization and automation on traditional businesses
- Increased competition from multinational companies
- Need for continuous innovation and skill upgradation

- Difficulty for MSMEs to access finance and technology
- Cyber security and data protection challenges in digital business

4. Trade with Various Nations

India's trade relations with various countries have expanded significantly due to globalization. However, managing international trade effectively remains challenging due to trade deficits, dependence on imports, fluctuating exchange rates, and global economic uncertainties. India must balance domestic growth with international competitiveness.

- Heavy dependence on imports of crude oil and advanced technology
- Trade deficit with major trading partners
- Vulnerability to global economic crises and supply chain disruptions
- Impact of trade wars and protectionist policies
- Exchange rate volatility affecting exports and imports
- Need to improve export competitiveness and product quality

5. Sustainable Economic Development

Sustainable economic development focuses on achieving economic growth while protecting the environment and ensuring social well-being. India faces the challenge of balancing rapid industrialization and urbanization with environmental conservation. Unsustainable growth can lead to long-term economic and ecological damage.

- Environmental pollution from industries and vehicles
- Overexploitation of natural resources such as water and forests
- Climate change affecting agriculture and livelihoods
- Rapid urbanization leading to waste management issues
- High dependence on fossil fuels for energy
- Need to promote renewable energy and green technologies

Conclusion

The challenges of human capital formation, poverty, dynamic business conditions, international trade, and sustainable development are interconnected and deeply rooted in India's economic structure. Addressing these challenges requires comprehensive policy reforms, investment in education and health, support for businesses, trade diversification, and a strong commitment to sustainable development.