1 Introduction to Micro and Macro Economics

Let's recall :

You have already studied in Class XI, the meaning and definitions of economics given by different economists.

Fig. 1.1

Introduction :

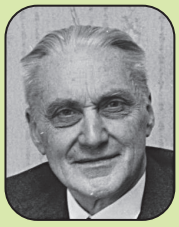
Micro economics and Macro economics are the two main branches of modern economics. The term 'micro' is derived from the Greek word, 'Mikros' which means small or a millionth part. The term 'macro' is derived from the Greek word, 'Makros' which means large. These terms were coined by Norwegian Economist Ragnar Frisch of Oslo University in 1933.

Main Branches of Economics

- Micro Economics
- Macro Economics

Do you know?

Ragnar Anton Kittil Frisch (1895-1973),



a Norwegian econometrician and economist was a joint winner with Jan Tinbergen of the first Nobel Prize for Economics in 1969. He was a pioneer of econometrics- the application of mathematical models and statistical techniques to economic data and theories. He coined many economic terms. In an article on business cycles, Frisch was likely the first person to have referred to the study of individual firm and producer as "Microeconomics." Moreover, he referred to the study of the aggregate economy as "Macroeconomics."

You should know :

Historical review of Micro Economics :

Micro Economic analysis was developed first. It is a traditional approach. Origin of this approach can be traced back to the era of Classical Economists- Adam Smith, David Ricardo, J. S. Mill etc.

It was popularized by Neo-Classical Economist, Prof. Alfred Marshall in his book, 'Principles of Economics', published in 1890. Other economists like Prof. Pigou, J. R. Hicks, Prof. Samuelson, Mrs. Joan Robinson, etc. have also contributed to the development of Micro Economics.

Historical Review of Macro Economics :

Macro Economics did exist in the past before the evolution of Micro Economics. In the 16th and 17th century, followers of Mercantilists (a group of English merchants) advocated policies to the government which were based on macro approach. In the 18th century, Physiocrats (French Thinkers) tried to analyse the concept of national income and wealth. Even the Classical Economic theories of Prof. Adam Smith, Prof. Ricardo and Prof. J. S. Mill discussed the determination of national income and wealth. But their macro analysis was combined with micro analysis. Thus, micro analysis ruled the world of economics till the Great Depression of 1930s.

After the Great Depression, Lord John

Maynard Keynes published his famous book the "General Theory of Employment, Interest and Money" in 1936. Keynes used macro economic approch to analyse economic problems. The credit for the development of macro economic approach goes to Lord Keynes. Besides Keynes, Malthus, Wicksell, Walras, Irving Fisher are other economists who have contributed to the development of macro economics.

Meaning of Micro Economics :

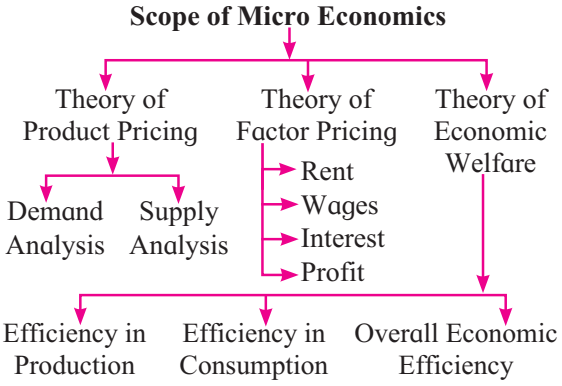
Micro means a small part of a thing. Micro economics thus deals with a small part of the national economy. It studies the economic actions and behaviour of individual units such as an individual consumer, individual producer or a firm, the price of a particular commodity or a factor etc.

Definitions of Micro Economics :

You have already studied some important definitions of micro economics, let us review some more definitions :

1) Maurice Dobb - "Micro economics is in fact a microscopic study of the economy."
2) Prof A. P. Lerner - "Micro economics consists of looking at the economy through a microscope, as it were, to see how the millions of cells in the body of economy – the individuals or households as consumers and individuals or firms as producers play their part in the working of the whole economic organism."

The following chart gives an idea of the scope of micro economics.



(a) Theory of Product Pricing : The price of an individual commodity is determined by the market forces of demand and supply. Micro economics is concerned with demand analysis i.e. individual consumer behaviour, and supply analysis i.e. individual producer behaviour.

(b) Theory of Factor Pricing : In Micro economics, land, labour, capital and entrepreneur are the factors that contribute to the production process. Micro economics helps in determining the factor rewards for land, labour, capital, and entrepreneur in the form of rent, wages, interest, and profit respectively.

(c) Theory of Economic Welfare : Theory of Welfare basically deals with efficiency in the allocation of resources. Efficiency in the allocation of resources is attained when it results in maximization of satisfaction of the people. Economic efficiency involves three efficiencies :

- Efficiency in production : Efficiency in production means producing maximum possible amount of goods and services from the given amount of resources.
- Efficiency in consumption : Efficiency in consumption means distribution of produced goods and services among the people for consumption in such a way as to maximize total satisfaction of the society.
- Overall economic efficiency : It means the production of those goods which are most desired by the people.

Micro economic theory shows under what conditions these efficiencies are achieved.

Thus, the focus of micro economics is mainly confined to price theory and resource allocation. It does not study the aggregates relating to the whole economy. This approach does not study national economic problems such as unemployment,

poverty, inequality of income etc. Theory of growth, theory of business cycles, monetary and fiscal policies etc. are beyond the limits of micro economics.

Features of Micro Economics :

1) **Study of Individual Units :** Micro economics is the study of the behaviour of small individual economic units, like individual firm, individual price, individual household etc.
2) **Price Theory :** Micro economics deals with determination of the prices of goods and services as well as factors of production. Hence, it is known as price theory.
3) **Partial Equilibrium :** Equilibrium is the balance between two factors. Micro economic analysis deals with partial equilibrium which analyses equilibrium position of an individual economic unit i.e. individual consumer, individual firm, individual industry etc. It isolates an individual unit from other forces and studies its equilibrium independently.
4) **Based on Certain Assumptions :** Micro economics begins with the fundamental assumption, "Other things remaining constant" (Ceteris Paribus) such as perfect competition, laissez-faire policy, pure capitalism, full employment etc. These assumptions make the analysis simple.
5) **Slicing Method :** Micro economics uses slicing method. It splits or divides the whole economy into small individual units and then studies each unit separately in detail. For example, study of individual income out of national income, study of individual demand out of aggregate demand etc.
6) **Use of Marginalism Principle :** The concept of Marginalism is the key tool of micro economic analysis. The term 'marginal' means change brought in total by an additional unit. Marginal analysis helps to study a variable through the changes. Producers and consumers take economic decisions using this principle.
7) **Analysis of Market Structure :** Micro economics analyses different market structures such as Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly etc.
8) **Limited Scope :** The scope of micro economics is limited to only individual units. It doesn't deal with the nationwide economic problems such as inflation, deflation, balance of payments, poverty, unemployment, population, economic growth etc.

Importance of Micro Economics :

1) **Price Determination :** Micro economics explains how the prices of different products and various factors of production are determined.
2) **Free Market Economy :** Micro economics helps in understanding the working of a free market economy. A free market economy is that economy where the economic decisions regarding production of goods, such as 'What to produce?, How much to produce?, How to produce? etc.' are taken at individual levels. There is no intervention by the Government or any other agency.
3) **Foreign Trade :** Micro economics helps in explaining various aspects of foreign trade like effects of tariff on a particular commodity, determination of currency exchange rates of any two countries, gains from international trade to a particular country etc.
4) **Economic Model Building :** Micro economics helps in understanding various complex economic situations with the help

of economic models. It has made a valuable contribution to economics by developing various terms, concepts, terminologies, tools of economic analysis etc. Economic models are built using various economic variables.

5) **Business Decisions :** Micro economic theories are helpful to businessmen for taking crucial business decisions. These decisions are related to the determination of cost of production, determination of prices of goods, maximization of output and profit, etc.

6) **Useful to Government :** It is useful to government in framing economic policies such as taxation policy, public expenditure policy, price policy etc. These policies help the government to attain its goals of efficient allocation of resources and promoting economic welfare of the society.

7) **Basis of Welfare Economics :** Micro economics explains how best results can be obtained through optimum utilization of resources and its best allocation. It also studies how taxes affect social welfare.

Meaning of Macro Economics :

Macro economics is the branch of economics which analyses the entire economy. It deals with the total employment, national income, national output, total investment, total consumption, total savings, general price level interest rates, inflation, trade cycles, business fluctuations etc. Thus, macro economics is the study of aggregates.

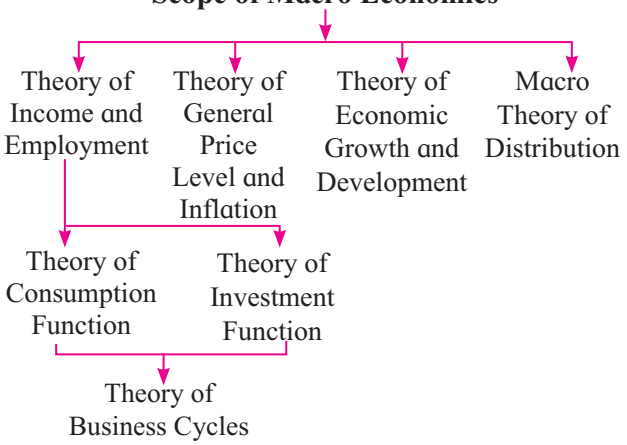
Definitions of Macro Economics :

1) J. L. Hansen - "Macro economics is that branch of economics which considers the relationship between large aggregates such as the volume of employment, total amount of savings, investment, national income etc."

2) Prof Carl Shapiro - "Macro economics deals with the functioning of the economy as a whole."

The following chart gives an idea about the scope of macro economics.

Scope of Macro Economics



i) Theory of Income and Employment : Macro economic analysis explains which factors determine the level of national income and employment and what causes fluctuations in the level of income, output and employment. To understand, how the level of employment is determined, we have to study the consumption function and investment function. Theory of Business Cycles is also a part and parcel of the Theory of Income and Employment.

ii) Theory of General Price Level and Inflation : Macro economic analysis shows how the general price level is determined and further explains what causes fluctuations in it. The study of general price level is significant on account of the problems created by inflation and deflation.

iii) Theory of Growth and Development : Macro economics consists of the theory of economic growth and development. It explains the causes of underdevelopment and poverty. It also suggests strategies for accelerating growth and development.

iv) Macro Theory of Distribution : Macro theory of distribution deals with the relative

shares of rent, wages, interest and profit in the total national income.

Features of Macro Economics :

1) **Study of Aggregates :** Macro economics deals with the study of economy as a whole. It is concerned with the aggregate concepts such as national income, national output, national employment, general price level, business cycles etc.

2) **Income Theory :** Macro economics studies the concept of national income, its different elements, methods of measurement and social accounting. Macro economics deals with aggregate demand and aggregate supply. It explains the causes of fluctuations in the national income that lead to business cycles i.e. inflation and deflation.

3) **General Equilibrium Analysis :** Macro economics deals with the behaviour of large aggregates and their functional relationship. General Equilibrium deals with the behaviour of demand, supply and prices in the whole economy.

4) **Interdependence :** Macro analysis takes into account interdependence between aggregate economic variables, such as income, output, employment, investments, price level etc. For example, changes in the level of investment will finally result into changes in the levels of income, levels of output, employment and eventually the level of economic growth.

5) **Lumping Method :** Lumping method is the study of the whole economy rather than its part. According to Prof. Boulding, "Forest is an aggregation of trees but it does not reveal the properties of an individual tree." This reveals the difference between micro economics and macro economics.

6) **Growth Models :** Macro economics studies various factors that contribute to economic growth and development. It is useful in developing growth models. These growth models are used for studying economic development. For example, Mahalanobis growth model emphasized on basic heavy industries.

7) **General Price Level :** Determination and changes in general price level are studied in macroeconomics. General price level is the average of all prices of goods and services currently being produced in the economy.

8) **Policy-oriented :** According to Keynes, macro economics is a policy oriented science. It suggests suitable economic policies to promote economic growth, generate employment, control of inflation, and depression etc.

