Unit-1 Introduction

Introduction to Microeconomics

The term micro is derived from the Greek word 'mikros', which means 'small'. Microeconomics thus deals with the study of small components of the economy or individual i.e. studies the economic behavior of individual units, maybe a person, a particular household, or a particular firm. In this sense, introduction to microeconomics is referred to as a microscopic study of the economy.

Basic Concepts of Microeconomics

The study of microeconomics involves several key concepts, including (but not limited to):

1.Incentives and behaviors: How people, as individuals or in firms, react to the situations with which they are confronted.

2.Utility theory: Consumers will choose to purchase and consume a combination of goods that will maximize their happiness or "utility," subject to the constraint of how much income they have available to spend.

3.Production theory: This is the study of production—or the process of converting inputs into outputs. Producers seek to choose the combination of inputs and methods of combining them that will minimize cost in order to maximize their profits.

4.Price theory: Utility and production theory interact to produce the theory of supply and demand, which determine prices in a competitive market. In a perfectly competitive market, it concludes that the price demanded by consumers is the same supplied by producers. That results in economic equilibrium.

Types of Microeconomics

On the basis of analysis, the equilibrium between two variables in microeconomics is divided into three parts as micro statics, comparative and dynamic which are also called types of microeconomics. The types of Microeconomics is explained separately as stated below;

- Micro Statics
- Comparative Micro Statics and
- Micro Dynamics

Micro statics is the analysis of one microeconomics equilibrium. It analyzes the economic situation at a point. Suppose, individual demand and supply are two economic variables, their relationship can be explained with the help of the following figure.

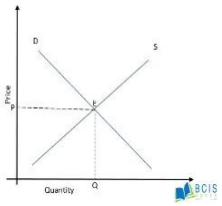


fig:micro-statics

In this figure, the demand curve (D) intersects the supply curve (S) at a point E to determine the price OP and quality OQ at a given time period. This analysis is a static analysis of equilibrium.

Comparative Micro Statics compares two or more equilibrium positions without regard to the transitional period and the process involved in the adjustment. It deals with the comparison of two equilibrium positions of the variable.

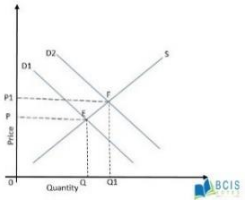


fig: comparative micro statics: The demand curve shift from D to D1 due to the change in the variable of demand function and a new equilibrium is formed at F, which determine the price OP1 and quantity OQ1. The comparison between the values of the variables between E and F position in Comparative Statics.

Microdynamics deals with the time path and process of the adjustment itself. It studies the activities of the variable during the time of adjustment from one equilibrium position to another.

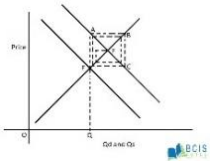


fig: micro-dynamics

This figure shows how the equilibrium is shifted from E to F. It shows the time path and the change position from E to A, B and C to reach F. It also shows how the variables adjust during the movement between two equilibrium positions.

Macroeconomics: Macroeconomics is that specialized field of economics which focuses on the overall economy. It works on the aggregate value of the various individual units, to determine its more substantial impact on the whole nation. All the prominent reforms and policies are based on this concept.

Scope of Macroeconomics

Theory of National Income: It covers the various topics related to the evaluation of national income, including the income, expenditure and budgeting.

Theory of Money: Macroeconomics analyzes the functions of the reserve bank in the economy, the inflow and outflow of money, along with its impact on the employment level.

Theory of International Trade: It is a field of study that enlightens upon the export and import of goods or services. In brief, it determines the impact of cross-border trade and duty charged, on the economy.

Theory of Employment: This stream of macroeconomics helps to figures out the level of unemployment and prevailing employment conditions in the country. Also, to know how it affects the supply, demand, savings, consumption, expenditure behaviour.

Theory of General Price Level: The most important of all is the analysis of product pricing and how these price levels fluctuate because of inflation or deflation.

Types of Macroeconomics

Macroeconomics has been divided into three types. They are:

1.Simple Macro-statics:-

Macro-statics deals with the final equilibrium of the economy at a particular point in time.

a. Study of one static equilibrium point of the economy.

b. Study of the relationship between aggregate economic variables from a still picture point of view.

c. Don't deal with the process of attaining and breaking the equilibrium points.

d. Related with a single point of time.

Y=C+I

Where Y= Total Income, C= Total Consumption, I= Total Investment.

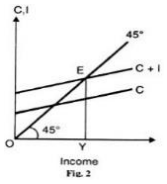


Fig. 2

Fig: Simple Macro-statics

In the figure, the consumption schedule is shown by C and the combined consumption and investment are shown by C+I. The equilibrium point will be attained at E where the equilibrium national income is OY. This equilibrium position will be studied under simple macro-statics.

2. Comparative Macro-Statics

a. Comparative macro-statics makes a comparative study between two equilibriums and draw the conclusions.

b. Don't deal with the process of attaining and breaking equilibrium points.

Don't answer the following questions:

i. What are the causes responsible for breaking the initial equilibrium point?

ii. What are the causes responsible for attaining the final equilibrium point?

iii. What is the actual process in between them?