Importance of Macroeconomics :

1) **Functioning of an Economy :** Macro economic analysis gives us an idea of the functioning of an economic system. It helps us to understand the behaviour pattern of aggregative variables in a large and complex economic system.

2) **Economic Fluctuations :** Macro economics helps to analyse the causes of fluctuations in income, output and employment and makes an attempt to control them or reduce their severity.

3) **National Income :** Study of macro economics has brought forward the immense importance of the study of national income and social accounts. Without a study of national income, it is not possible to formulate correct economic policies.

4) **Economic Development :** Advanced studies in macro economics help to understand the problems of developing countries such as poverty, inequalities of income and wealth, differences in the standards of living of the

people etc. It suggests important steps to achieve economic development.

5) **Performance of an Economy :** Macro economics helps us to analyse the performance of an economy. National Income (NI) estimates are used to measure the performance of an economy over time by comparing the production of goods and services in one period with that of the other period.

6) **Study of Macro economic Variables :** To understand the working of the economy, study of macro economic variables are important. Main economic problems are related to the economic variables such as behaviour of total income, output, employment and general price level in the economy.

7) **Level of Employment :** Macro economics helps to analyse the general level of employment and output in an economy.

You should know :

Micro Economics and Macro Economics at a glance

Basis for comparison	Micro economics	Macro economics
Meaning	Micro economics studies the behaviour of individual unit of an economy	Macro economics studies the behaviour of aggregates of the economy as a whole
Tools	Individual Demand and Individual Supply	Aggregate Demand and Aggregate Supply
Scope	Demand, supply, product pricing, factor pricing, production, consumption, economic welfare, etc.	National income, general price level, employment, money etc.
Importance	Price determination, Model building, Business decisions etc.	Economic fluctuations, Study of national income, Economic development etc.
Theory	Price Theory	Income and Employment Theory
Examples	Individual income, Individual output etc.	National income, National output etc.

Try this :

1) Visit the vegetable market in the nearest area and try to get information about income and expenditure items of a particular seller

2 Utility Analysis

Let's recall :

1) Want denotes a feeling of lack of satisfaction.
2) Wants are unlimited.
3) They are recurring in nature.
4) They differ with age, gender, seasons, habits and culture.
5) Utility is the capacity of a commodity to satisfy human wants. In other words, utility is the want satisfying power of a good.

Introduction :

You have been already introduced to the concept of utility in class XI. This unit gives a detailed explanation of consumer's behaviour.

In practice, every individual tries to satisfy his wants with available resources. It is true that all human wants cannot be satisfied fully at a specific time. Utility analysis explains a consumer's behaviour in relation to maximization of satisfaction.

Try this :

1) Make a list of 10 commodities which satisfy your wants.
2) Make a list of 10 commodities which satisfy the wants of particular individuals performing specific activities. For example, A chalk has utility for a teacher.

Features of Utility :

Following are the features of utility :

1) **Relative concept :** Utility is related to time and place. It varies from time to time and place to place. For example, (i) woollen clothes have a greater utility in the winter. (ii) sand has greater utility at the construction site than at the sea shore.
2) **Subjective concept :** It is a psychological concept. Utility differs from person to person. This is due to differences in taste, preferences, likes, dislikes, nature, habits, profession etc. For example, stethoscope has utility to a doctor but not to a layman.
3) **Ethically neutral concept :** The concept of utility has no ethical consideration. It is a morally colourless concept. The commodity should satisfy any want of a person without consideration of what is good or bad, desirable or undesirable. For example, a knife has utility to cut fruits and vegetables as well as it can be used to harm someone. Both wants are of different nature but are satisfied by the same commodity. Thus, utility is ethically neutral.
4) **Utility differs from usefulness :** Utility is the capacity of a commodity to satisfy human wants, whereas usefulness indicates value in use of the commodity. For example, milk has both utility as well as usefulness to a consumer, while liquor has utility only to an addict, but has no usefulness.
5) **Utility differs from pleasure :** A commodity may possess utility but it may not give any pleasure to the consumer. For example, injection for a patient has utility because it cures the ailment but it hardly gives any enjoyment or pleasure to him.
6) **Utility differs from satisfaction :** Utility is a cause of consumption, satisfaction is the end result of consumption. They are interrelated but still different concepts. For example, a thirsty person drinks a glass of water since water has the capacity to satisfy thirst. Utility of water is the cause of consumption and the satisfaction derived is the end result of consumption.

7) **Measurement of utility is hypothetical :** Utility is an abstract concept. Cardinal or numerical measurement of utility is not possible. For example, a thirsty person after drinking water, may derive higher or lower level of utility. Thus, utility can only be experienced and found either positive, zero or negative. Negative utility is called disutility.

8) **Utility is multi-purpose :** A commodity can satisfy the want of more than one person, it can also be put to several uses. For example, electricity can be used to serve many purposes and for many people at some point of time.

9) **Utility depends on the intensity of want :** Utility depends on the intensity of a want. More intense the want, greater will be the utility. As and when the urgency of want declines, utility diminishes. For example, a hungry person finds more utility in food, than a person who is not hungry.

10) **Utility is the basis of demand :** A person will demand a commodity only if it gives utility to him. For example, a sick person has utility in medicines hence, he demands medicines.

Types of Utility :

Following are some of the different types of utility

1) **Form utility :** When utility is created due to a change in the shape or structure of an existing material, it is called form utility. For example, toys made of clay, furniture from wood etc.

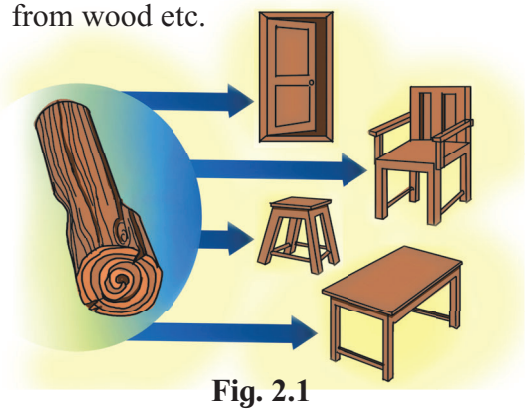


Fig. 2.1

2) **Place utility :** When utility of a commodity increases due to a change in its place, it is called place utilities. For example, woollen clothes have more utility at cold places than at warm places. Transport creates place utility.

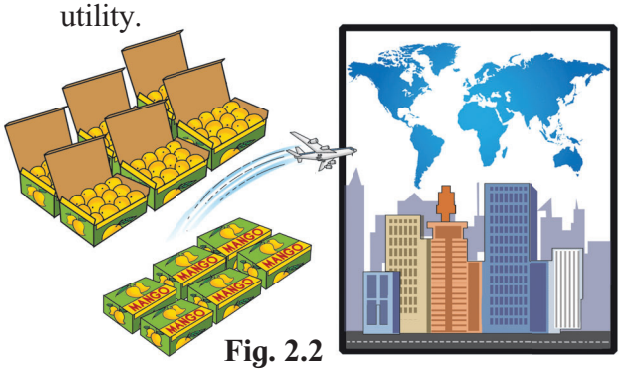


Fig. 2.2

3) **Service utility :** Service utility arises when personal services are rendered by various professionals. For example, services of doctors, teachers, lawyers etc.

Fig. 2.3

4) **Knowledge utility :** When a consumer acquires knowledge about a particular product, it is called knowledge uitility. For example, utility of a mobile phone or a computer increases when a person knows about its various functions.

Fig. 2.4

5) **Possession utility :** Possession utility arises when the ownership of goods is transferred from one person to another. For example, transfer of goods from the sellers to the buyers.

Fig. 2.5

6) **Time utility :** When the utility of a commodity increases with a change in its time of utilization, it is called time utility. For example, a student has more utility for text books during examinations than in the vacations. Time utility is also observed when goods are stored and used at the time of scarcity. For example, Blood bank.

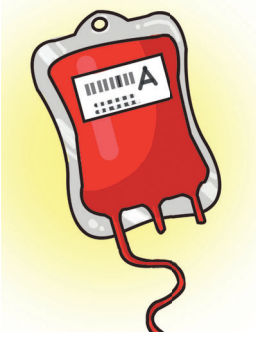


Fig. 2.6 A

Try this :

Following are the various types of utility and their respective examples. Arrange the information in the form of pairs:

Types of utility : Time utility, possession utility, service utility and place utility.

Examples : 1) A dentist giving dental treatment to a patient.

2) A mountaineer using oxygen cylinder at a high altitude.

3) A farmer selling rice stored in the warehouse at the end of the season.

4) A retail trader purchasing 100 chairs from the wholesale trader.

Concepts of Utility :

Following are the two main concepts of utility :

1) **Total Utility (TU) :** Total utility refers to the aggregate of utility derived by the consumer from all units of a commodity consumed. It is an aggregate of utilities from all successive units of a commodity consumed.

2) **Marginal Utility (MU) :** Marginal utility refers to the additional utility derived by a consumer from an additional unit of a commodity consumed. In other words, it is the addition made by the last unit of a commodity consumed.

Fig. 2.6 B

Fig. 2.6 C

Fig. 2.6 D

which is based on table 3.1

Individual Demand Curve

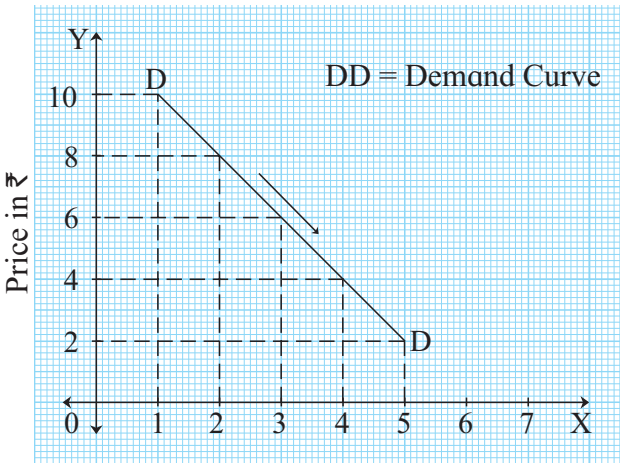


Fig. 3.1

In figure 3.1, X axis represents quantity demanded and Y axis represents the price of the commodity. The demand curve DD slopes downward from left to right, indicating an inverse relationship between price and quantity demanded.

Fig. 3.2 Individual Demand

Market Demand Schedule :

Market demand is total demand for a commodity from all the consumers at a given price during a given period of time.

Market demand schedule is a tabular representation showing different quantities of commodity which all consumers are prepared to buy at various prices over a given period of time.

It is obtained by a horizontal summation of the demand of all consumers at various prices. It also indicates an inverse relationship between price and quantity demanded.

This can be explained with the help of following market demand schedule.

Market demand schedule :

Table. 3.2

Price of commodity	Quantity of '*x*' demanded Kgs.			Market demand
'*x*' (₹)	Con-sumer	Con-sumer	Con-sumer	A + B + C
	A	B	C	
10	5	10	15	30
8	10	15	20	45
6	15	20	25	60
4	20	25	30	75
2	25	30	35	90

Table 3.2 shows different quantities of commodity *x* purchased by different consumers (A, B, C) at various prices. It can be observed that less quantity of commodity is demanded at rising prices and more quantity of commodity is demanded at falling prices. Thus, there is an inverse relationship between price and quantity demanded.

Market Demand Curve :

Graphically, the market demand curve is a horizontal summation of individual demand curves. It is based on the market demand schedule. Fig. 3.3 represents the market demand curve

Market Demand Curve

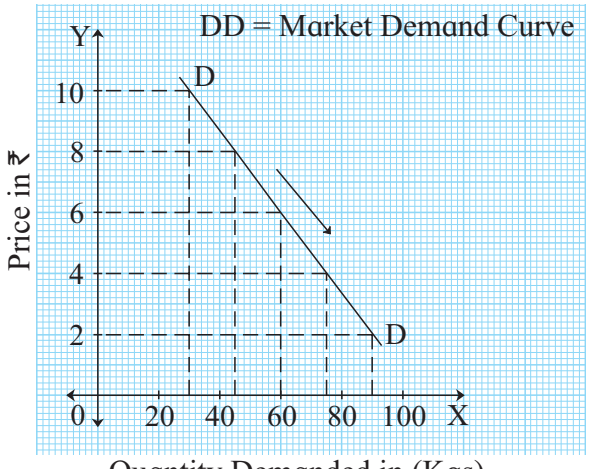


Fig. 3.3

In figure 3.3, X axis represents market demand and Y axis represents the price of the commodity. The market demand curve 'DD' slopes downward from left to right, indicating an inverse relationship between price and market demand.

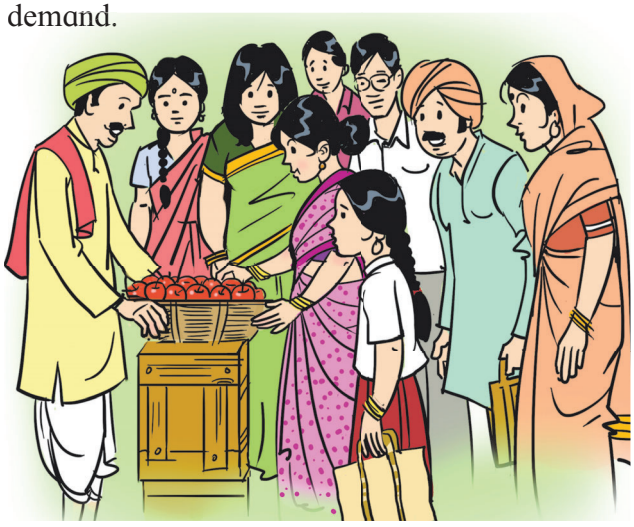


Fig. 3.4 Market Demand

Try this :

Prepare a monthly demand schedule of your family for various commodities. For example, vegetables, fruits, medicines etc.

Reasons justifying downward sloping demand curve are as follows :

1) **Law of Diminishing Marginal Utility :** We have seen that marginal utility goes on diminishing with an increase in the stock of a commodity and vice-versa. Therefore, a consumer tends to buy more when price falls and vice-versa. This implies that demand curve is downward sloping.

2) **Income effect :** In the case of normal goods, when price falls, purchasing power (real income) of a consumer increases which enables him to buy more of that commodity. This is known as income effect.

3) **Substitution effect :** In case of substitute goods, when the price of a commodity rises, the consumer tends to buy more of its substitute and less of that commodity whose price has increased. This is known as substitution effect.

4) **Multi-purpose uses :** When a commodity can be used for satisfying several needs, its demand will rise with a fall in its price and fall with a rise in its price.

5) **New Consumers :** When the price of a commodity falls, a new consumer class appears who can now afford the commodity. Thus, total demand for commodity increases with fall in price.

Try this :

Complete the following hypothetical demand schedule.

Price of commodity '*x*'(₹)	Qty. Demanded kgs
350	3
300	
250	10
200	
150	
100	30

Types of Demand :

Types of Demand

1) Direct demand
2) Indirect demand
3) Complementary/Joint demand
4) Composite demand
5) Competitive demand

1) **Direct demand :** It is the demand by the consumer for goods which satisfy their wants directly. They serve direct consumption needs of the consumers. Thus, it is the demand for consumer goods. For example, demand for cloth, sugar, etc.

2) **Indirect demand :** Indirect demand is also known as derived demand. It refers to demand for goods which are needed for further production. It is the demand for producer's goods. Hence, all factors of production have indirect or derived demand. For example, demand for workers in a sugar factory is derived or indirect demand.

3) **Complementary/Joint demand :** When two or more goods are demanded jointly to satisfy a single want, it is known as joint or complementary demand. For example, car and fuel etc.

4) **Composite demand :** The demand for a commodity which can be put to several uses is known as composite demand. For example, electricity is demanded for several uses such as light, fan, washing machine etc.

5) **Competitive demand :** It is demand for those goods which are substitute for each other. For example, tea or coffee, sugar or jaggery etc.

Try this :

Complete the table

Type of demand	Example
Direct demand	[ ] [ ]
[ ]	Workers in cotton textile industry
Joint demand	For preparing Coffee → Coffee Powder, [ ], [ ], [ ]
[ ]	CNG and petrol, pen and pencil
[ ]	Milk → Tea, Curd, Direct consumption, Sweets

Determinants of Demand :

The demand for goods is determined by the following factors :

1) **Price :** Price determines the demand for a commodity to a large extent. Consumers prefer to purchase a product in large quantities when price of a product is less and they purchase a product in small quantities when price of a product is high.

2) **Income :** Income of a consumer decides purchasing power which in turn influences the demand for the product. Rise in income will lead to a rise in demand for the commodity and a fall in income will lead to a fall in demand for the commodity.

3) **Prices of Substitute Goods :** If a substitute good is available at a lower price then people will demand cheaper substitute good than costly good. For example, if the price of sugar rises then demand for jaggery will rise.

4) **Price of Complementary Goods :** Change in the price of one commodity would also affect the demand for other commodity. For example, car and fuel. If the price of fuel rises, then demand for cars will fall.

5) **Nature of product :** If a commodity is a necessity and its use is unavoidable, then its demand will continue to be the same irrespective of the corresponding price. For example, medicine to control blood pressure.

6) **Size of population :** Larger the size of population, greater will be the demand for a commodity and smaller the size of population smaller will be the demand for a commodity.

7) **Expectations about future prices :** If the consumer expects the price to fall in future, he will buy less in the present at the prevailing price. Similarly, if he expects the price to rise in future, he will buy more in the present at the prevailing price.

8) **Advertisement :** Advertisement, sales promotion scheme and effective sales-manship tend to change the preferences of the consumers and lead to demand for many products. For example, cosmetics, tooth brush etc.

9) **Tastes, Habits and Fashions :** Taste and habits of a consumer influence the demand for a commodity. If a consumer likes to

eat chocolates or consume tea, he will demand more of them. Similarly, when a new fashion hits the market, the consumer demands that particular type of commodity. If a commodity goes out of fashion then suddenly the demand for that product tends to fall.

10) **Level of Taxation :** High rates of taxes on goods or services would increase the price of the goods or services. This, in turn would result in a decrease in demand for goods or services and vice-versa.

11) **Other factors :**

1) Climatic conditions
2) Changes in technology
3) Government policy
4) Customs and traditions etc.

Law of Demand :

Introduction :

The law of demand was introduced by Prof. Alfred Marshall in his book, 'Principles of Economics', which was published in 1890. The law explains the functional relationship between price and quantity demanded.

Statement of the Law :

According to Prof. Alfred Marshall, "Other things being equal, higher the price of a commodity, smaller is the quantity demanded and lower the price of a commodity, larger is the quantity demanded."

In other words, other factors remaining constant, if the price of a commodity rises, demand for it falls and when price of a commodity falls demand for the commodity rises. Thus, there is an inverse relationship between price and quantity demanded.

Symbolically, the functional relationship between demand and price is expressed as :

$Dx = f(Px)$

Where D = Demand for a commodity

x = Commodity

f = Function

Px = Price of a commodity

Assumptions :

Law of demand is based on the following assumptions :

1) **Constant level of income :** If the law of demand is to find true operate then, consumers' income should remain constant. If there is a rise in income, people may demand more at a given price.

2) **No change in size of population :** It is assumed that the size of population remains unchanged. Any change in the size and composition of population of a country affects the total demand for the product.

3) **Prices of substitute goods remain constant :** It is assumed that the prices of substitutes remain unchanged. Any change in the price of the substitute will affect the demand for the commodity.

4) **Prices of complementary goods remain constant :** It is assumed that the prices of complementary goods remain unchanged because a change in the price of one good will affect the demand for the other.

5) **No expectations about future changes in prices :** It is assumed that consumers do not expect any further change in price in the near future. If consumers expect a rise in prices in future, they may demand more in the present even at existing high price.

6) **No change in tastes, habits, preferences, fashions etc. :** It is assumed that consumers' tastes, habits, preferences, fashions etc. should remain unchanged. Any change in these factors will lead to a change in demand.

7) **No change in taxation policy :** Taxation policy of the government has a great impact on demand for various goods and services.

Therefore, it is assumed that there is no change in the policy of taxation declared by Government.

The law of demand is explained with the help of the following demand schedule and diagram.

Demand schedule :

Table. 3.3

Price of commodity '*x*' (₹)	Quantity demanded of commodity '*x*' (in kgs.)
50	1
40	2
30	3
20	4
10	5

As shown in Table 3.3 when price of commodity '*x*' is ₹ 50, quantity demanded is 1 kg. When price falls from ₹ 50 to ₹ 40, quantity demanded rises from 1 kg to 2 kgs. Similarly, at price ₹ 30, quantity demanded is 3 kgs and when price falls from ₹ 20 to ₹ 10, quantity demanded rises from 4 kg sto 5 kgs

Thus, as the price of a commodity falls, quantity demanded rises and when price of commodity rises, quantity demanded falls. This shows an inverse relationship between price and quantity demanded.

Demand Curve

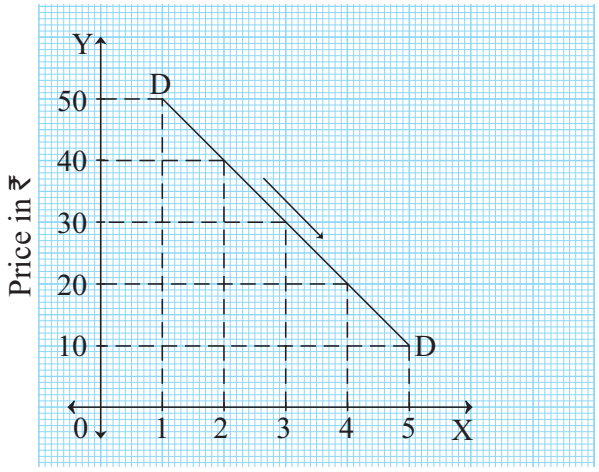


Fig. 3.5

In fig. 3.5, X axis represents the demand for the commodity and Y axis represents the price of commodity *x*. DD is the demand curve which slopes downward from left to right due to an inverse relationship between price and quantity demanded.

Try this :

Draw a demand curve from the following demand schedule :

Price of Apple (₹) per kg	Quantity demanded (in kgs.)
40	5
50	4
60	3
70	2
80	1

Exceptions to the Law of Demand :

There are certain exceptions to the law of demand. It means that under exceptional circumstances, consumer buys more when the price of commodity rises and buys less when price of commodity falls. In such cases, demand curve slopes upwards from left to right. i.e. the demand curve has a positive slope as shown in fig. 3.6.

Exceptional Demand Curve

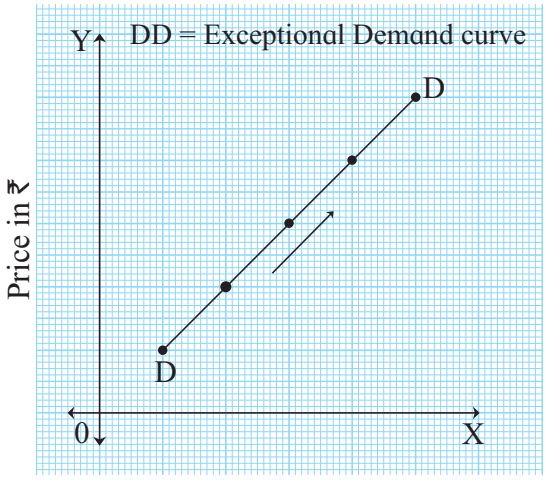


Fig. 3.6

Following are the exceptions to the law of demand:

1) **Giffen's paradox :** Inferior goods or low quality goods are those goods whose demand does not rise even if their price falls. At times, demand decreases when the price of such commodities fall.

Sir Robert Giffen observed this behaviour in England in relation to bread. He noted that, when the price of bread declined, people did not buy more because of an increase in their real income or purchasing power. They preferred to buy superior good like meat. This is known as Giffen's paradox.

2) **Prestige goods :** Expensive goods like diamond, gold etc. are status symbol. So rich people buy more of it, even when their prices are high.

3) **Speculation :** The law of demand does not hold true when people expect prices to rise still further. In this case, although the prices have risen today, consumers will demand more in anticipation of further rise in price. For example, prices of oil, sugar etc. tend to rise before Diwali. So people go on purchasing more at a high price as they anticipate that prices may rise during Diwali.

4) **Price illusion :** Consumers have an illusion that high priced goods are of a better quality. Therefore, the demand for such goods tend to increase with a rise in their prices. For example, branded products which are expensive are demanded even at a high price.

5) **Ignorance :** Sometimes, due to ignorance people buy more of a commodity at high price. This may happen when consumer is ignorant about the price of that commodity at other places.

6) **Habitual goods :** Due to habit of consumption, certain goods like tea is purchased in required quantities even at a higher price.

Find out :

Examples of the given exceptions to the law of demand.

1) Prestigious goods – _____ _____

2) Habitual goods – _____ _____

3) Branded goods – _____ _____

Variations in Demand :

When the demand for a commodity falls or rises due to a change in price alone and other factors remain constant, it is called variations in demand. It is of two types :

1) **Expansion of demand :** Expansion of demand refers to rise in quantity demanded due to fall in price alone while other factors like tastes, income of the consumer, size of population etc. remain unchanged.

Demand moves in downward direction on the same demand curve.

This is explained with the help of following fig. 3.7

Expansion of Demand

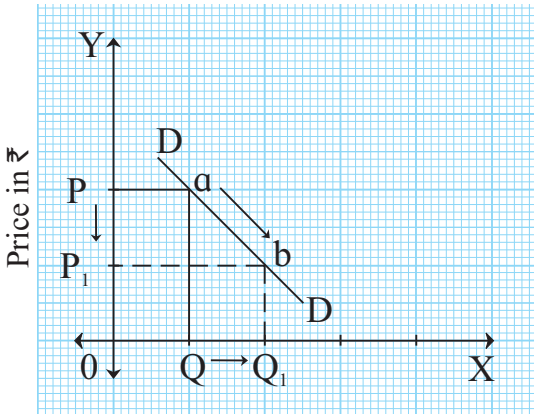


Fig. 3.7

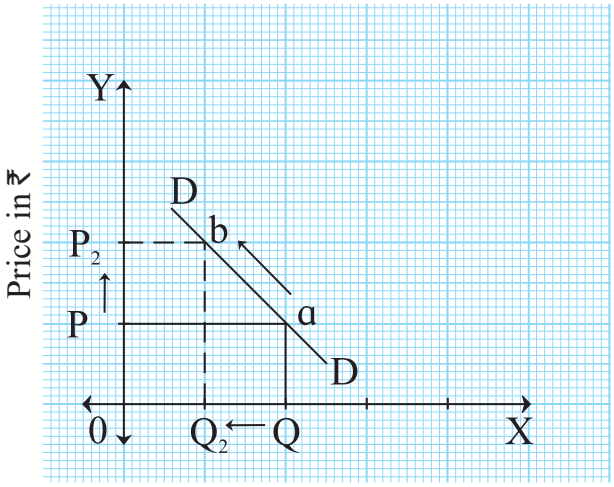
As shown in fig. 3.7, DD is demand curve. A downward movement on the same demand curve from point a to point b indicates an expansion of demand.

2) Contraction of Demand : Contraction of demand refers to a fall in demand due to rise in price alone. Other factors like tastes, income of the consumer, size of population etc. remain unchanged.

Demand curve moves in the upward direction on the same demand curve.

This can be explained with the help of following fig. 3.8

Contraction of Demand



Quantity Demanded in kgs

Fig. 3.8

As shown in fig. 3.8, DD is a demand curve. An upward movement on the same demand curve from point a to point b shows contraction of demand.

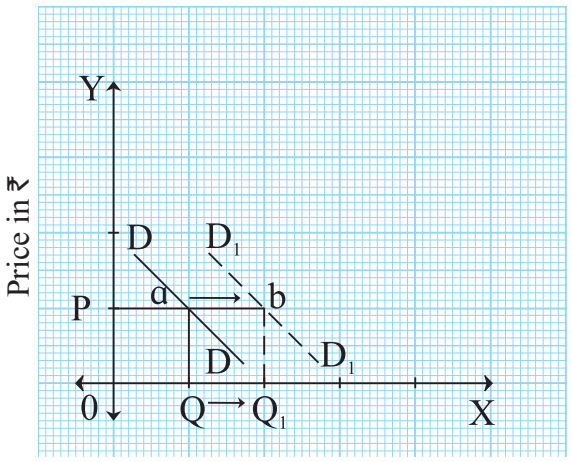
Changes in Demand :

When demand for a commodity increases or decreases due to changes in other factors and price remains constant, it is known as changes in demand. It is of two types :

1) Increase in demand : It refers to increase in quantity demanded due to favourable changes in other factors like tastes, income of the consumer, climatic conditions etc. and price remains constant.

Demand curve shifts to the right hand side of the original demand curve. This can be explained with the help of fig. 3.9

Increase in Demand



Quantity Demanded in kgs

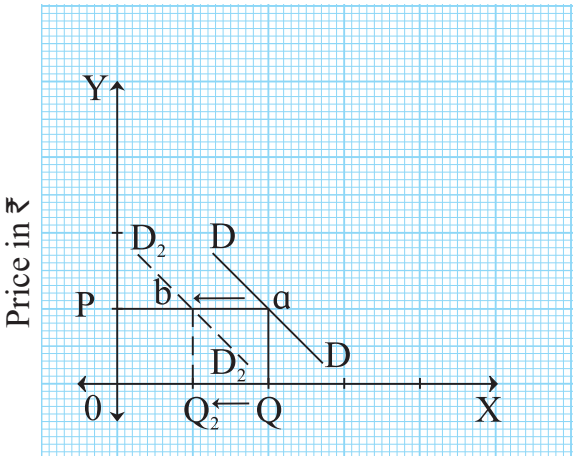
Fig. 3.9

As shown in fig. 3.9, DD is the original demand curve. Demand curve shifts outward to the right from DD to D_1D_1 which indicates increase in demand.

2) Decrease in demand : It refers to decrease in quantity demanded due to unfavourable changes in other factors like tastes, income of the consumer, climatic conditions etc. and price remains constant.

Demand curve shifts to left hand side of the original demand curve. This can be explained with the help of fig. 3.10

Decrease in Demand



Quantity Demanded in kgs

Fig. 3.10

As show in fig. 3.10, DD is the original demand curve. It shifts inward to the left from DD to D_2D_2 which indicates decrease in demand.

3B Elasticity of Demand

Introduction :

In the previous chapter you have already studied the law of demand which shows the inverse relationship between quantity demanded and price of a commodity. The law of demand does not explain the extent of a change in demand due to a change in the price. Thus, law of demand fails to explain the quantitative relationship between price and quantity demanded. Therefore, Prof. Alfred Marshall explained the concept of elasticity of demand.

Concept of Elasticity of Demand :

The term elasticity indicates responsiveness of one variable to a change in the other variable. Elasticity of demand refers to the degree of responsiveness of quanitity demanded to a change in its price or any other factor.

According to Prof. Marshall, "Elasticity of demand is great or small according to the amount demanded which rises much or little for a given fall in price and quantity demanded falls much or little for a given rise in price."

It is clear from the above definition that elasticity of demand is a technical term which describes the responsiveness of change in quantity demanded to fall or rise in its price. In other words, it is the ratio of percentage change in quantity demanded of a commodity to a percentage change in price.

Types of Elasticity of Demand :

1) Income elasticity
2) Cross elasticity
3) Price elasticity

1) Income elasticity : It refers to the degree of responsiveness of a change in quantity demanded to a change in the income only, other factors including price remain unchanged. It is expressed as :

$$Ey = \frac{\text{Percentage change in Qty. Demanded}}{\text{Percentage change in Income}}$$

Symbolically,

$$Ey = \frac{\% \triangle Q}{\% \triangle Y}$$

$$= \frac{\triangle Q}{Q} \div \frac{\triangle Y}{Y}$$

$$= \frac{\triangle Q}{Q} \times \frac{Y}{\triangle Y}$$

Where,

$\triangle$ = Represents change

Q = Orignal demand

Y = Orignal income

$\triangle Q$ = Change in quantity demanded

$\triangle Y$ = Change in income of a consumer

You should know :

- **Positive income elasticity**
  Normal goods for which demand increases with increase in income.
- **Negative income elasticity**
  Inferior or goods for which demand decreases with increase in income of consumer.
- **Zero income elasticity**
  Necessary goods for which demand remains constant with increase in income of the consumer.

2) Cross elasticity : It refers to a change in quantity demanded of one commodity due to a change in the price of other commodity. (Complementary goods or substitutes)

$$Ec = \frac{\text{Percentage change in Qty. demanded of A}}{\text{Percentage change in Price of B}}$$

(A = Original commodity, B = Other commodity)

Symbolically, $Ec = \frac{\% \triangle Q_A}{\% \triangle P_B}$

$$= \frac{\triangle Q_A}{Q_A} \div \frac{\triangle P_B}{P_B}$$

$$= \frac{\triangle Q_A}{Q_A} \times \frac{P_B}{\triangle P_B}$$

Where,

Q_A = Original quantity demanded of commodity A

$\triangle Q_A$ = Change in quantity demanded of commodity A

P_B = Original price of commodity B

$\triangle P_B$ = Change in price of commodity B

You should know :

- Positive cross elasticity : Substitute goods. Example, tea and coffee.
- Negative cross elasticity : Complementary goods. Example, tea and sugar.
- Zero cross elasticity : Non-related goods. Example, tea and books.

3) **Price elasticity :** According to Prof. Alfred Marshall, price elasticity of demand is a ratio of proportionate change in the quantity demanded of a commodity to a given proportionate change in its price only.

$$Ed = \frac{\text{Percentage change in Quantity Demanded}}{\text{Percentage change in Price}}$$

Symbolically, $Ed = \frac{\% \triangle Q}{\% \triangle P}$,

$$Ed = \frac{\triangle Q}{Q} \div \frac{\triangle P}{P}$$

$$Ed = \frac{\triangle Q}{Q} \times \frac{P}{\triangle P}$$

Where,

Q = Original quantity demanded

$\triangle Q$ = Difference between the new quantity and original quantity demanded

P = Original price

$\triangle P$ = Difference between new price and original price

Types of Price Elasticity of Demand :

1) Perfectly Elastic Demand (Ed = ∞) :

When a slight or zero change in the price brings about an infinite change in the quantity demanded of that commodity, it is called perfectly elastic demand. It is only a theoretical concept. For example, 10% fall in price may lead to an infinite rise in demand.

$$Ed = \frac{\text{Percentage change in Quantity Demanded}}{\text{Percentage change in Price}} = \infty$$

Ed = ∞

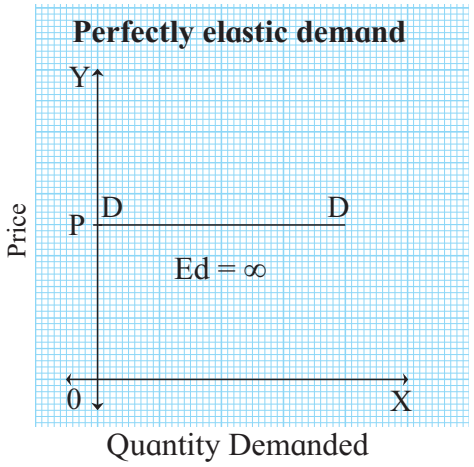


Fig. 3.11

In figure 3.11, the demand curve DD is a horizontal line parallel to the X axis indicating perfectly elastic demand.

2) Perfectly inelastic demand (Ed = 0) :

When a percentage change in price has no effect on the quantity demanded of a commodity it is called perfectly inelastic demand. For example, 20% fall in price will have no effect on quantity demanded.

$$Ed = \frac{\% \triangle Q}{\% \triangle P}$$

$$Ed = \frac{0}{20} = 0$$

Ed = 0

In practice, such a situation rarely occurs. For example, demand for salt, milk.

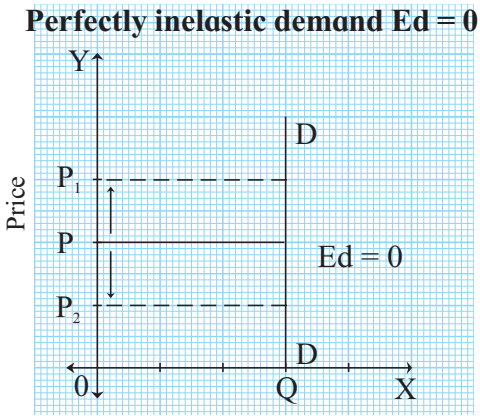


Fig. 3.12

In figure 3.12, when price rises from OP to OP_1 or when price falls from OP to OP_2, demand remains unchanged at OQ. Therefore, the demand curve is a vertical straight line parallel to the Y axis, indicating perfectly inelastic demand.

3) Unitary elastic demand (Ed = 1) :

When a percentage change in price leads to a proportionate change in quantity demanded then demand is said to be unitary elastic. For example, 50% fall in price of a commodity leads to 50% rise in quantity demanded.

$$Ed = \frac{\% \triangle Q}{\% \triangle P} = \frac{50}{50} = 1 \qquad \therefore Ed = 1$$

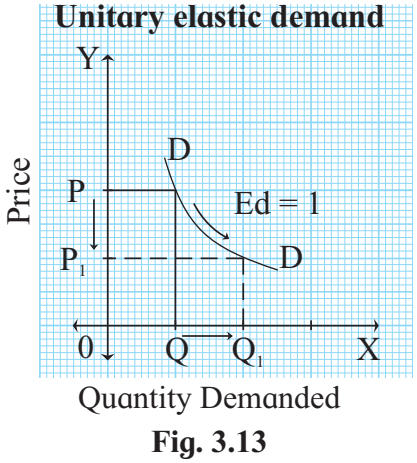


Fig. 3.13

In figure 3.13, when price falls from OP to OP_1 (50%), demand rises from OQ to OQ_1 (50%). Therefore, the slope of the demand curve is a 'rectangular hyperbola'.

4) Relatively elastic demand (Ed >1) :

When a percentage change in price leads to more than proportionate change in quantity demanded, the demand is said to be relatively elastic. For example, 50% fall in price leads to 100% rise in quantity demanded.

$$Ed = \frac{\% \triangle Q}{\% \triangle P}$$

$$Ed = \frac{100}{50} \qquad \therefore Ed = 2$$

$Ed > 1$

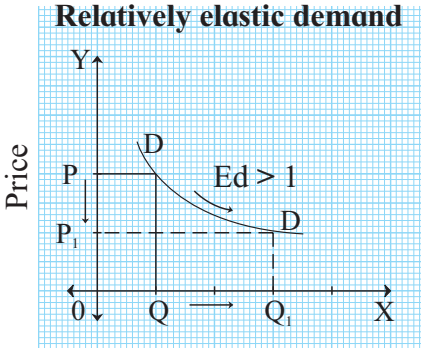


Fig. 3.14

In figure 3.14, when price falls from OP to OP_1 (50%), demand rises from OQ to OQ_1 (100%). Therefore, the demand curve has a flatter slope.

5) Relatively inelastic demand (Ed < 1) :

When a percentage change in price leads to less than proportionate change in the quantity demanded, demand is said to be relatively inelastic. For example, 50% fall in price leads to 25% rise in quantity demanded.

$$Ed = \frac{\% \triangle Q}{\% \triangle P} = \frac{25}{50} = 0.5$$

$Ed = 0.5 \qquad \therefore Ed < 1$

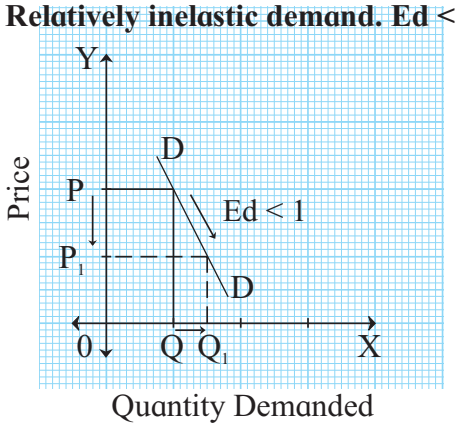


Fig. 3.15

4 Supply Analysis

Introduction :

The study of supply is as important as the study of demand. Supply is a fundamental economic concept that describes the total amount of a specific good or service that is available to a seller. The total amount of goods or services available for sale at any specified price is known as supply.

Concept of Total Output, Stock and Supply :

Total Output :

Output is produced in the process of production. "Total output can be defined as the sum total of the quantity of the commodity produced at a given period of time in the economy." Production leads to consumption. In the process of production inputs are converted into output or final goods.

Stock :

Stock is the total quantity of commodity available for sale with a seller at a particular point of time. It is the source of supply. It is potential supply. By increasing production, stock can be increased. Without stock, supply is not possible. Normally, stock exceeds supply and it is fixed and inelastic. In case of perishable goods such as milk, fish etc. stock may be equal to supply. On the other hand, for durable goods such as furniture, garments etc. stock can exceed the supply.

Supply :

Supply is a relative term. It is always expressed in relation to price, time and quantity.

Meaning of Supply :

The word 'supply' implies the various quantities of a commodity offered for sale by producers during a given period of time at a given price. It is related to time and price. Supply is a flow concept. It refers to the amount of a commodity that the firms produce and offer for sale in the market over a period of time, say a day, a week, a month or a year.

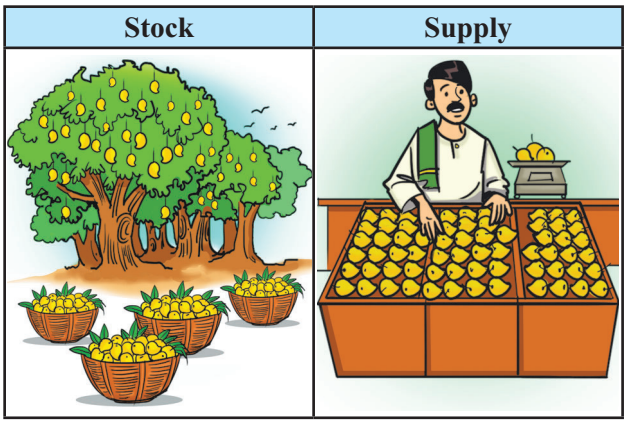


Fig. 4.1

Try this :

Distinguish between stock and supply.

Definition of Supply :

According to Paul Samuelson, "Supply refers to the relation between market prices and the amount of goods that producers are willing to supply."

Supply refers to the quantity of a commodity that a seller is willing and able to offer for sale at a given price, during a certain period of time. For example, a farmer's total output of rice is 4000 kgs. This is the total stock. If the price is ₹ 40 per kg, he offers 1000 kgs for sale. This is the actual supply.

Supply schedule :

A supply schedule is a tabular representation of the functional relationship between price and quantity supplied of a particular commodity.

1) **Individual Supply Schedule :** Individual supply schedule refers to a tabular representation showing various quantities of a commodity that a producer is willing to

sell at various prices, during a given period of time.

Table 4.1

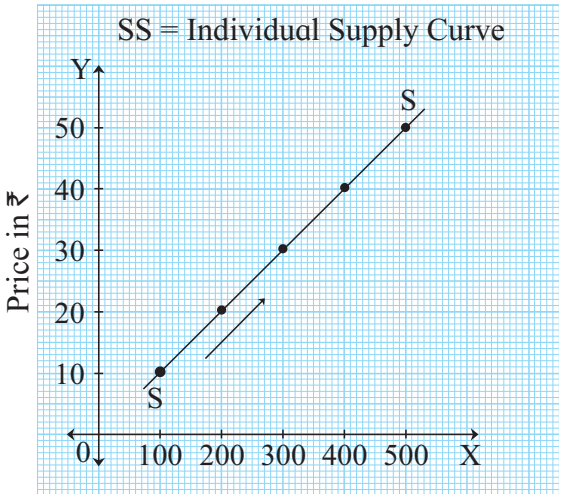
Individual Supply Schedule

Price of a commodity *x* (in ₹ per kgs.)	Supply of a commodity *x* (in kgs.)
10	100
20	200
30	300
40	400
50	500

Table 4.1 explains the functional relationship between price and quantity supplied of a commodity. Lower the price, lower the quantity of a commodity supplied and vice versa. At the lowest price of ₹ 10, supply is also lowest at 100 kgs. At the highest price of ₹ 50, quantity supplied is highest at 500 kgs.

Individual Supply Curve : It is a graphical presentation of individual supply schedule.

Individual Supply Curve



Quantity Supplied in kgs

Fig. 4.2

In figure 4.2, quantity supplied is shown on the X axis and price on the Y axis. Supply curve SS slopes upwards from left to right, indicating a direct relationship between price and quantity supplied.

2) Market Supply Schedule : Market supply schedule refers to a tabular representation showing different quantities of commodity which all producers are prepared to sell at different prices at a given period of time.

Table 4.2

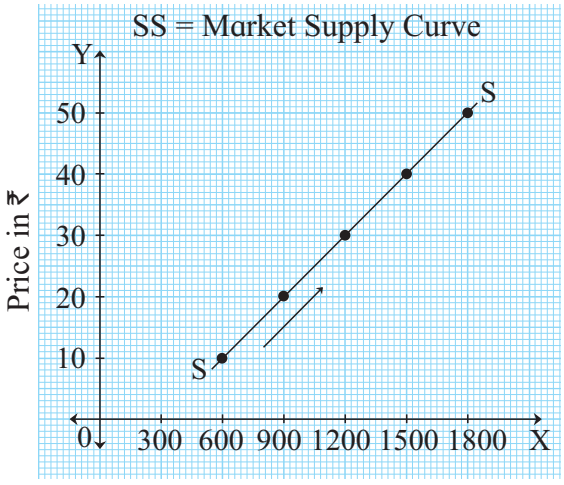
Market Supply Schedule

Price of commodity (in ₹)	Quantity supplied (in kgs.)			Market supply (in kgs.) (A+B+C)
	Seller A	Seller B	Seller C	
10	100	200	300	600
20	200	300	400	900
30	300	400	500	1200
40	400	500	600	1500
50	500	600	700	1800

In Table 4.2, market supply is obtained by adding the supply of sellers A, B and C at different prices. At a highest price of ₹ 50, market supply is the highest at 1800 kgs. At a lowest price of ₹ 10 market supply is lowest at 600 kgs.

Market Supply Curve : It is a graphical presentation of market supply schedule.

Market Supply Curve



Quantity Supplied in kgs

Fig. 4.3

In figure 4.3, quantity supplied is shown on the X axis and price on the Y axis. Supply curve SS slopes upwards from left to right, indicating a direct relationship between price and market supply.

Try this :

Draw a supply curve with the help of a hypothetical supply schedule.

Determinants of Supply :

1) **Price of commodity :** Price is an important factor influencing the supply of a commodity. More quantities are supplied at a higher price and less quantities are supplied at a lower price. Thus, there is a direct relationship between price and quantity supplied.
2) **State of technology :** Technological improvements reduce the cost of production which lead to an increase in production and supply.
3) **Cost of Production :** If the factor price increases, the cost of production also increases, as a result, supply decreases.
4) **Infrastructural facility :** Infrastructure in the form of transport, communication, power, etc. influences the production process as well as supply. Shortage of these facilities decreases the supply and vice versa.
5) **Government policy :** Favourable Government policies may encourage supply and unfavourable government policies may discourage the supply. Government policies like taxation, subsidies, industrial policies, etc. may encourage or discourage production and supply, depending upon government policy measures.
6) **Natural conditions :** The supply of agricultural products depends on the natural conditions. For example, a good monsoon and favourable climatic condition will produce a good harvest, so the supply of agricultural products will increase and unfavourable climatic conditions will lead to a decrease in supply.
7) **Future expectations about price :** If the prices are expected to rise in the near future, the producer may withhold the stock. This will reduce the supply and vice versa
8) **Other factors :** It includes,
   - nature of the market,
   - relative prices of other goods,
   - export and imports,
   - industrial relations,
   - availability of factors of production etc.

   If all factors are favourable, supply of a commodity will be more and vice versa.

Law of Supply

Introduction :

The law of supply is also a fundamental principle of economic theory like law of demand. It was introduced by Prof. Alfred Marshall in his book, 'Principles of Economics' which was published in 1890. The law explains the functional relationship between price and quantity supplied.

Statement of the Law :

"Other things being constant, higher the price of a commodity, more is the quantity supplied and lower the price of a commodity less is the quantity supplied"

In simple words, "other factors remaining constant, a rise in price results in a rise in the quantity supplied and vice-versa. Thus, there is a direct relationship between price and quantity supplied.

Symbolically,

$S_x = f(P_x)$

S = Supply

x = Commodity

f = Function

P = Price of commodity

Assumptions of the law :

The law of supply is based on the following assumptions :

1) **Constant cost of production :** It is assumed that there is no change in the cost of production .A change in cost of production will affect the profits of the seller. Therefore less quantity will be supplied at the same price.

2) **Constant technique of production :** It is also assumed that technique of production does not change. Improved technique of production may lead to an increase in production. This in turn may lead to an increase in the supply at the same price.

3) **No change in weather conditions :** It is assumed that there is no change in the weather conditions. Natural calamities like floods, earthquakes etc. may decrease supply.

4) **No change in Government policy :** It is also assumed that government policies like taxation policy, trade policy etc. remain unchanged.

5) **No change in transport cost :** It is assumed that there is no change in the condition of transport facilities and transport cost. For example, better transport facility increases supply at the same price.

6) **Prices of other goods remain constant :** Prices of other goods are assumed to remain constant. If they change, the law of supply may not hold true because producer may transfer resources to other products.

7) **No future expectations :** The law also assumes that the sellers do not expect future changes in the price of the product.

Law of supply is explained with the help of the following schedule and diagram :

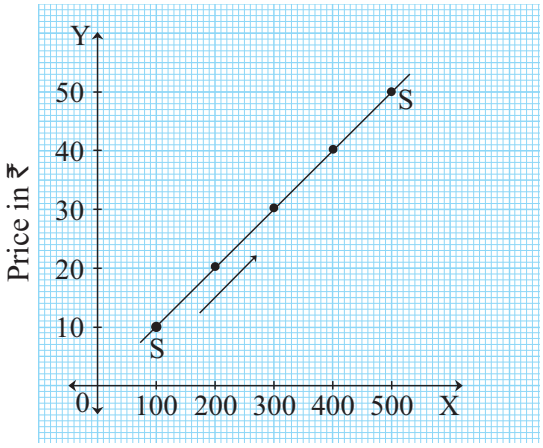
Table 4.3

Supply Schedule

Price of commodity *x* (in ₹)	Supply of commodity *x* (in kgs.)
10	100
20	200
30	300
40	400
50	500

Table 4.3 explains the direct relationship between price and quantity of commodity supplied. When price rises from ₹ 10 to 20, 30, 40 and 50, the supply also rises from 100 to 200, 300, 400 and 500 units respectively. It means, when price rises supply also rises and when price falls supply also falls. Thus, there is direct relationship between price and quantity supplied which is shown in following figure 4.4 :

Supply Curve



Quantity Supplied in kgs

Fig. 4.4

In the figure 4.4, X axis represents quantity supplied and Y axis represents the price of the commodity. Supply curve 'SS' slopes upwards from left to right which has a positive slope. It indicates a direct relationship between price and quantity supplied.

Exceptions to the Law of Supply :

Following are the exceptions to the law of supply:

1) **Supply of labour :** Labour supply is the total number of hours that workers to work at a given wage rate. It is represented graphically by a supply curve. In case of labour, as the wage rate rises the supply of labour (hours of work) would increase. So supply curve slopes upward. Supply of labour (hours of work) falls with a further rise in wage rate and supply curve of labour bends backward. This is because the worker would prefer leisure to work after receiving higher amount of wages. Thus, after a certain point when wage rate rises the supply of labour tends to fall.

It can be explained with the help of a backward bending supply curve. Table no. 4.4 and fig. no 4.5 explains the backward bending supply curve of labour.

Table. 4.4

Labour Supply Schedule

Wage rate (₹) per hour	Hours of work per day	Total amount of wages (₹)
100	5	500
200	7	1400
300	6	1800

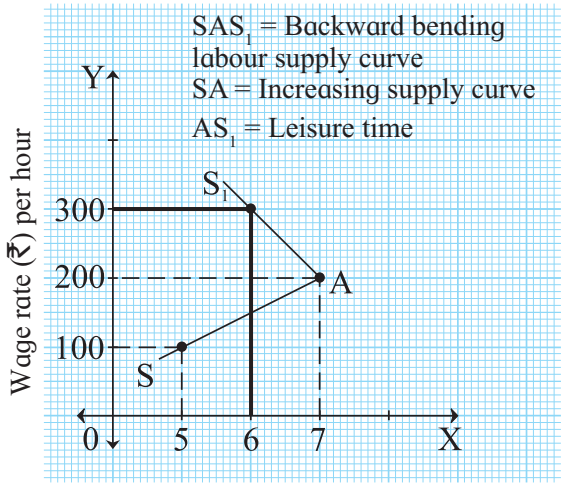


Fig. 4.5

In fig. 4.5, supply of labour (hours of work) is shown on X axis and wage rate per hour is shown on the Y axis. The curve SAS represents backward bending supply curve of labour. Initially, when the wage rate is ₹ 100 per hour, the hours of work is 5. The total amount of wages received is ₹ 500. When wage rate rises from ₹ 100 to ₹ 200, hours of work will also rise from 5 hours to 7 hours and total amount of wages would also rise from ₹ 500 to ₹ 1400. At this point, labourer enjoys the highest amount i.e. ₹ 1400, and works for 7 hours. If wage rate rises further from ₹ 200 to ₹ 300, total amount of wages may rise, but the labourer will prefer leisure time and denies to work for extra hours. Thus, he is ready to work only for 6 hours. At the point A, the supply curve bends backward, which becomes an exception to the law of supply.

2) **Agricultural goods :** The law of supply does not apply to agricultural goods as they are produced in a specific season and their production depends on weather conditions. Due to unfavourable changes in weather, if the agricultural production is low, their supply cannot be increased even at a higher price.

3) **Urgent need for cash :** If the seller is in urgent need for hard cash, he may sell his product at which may even be below the market price.

4) **Perishable goods :** In case of perishable goods, the supplier would offer to sell more quantities at lower prices to avoid losses. For example, vegetables, eggs etc.

5) **Rare goods :** The supply of rare goods cannot be increased or decreased according to its demand. Even if the price rises, supply remains unchanged. For example, rare paintings, old coins, antique goods etc.

Variations in Supply :

When quantity supplied of a commodity varies due to change in its price, other factors remaining constant, it is known as variations in supply. There are two types of variations in supply :

1) **Expansion of supply :** Expansion of supply refers to a rise in the quantity supplied due to a rise in the price of a commodity, other factors remaining constant. Expansion in supply leads to an upward movement on the same supply curve due to a rise in price. It is shown in figure 4.6

Expansion of supply

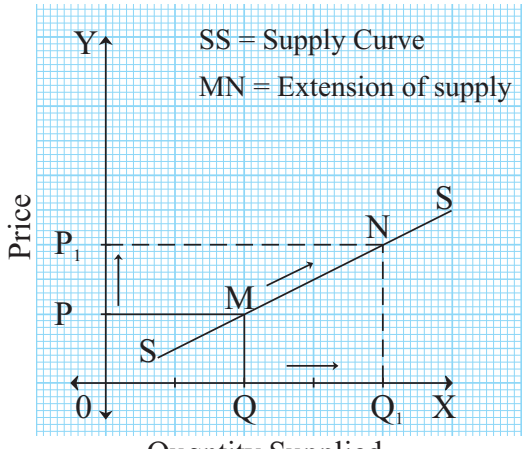


Fig. 4.6

In figure 4.6, quantity supplied is shown on the X axis and price on the Y axis. Quantity supplied rises from OQ to OQ_1, with a rise in price from OP to OP_1, resulting in an upward movement from M to N along the same supply curve SS. It is known as Expansion of supply.

2) Contraction of supply : Contraction of supply refers to a fall in the quantity supplied, due to fall in the price of a commodity, other factors remaining constant. In case of contraction of supply, there is a downward movement on the same supply curve. It is shown in figure 4.7

Contraction of supply

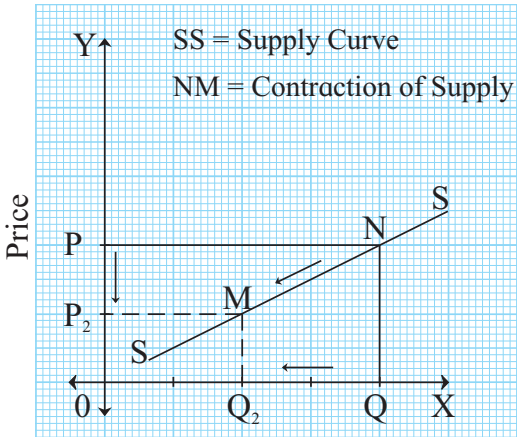


Fig. 4.7

In figure 4.7, quantity supplied is shown on the X axis and price on the Y axis. Quantity supplied falls from OQ to OQ_2 with a fall in price from OP to OP_2, resulting in a downward movement from N to M on the same supply curve SS. It is known as Contraction of supply.

Changes in Supply :

When other factors change and price remains constant, it is known as changes in supply. There are two types of changes in supply :

1) Increase in supply : Increase in supply refers to rise in the supply of a given commodity due to favourable changes in other factors such as fall in the price of inputs, fall in tax rates, technological upgradation etc., while price remains constant. The supply curve shifts to the right of the original supply curve. It is shown in figure 4.8

Increase in supply

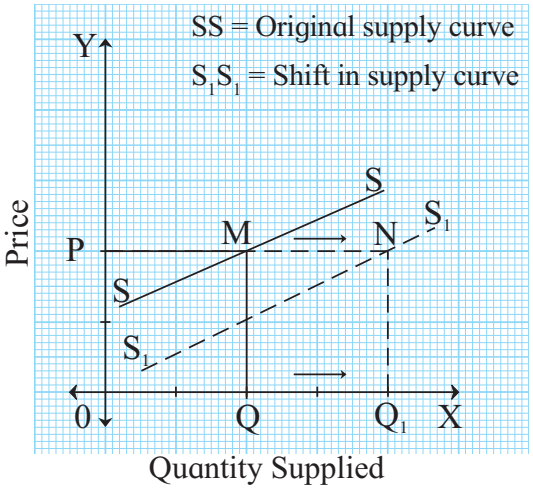


Fig. 4.8

In figure 4.8, quantity supplied is shown on the X axis and price on the Y axis. Supply rises from OQ to OQ_1 at the same price OP, resulting in an outward shift of the original supply curve to the right from SS to S_1S_1. It is known as Increase in supply.

2) Decrease in supply : Decrease in supply refers to a fall in the supply of a given commodity due to unfavourable changes in other factors such as increase in the prices of inputs, increase in tax rate, outdated technology, strikes by worker, while price remains constant. The supply curve shifts to the left of the original supply curve. It is shown in figure 4.9

Decrease in supply

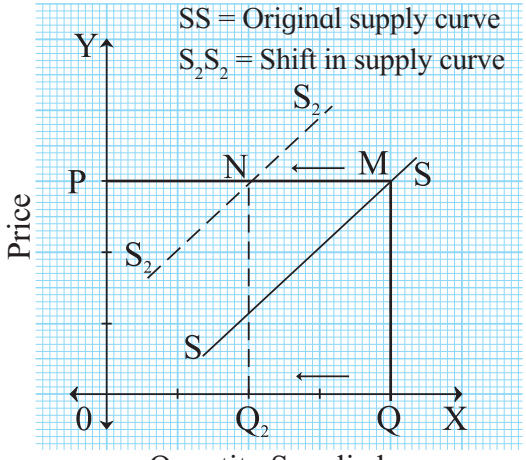


Fig. 4.9

In figure 4.9, quantity supplied is shown on the X axis and price on the Y axis. Supply falls from OQ to OQ_2 at the same price OP, resulting in an inward shift of the original supply curve to the left from SS to S_2S_2. It is known as Decrease in supply.

You should know :

1) Supply : Supply is a micro-economic concept. Supply refers to quantity of a commodity that a seller is willing and able to offer for sale at a particular price, during a certain period of time.

2) Aggregate supply : It is a macro-economic concept. It refers to the minimum amount of sales proceeds which entrepreneurs expect to receive from the sale of output at a given level of employment.

Concepts of Cost and Revenue :

A) Cost Concepts :

When an entrepreneur undertakes an act of production, he has to use various inputs like raw material, labour, capital etc. He has to make payments for such inputs. The expenditure incurred on these inputs is known as the cost of production. Cost of production increases with an increase in need of output. There are three types of costs which are as follows :

1) **Total Cost (TC) :** Total cost is the total expenditure incurred by a firm on the factors of production required for the production of goods and services. Total cost is the sum of total fixed cost and total variable cost at various levels of output.

$$TC = TFC + TVC$$

TC = Total cost

TFC = Total Fixed Cost

TVC = Total Variable Cost

Total Fixed Cost (TFC) : Total fixed costs are those expenses of production which are incurred on fixed factors such as land, machinery etc.

Total Variable Cost (TVC) : Total variable costs are those expenses of production which are incurred on variable factors such as labour, raw material, power, fuel etc.

2) **Average Cost (AC) :** Average cost refers to cost of production per unit. It is calculated by dividing total cost by total quantity of production.

$$AC = \frac{TC}{TQ}$$

AC = Average cost

TC = Total cost

TQ = Total quantity

For example, If the total cost of production of 40 units of commodity is ₹ 800 then the average cost is :

$$AC = \frac{TC}{TQ}$$

$$= \frac{800}{40}$$

= ₹ 20 per unit

3) **Marginal cost (MC) :** Marginal cost is the net addition made to total cost by producing one more unit of output.

$$MCn = TC_n - TC_{n-1}$$

n = Number of units produced

MC_n = Marginal cost of the n^{th} unit

TC_n = Total cost of n^{th} unit

TC_{n-1} = Total cost of previous units

If previous total cost of producing 4 units is ₹ 200 and total cost of producing 5 units is ₹ 250, then :

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

= ₹ 250 – ₹ 200

= ₹ 50

Find out :

If a firm produces 600 units of a commodity in a day and incurs a total cost of ₹ 30,000. Calculate the Average Cost.

B) Revenue Concepts :

The term 'revenue' refers to the receipts obtained by a firm from the sale of certain quantities of a commodity at given price in the market. The concept of revenue relates to total revenue, average revenue and marginal revenue.

1) Total Revenue (TR) : Total revenue is the total sales proceeds of a firm by selling a commodity at a given price. It is the total income of a firm. Total revenue is calculated as follows :

Total revenue = Price × Quantity

For example, if a firm sells 15 units of a commodity at ₹ 200 per unit TR is calculated as :

$TR = P \times Q$

$= ₹\ 200 \times 15$

$= ₹\ 3000$

2) Average Revenue (AR) : Average revenue is the revenue per unit of output sold. It is obtained by dividing the total revenue by the number of units sold.

$$AR = \frac{TR}{TQ}$$

AR = Average Revenue

TR= Total Revenue

TQ =Total Quantity

For example, if the total revenue of 15 units, is ₹ 3000, then average revenue is calculated as :

$$AR = \frac{TR}{TQ}$$

$$= \frac{3000}{15}$$

$= ₹\ 200$

3) Marginal Revenue : Marginal revenue is the net addition made to total revenue by selling an extra unit of the commodity.

$MR_n = TR_n - TR_{n-1}$

MR_n = Marginal revenue of n^{th} unit

TR_n = Total revenue of n^{th} unit

TR_{n-1} = Total Revenue of previous units

n = Number of units sold

For example, if the previous total revenue from the sale of 20 tables is ₹ 4000 and that from the sale of 21 tables is ₹ 4200, marginal revenue is calculated as :

$MR_n = TR_n - TR_{n-1}$

$= 4200 - 4000$

$= ₹\ 200$ per table

Find out :

If a firm sells 400 units of a commodity at ₹ 10 unit. Calculate the TR and AR.

EXERCISE

Q. 1. Complete the following statements :

1) When supply curve is upward sloping, it's slope is .....
   a) positive
   b) negative
   c) first positive then negative
   d) zero

2) An upward movement along the same supply curve shows .....
   a) contraction of supply
   b) decrease in supply
   c) expansion of supply
   d) increase in supply

3) A rightward shift in supply curve shows .....
   a) contraction of supply
   b) decrease in supply
   c) expansion of supply
   d) increase in supply

4) Other factors remaining constant, when less

7 National Income

Fig. 7.1

Introduction :

National Income is one of the important subject matter of macroeconomics. The national economy comprises of all the firms and factories, shops and markets, banks and financial institutions, various departments and their offices etc. National income is a composite measure of all economic activities such as production, distribution, exchange and consumption, but is also an objective indicator of economic welfare of the people in a country.

In India, establishment of the National Income Committee (NIC) in 1949 marked the beginning of Government efforts for regular compilation of National Income estimates. At present, Central Statistical Organisation (CSO) compiles and publishes data on national income and allied aggregates every year.

Meaning :

Modern economy is a money economy. Hence, national income of a country is expressed in terms of money.

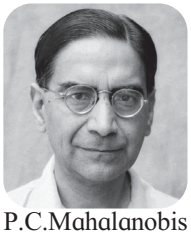
The total income of the nation is called national income.

In real terms, national income is the flow of goods and services produced in an economy during a year.

Definitions of National Income :

Following are some of the important definitions of national income :

1) **National Income Committee (NIC) :** The National Income Commitee was appointed by the Government of India in August 1949 with Prof. P. C. Mahalanobis as Chairman and Prof. D. R. Gadgil and Dr. V. K. R. V. Rao as the members.

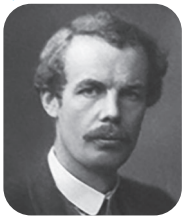

P.C.Mahalanobis


V. K. R. V. Rao


D. R. Gadgil

According to NIC "A national estimate measures the volume of commodities and services turned out during a given period counted without duplication."

2) **Prof. A.C. Pigou :** "National dividend is



that part of objective income of the community including of course income derived from abroad which can be measured in money."

5) **Prof. Irving Fisher :** "National dividend

or income consists solely of services as received by ultimate consumers, whether from their material or from their human environments."

Features of National Income :

1) **Macro Economic concept :** National income represents income of the economy as a whole rather than that of an individual. Hence it is a macro economic concept.

2) **Value of only final goods and services :** In order to avoid double counting in national income, the value of only final goods and

services produced in the economy are considered. The value of intermediate goods or raw materials is not considered. For example, while estimating the production of shirts, there is no need to take the value of cotton, as it is already included in the price of the shirts.

3) **Net aggregate value :** National income includes net value of goods and services produced and does not include depreciation cost. (i.e. wear and tear of capital assets)

4) **Net income from abroad :** National income includes net income from abroad i.e. difference between export value and import value (X-M) and net difference between receipts from abroad and payments made abroad (R-P).

5) **Financial year :** National income is always expressed with reference to a time period. In India, it is from 1st April to 31st March.

6) **Flow concept :** National income is a flow concept as it shows flow of goods and services produced in the economy during a year.

7) **Money value :** National income is always expressed in monetary terms. It represents only those goods and services which are exchanged for money.

Circular Flow of National Income :

Circular flow of income is the basic concept in macro economics. The circular flow of income refers to the process whereby an economy's money receipts and payments flow in a circular manner continuously through time.

Circular flow of income can be determined for the following :

1) Two sector Economy (Households and Business Firms.) $Y = C + I$
2) Three sector Economy (Households, Business Firms and Government sector) $Y = C + I + G$
3) Four Sector Economy (Households, Business Firms, Government and Foreign sector) $Y = C + I + G + (X-M)$

The circular flow of goods and money in a two sector model is explained below :

Two sector model of Circular flow of National Income :

There are two sectors, households and firms. It divides the diagram into two parts. The upper half represents the factor market and the lower half represents the commodity market.

Fig. no. 7.2 explaines circular flow of income and expenditure in a two sector model.

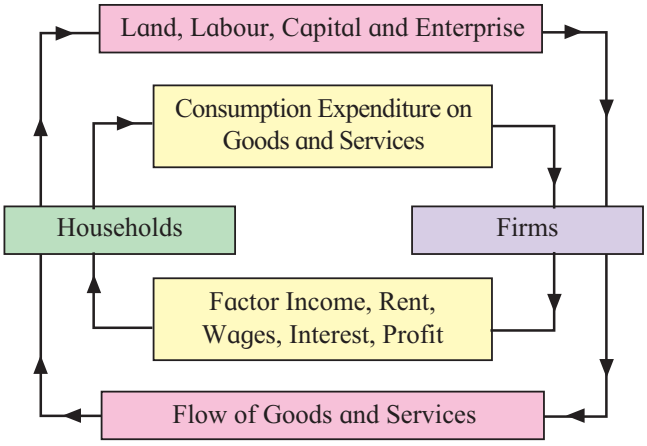


Fig. 7.2

In the above figure 7.2, the factors of production flow from the households to the firms. The firms use these factors to produce goods and services required by the households. Thus, goods flow from the households to the firms and from the firms back to the households. It is called product flows.

In the same way, money flows from the firms to the households in the form of factor payments such as rent, wages, interest and profit. Households use this income to purchase goods and services. Thus, money flows from the firms to the households and from the households back to the firms. It is called money flows.

In the circular flow of income, production generates factor income, which is converted into expenditure. This flow of income continues as production is a continuous activity due to never ending human wants. It makes the flow of income circular

Do you know?

I) Three Sector Model of Circular Flow of National Income : Under a three sector model, the government sector is added to the existing two sectors i.e. households and business firms.

II) Four Sector Model of Circular Income : In an four sector model, foreign sector is added to the existing three sectors i.e. households, business firms and government sector.

Different Concepts of National Income :

Following are some of the important concepts related to national income.

1) **Gross Domestic Product (GDP) :** Gross Domestic Product is the gross market value of all final goods and services produced within the domestic territory of a country, during a period of one year.

∴ GDP = C + I + G + (X-M) ,

Where C = Private consumption expenditure

I = Domestic Private Investment

G = Government's consumption and Investment Expenditures

X - M = Net export value (Value of Exports - Value of imports

2) **Net Domestic Product (NDP) :** Net Domestic Product is the net market value of all final goods and services produced, within the territorial boundaries of a country, during a period of one year.

∴ NDP = GDP – Depreciation.

3) **Gross National Product (GNP) :** Gross National Product means the gross value of final goods and services produced annually in a country, which is estimated according to the price prevailing in the market.

∴ GNP = C + I + G + (X-M) + (R-P).

(R = receipts from abroad and P = payments made abroad)

4) **Net National Product (NNP) :** Net National Product is the net market value of all final goods and services produced by the residents of a country, during a period of one year.

∴ NNP = GNP – Depreciation.

Find out :

India's GDP data.

You should know :

Concept of Green GNP :

It is defined as, "Green GNP is an indicator of sustainable use of natural environment and equitable distribution of benefits of development."

Gross National product does not take into consideration the cost in terms of (i) Environmental pollution, (ii) Depletion of natural resources caused by production of output. Mere increase in GNP will not reflect improvement in quality of life, when it increases environmental pollution or reduce available resources for future generations. So Green GNP has been introduced while measuring economic welfare.

Following are the characteristics of Green GNP :

1) Sustainable economic development, i.e. development which should not cause environmental degradation (pollution) and depletion of natural resources.
2) Equitable distribution of benefits of its development.
3) Promotes economic welfare for a long period of time.

Measurement :

Green GNP = GNP - (Net fall in stock of natural capital + pollution load.)

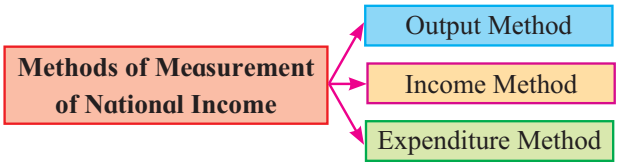
Find out :

Names of five countries making use of the concept of Green GNP.

Methods of Measurment of National Income :

There are three methods of measuring national income.

1) Output Method/Product Method
2) Income Method
3) Expenditure Method



1) Output Method :

This method of measuring national income is also known as product method or inventory method.

This method approaches national income from the output side. According to this method, the economy is divided into different sectors, such as agriculture, mining, manufacturing, small enterprises, commerce, transport, communication and other services. The output or product method is followed either by valuing all the final goods and services, produced during a year, at their market price or by adding up all the values at each higher stage of production, until these products are turned into final products.

While using this method utmost care must be taken to avoid multiple or double counting. To avoid double counting this method suggests two alternative approaches for the measurement of GNP.

i) **Final Goods Approach / The Final Product Approach :** Final goods are those goods which are ready for final consumption. According to this approach, value of all final goods and services produced in primary, secondary and tertiary sector are included and the value of all intermediate transactions are ignored. Intermediate goods are involved in the process of producing final goods, that is, the final flow of output purchased by consumers. Hence, the value of final output includes the value of intermediate products.

For example, the price of bread includes, the cost of wheat, making of flour, etc., wheat and flour are both intermediate goods. Their values are paid up during the process of production. In the final product i.e. bread, the values of intermediate goods are already included.

Thus, a separate accounting of the values of intermediate goods, along with the accounting of the value of final product, would mean double counting. To avoid this, the value of only the final product or goods must be computed.

ii) **Value Added Approach / The Value Added Method :** In order to avoid double counting value added approach is used. According to this approach, the value added at each stage of the production process is included. The difference between the value of final outputs and inputs, at each stage of production is called the value added. Thus, GNP is obtained as the sum total of the values added by all the different, stages of the production process, till the final output is reached in the hands of consumers, to meet the final demand. This can be illustrated with the help of the following table.

Table No. 7.1 - Value Added Method

Production stage	Value of output ₹	Value of input ₹	Value added ₹
Cotton	150	0	150
Yarn	250	150	100
Cloth	400	250	150
Shirt (final goods)	500	400	100
Total value			500

Value added at each stage is calculated by deducting the value of inputs from the value of output produced. The sum total added at different stages make GNP. In the above table the value of final good (Shirt) is ₹ 500. The sum total of value added at each stage of production is also ₹ 500. Thus the total value added is equal to the value of final goods. (150 + 100 + 150 + 100 = 500)

Precautions :

While estimating national income by output method, following precautions should be taken:

1) To avoid double counting, only the value of final goods and services must be taken into account.
2) Goods used for self consumption by farmers should be estimated by a guess work. Imputed value of goods produced for self consumption is included in national income.
3) Indirect taxes included in the market prices are to be deducted and subsidies given by the government to certain products should be added for accurate estimation of national income.
4) While evaluating output, changes in the price level between different years must be taken into account.
5) Value of exports should be added and value of imports should be deducted.
6) Depreciation of capital assets should be deducted.
7) Sale and purchase of second hand goods should be ignored as it is not a part of current production.

Output method is widely used in the underdeveloped countries. However, it is less reliable because of the margin of error. In India, this method is applied to agriculture, mining and manufacturers, including handicrafts. But it is not applied for transport, commerce and communication sectors in India.

2) Income Method :

This method of measuring national income is also known as factor cost method. This method estimates national income from the distribution side.

According to this method, the income payments received by all citizens of a country, in a particular year, are added up, that is, incomes that accrue to all factors of production by way of rents, wages, interest and profits are all added together, but income received in the form of transfer payments are ignored. The data pertaining to income are obtained from different sources, for instance, from income tax returns, reports, books of accounts, as well as estimates for small income.

GNP can be treated as the sum of factor incomes, earned as a result of undertaking economic activity, on the part of resource owners and reflected in the production of the total output of goods and services during any given time period.

Thus, GNP, according to income method, is calculated as follows:

NI = Rent + Wages + Interest + Profit + Mixed Income + Net export + Net receipts from abroad.

$NI = R + W + I + P + MI + (X–M) + (R–P)$

Precautions :

While estimating national income by income method, the following precautions should be taken.

1) Transfer incomes or transfer payments like scholarships, gifts, donations, charity, old age pensions, unemployment allowance etc., should be ignored.
2) All unpaid services like services of a housewife, teacher teaching her/his child, should be ignored.
3) Any income from sale of second hand goods like car, house etc., should be ignored.
4) Income from sale of shares and bonds should be ignored, as they do not add anything to the real national income.
5) Revenue received by the government through direct taxes, should be ignored, as it is only a transfer of income.
6) Undistributed profits of companies, income from government property and profits from public enterprise, such as water supply, should be included.
7) Imputed value of production kept for self-consumption and imputed rent of owner occupied houses should be included.

In India, the National Income Committee

of the Central Statistical Organization, uses the income method for adding up the income arising from trade, transport, professional and liberal arts, public administration and domestic services.

3) Expenditure Method :

This method of measuring national income is also known as Outlay Method.

According to this method, the total expenditure incurred by the society, in a particular year, is added together. Income can be spent either on consumer goods or on capital goods. Thus, we can get national income by summing up all consumption expenditure and investment expenditure made by all individuals, firms as well as the government of a country during a year.

Thus, gross national product is found by adding up $NI = C + I + G + (X–M) + (R–P)$

1) **Private Final Consumption Expenditure (C) :** Private Final Consumption Expenditure (C) by households on non-durable goods, such as food, which are used immediately; expenditure on durable goods such as car, computer, television set, washing machine etc., which are generally used for a longer period of time; and expenditure on services like transport services, medical services, etc.

2) **Gross Domestic Private Investment Expenditure (I) :** It refers to expenditure made by private businesses on replacement, renewals and new investment (I).

3) **Government Final Consumption and Investment Expenditure (G) :**

i) Government's final consumption expenditure refers to the expenditure incurred by government on various administrative services like, law and order, defence, education, health etc.

ii) Government's investment expenditure refers to the expenditure incurred by government, on creating infrastructural facilities like construction of roads, railways, bridges, dams, canals, which are used by the business sector for production of goods and services in any economy (G).

4) **Net Foreign Investment/Net Exports :** It refers to the difference between exports and imports of a country during a period of one year.

5) **Net Receipts (R-P) :** The difference between expenditure incurred by foreigners on domestic goods and services (R) and expenditure incurred abroad by residents on foreign goods and services (P).

Precautions:

While estimating national income by Expenditure Method, the following precautions should be taken.

1) Expenditure on all intermediate goods and services should be ignored, in order to avoid double counting.
2) Expenditure on the repurchase of second hand goods, should be ignored, as it is not incurred on currently produced goods.
3) Expenditure on transfer payments like scholarships, old age pensions, unemployment allowance etc., should be ignored.
4) Expenditure on repurchase of financial assets such as shares, bonds, debentures etc., should not be included, as such transactions do not add to the flow of goods and services.
5) Indirect taxes should be deducted.
6) Expenditure on final goods and services should be included.
7) Subsidies should be included.

Out of these methods, the Output Method and Income Method are extensively used. In advanced countries like U.S.A. and U.K. the Income Method is popular. Expenditure Method is rarely used by any country because of its practical difficulties. In India, the Central Statistical Organization (CSO) adopts a combination of both output method and income method to estimate national income of India.

You should know :

Mixed income refers to the incomes of self employed persons who use their own land, labour, capital and entrepreneurship to produce various goods and services.

Difficulties in the Measurement of National Income :

There are various difficulties in the measurement of national income.

A) Theoretical Difficulties or Conceptual Difficulties :

1) **Transfer payments :** Individuals get pension, unemployment allowance etc. but whether these transfer payments should be included in national income or not, is a major problem. On one hand they are a part of individual income and on the other hand, they are part of Government expenditure. Hence, these transfer payments are not included in national income.

2) **Illegal income :** Illegal incomes like income from gambling, black marketing, theft, smuggling etc. are not included in national income.

3) **Unpaid services :** For the purpose of calculating national income, only paid goods and services are considered. However, there are a number of unpaid services which are not accounted for in the calculation of national income. For example, services of housewives and the services provided out of love, affection, mercy, sympathy, charity etc. are not included in national income.

4) **Production for self consumption :** The products kept for self consumption by the farmers and other allied producers do not enter the market. Hence, it is not accounted for in the national Income.

5) **Income of foreign firms :** According to IMF, income of a foreign firm, should be included in the national income of the country, where the firm actually undertakes the production work.

6) **Valuation of Government Services :** Government provides a number of public services such as law and order, defence, public administration, education, health services etc. The calculation of these services at market price is difficult, as the real value of these services is not known. Therefore, it is difficult to calculate national Income.

7) **Changing price level :** Difficulties in calculating national income also arise due to changes in price levels. For example, when the price level rises, the national income may show an increase even though the production may have decreased. Also, when the price level falls, the national income may show a decrease even though there may be an increase in production.

B) Practical Difficulties or Statistical Difficulties :

In practice, a number of difficulties arise in the collection of statistical data required for estimation of national income. Some of the practical difficulties are as follows :

1) **Problem of double counting :** The greatest difficulty in calculating national income is of double counting. It arises from the failure to distinguish properly, between a final and an intermediate product. For example, flour used by a bakery is an intermediate product and that by a household is final product.

2) **Existence of non-monetized sector :** In India, especially in rural areas, there exists the non-monetized sector. Agriculture, still being in the nature of subsistence farming, a major part of production is partly exchanged for other goods and services. It is excluded while counting national income.

3) **Inadequate and unreliable data :** Adequate and correct data on production and cost data relating to crops, fisheries, animal husbandry, forestry, construction workers, small enterprises etc., are not available in

a developing country. Besides this, data on unearned incomes, consumption and investment expenditure of rural and urban population are also not available. This does not reveal the actual size of national income.

4) **Depreciation :** Depreciation refers to wear and tear of capital assets, due to their use in the process of production. There are no uniform, common or accepted standard rates of depreciation applicable to the various capital assets. Thus, it is difficult to make correct deductions for depreciation.

5) **Capital gains or losses :** Capital gains or capital losses, which accrue to the property owners by increase or decrease in the market value of their capital assets or changes in demand, are not included in the national income because these changes do not result from current economic activities.

6) **Illiteracy and ignorance :** Due to ignorance and illiteracy, small producers do not keep an account of their production. So they cannot give information about the quantity or value of their output.

7) **Difficulties in the classification of working population :** In India, working population is not clearly defined. For instance, farmers in India are not engaged in agriculture round the year. Obviously, in the off season, they engage themselves in alternative occupations. In such a case, it is very difficult to identify their incomes from a particular occupation.

8) **Valuation of inventories :** Raw materials, intermediate goods, semi-finished and finished products in the stock of the producers are known as inventories. Any mistake in measuring the value of inventory, will distort the value of the final production of the producer. Therefore, valuation of inventories requires careful assessment.

Importance of National Income :

The following points explain the importance of the National Income :

1) **For the Economy :** National income data are important for the economy of a country. In present times, the national income data are regarded as accounts of the economy, which are known as 'Social Accounts'. It tells us how the aggregates of a nation's income, output and product result from the income of different individuals, products of industries and transactions of international trade.

2) **National policies :** National income data forms the basis of national policies such as employment policy, industrial policy, agricultural policy etc. These figures enable us to know the direction in which the industrial output, investment and saving etc., change. National Income also helps to generate economic models like growth model, investment models etc. Thus, proper measures can be adopted to bring the economy to the right path.

3) **Economic planning :** For economic planning, data pertaining to national income is very essential. This includes data related to a country's gross income, output, savings, investment and consumption which can be obtained from different sources.

4) **Economic Research :** National income data are also used by the research scholars of economics. They make use of various data of the country's input, output, income, savings, consumption, investment employment etc., which are obtained from social accounts.

5) **Comparison of Standard of Living :** National income data helps us to compare the standards of living of people in different countries and of people living in the same country at different times.

6) **Distribution of Income :** National income statistics enables us to know about the distribution of income in the country from the data related to wages, rent, interest and profits. We understand the disparities in the incomes of different sections of the society.