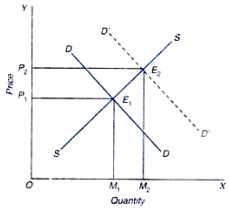


Fig. 4.3. Comparative Static Analysis

Fig: Comparative macro-statics

In the figure let, E_1 be the initial equilibrium to the economy with equilibrium income (OY_1). But if there is an increase in investment, then the initial level of the equilibrium will be disturbed. The new equilibrium is attained at the point E_2, where the new level of equilibrium income OY_2. Comparative macro-statics studies these two equilibrium positions E_1 and E_2 and does not talk about the process through which the equilibrium takes place. It states that when aggregate investment increase and increase aggregate in income will be Y. It also implies that OY_1 is greater than OY_2.

3.Macro-dynamics

a. Macro-dynamics studies the lagged relationship between macroeconomic variables.

b.Studies the process of breaking and attaining equilibrium points.

c. Analyses the macroeconomic variables from the motion picture point of view.

d. It involves the analysis of the period of time rather than a point of time.

It answers all the following questions:

i. What are the causes responsible for breaking the initial equilibrium point?

ii. What are the causes responsible for attaining the final equilibrium point?

iii. What is the actual process in between them?

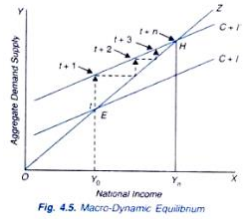


Fig. 4.5. Macro-Dynamic Equilibrium

Fig: Macro-dynamics

In the figure, let E be the initial equilibrium and OY be the initial equilibrium income. Now, there is an investment that leads to an increase in aggregate expenditure. The community would increase its expenditure from EY to YA at the OY level of national income. This increase in community expenditure increase the level of aggregate income in the next period at the level of OY_1 at this increase new level of income people will spend more on consumption goods and the final (long-run) equilibrium point E_1 is attained where the new level of equilibrium income of OY_1. Hence the entire process is studied under macro-dynamics.

Difference between Microeconomics and Macroeconomics

S.No	Microeconomics	Macroeconomics
1.	Microeconomics studies individual economic units	Macroeconomics studies a nation's economy, as well as its various aggregates.
2.	Microeconomics primarily deals with individual income, output, price of goods, etc.	Macroeconomics is the study of aggregates such as national output, income, as well as general price levels.
3.	Microeconomics focuses on overcoming issues concerning the allocation of resources and price discrimination.	Macroeconomics focuses on upholding issues like employment and national household income.
4.	Microeconomics accounts for factors like the demand and supply of a particular commodity.	Macroeconomics account for the aggregate demand and supply of a nation's economy.
5.	Microeconomics offers a picture of the goods and services that are required for an efficient economy. It also shows the goods and services that might grow in demand in the future.	Macroeconomics helps ensure optimum utilization of the resources available to a country.
6.	Microeconomics helps to point out how equilibrium can be achieved at a small scale.	Macroeconomics help determine the equilibrium levels of employment and income of the nation.
7.	Microeconomics also focuses on issues arising due to price variation and income levels.	The primary component of macroeconomic problems is income.

Goals of Macroeconomics

1.High and sustainable economic growth

Economic growth is essential to increase people's income and standard of living. It is usually seen as the most important macroeconomic goal. When economic growth rises, output increases, and so does income. A growing economy shows an increase in economic output. Businesses increase production, recruit more labor and create more income for the household sector. Thus, without economic growth, people will not be able to achieve a better standard of living. They cannot obtain a wide variety of goods and services in large quantities and higher incomes by working.

2.Price stability

Price stability is important because the purchasing power of money is maintained. To get the same number of items, you don't have to spend more nominal money. Price stability requires a low inflation rate. It is not the same as zero inflation. A stable low-moderate inflation rate is often considered ideal. Some economists said it was 2% inflation, as targeted in some countries such as the United States.

3.High rate of employment

High rate of Employment is when the economy uses its productive resources, including labor. That doesn't mean everyone is working. Instead, those who are able and want to have a job can get one.

In full employment, the unemployment rate does not equal zero percent due to structural and frictional problems. Some people are unemployed because they do not have sufficient skills as the market demands.

4.Balance of payments equilibrium

Balance of payments equilibrium is reached when the foreign currency entering a country is the same as the foreign currency leaving. Foreign currency inflows and outflows originate from the current account and the capital account. In other words, what we spend and invest abroad is nothing more than the spending and investment of foreigners into the domestic economy. Thus, our international reserves do not increase or decrease.

Instruments of Macro economics

It can be divided into two subsets:

a) monetary policy instruments

. Monetary policy is conducted by the central bank of a country or of a supranational region .

b) fiscal policy instruments Fiscal policy is conducted by the executive and legislative branches of the government and deals with managing a nation's budget.

Unit 2: Elasticity of Demand and Supply

What is elasticity of demand ? explain its types

Elasticity of demand is defined as the percentage (proportionate) change in quantity demanded of a goods due to the percentage (proportionate) change in the price of the goods, income of the consumer, prices of related goods or other determinants of demand.

There are 3 types of elasticity of demand

1. Price elasticity of demand
2. Income elasticity of demand
3. Cross elasticity of demand

1. Price elasticity of demand: Price elasticity of demand is defined as the percentage (proportionate) change in quantity demanded of a goods due to the percentage (proportionate) change in its price.

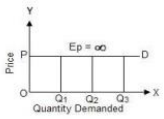
There are five types / Degrees of Price elasticity of demand: They are:

1. Perfectly elastic demand (Ep =∞)

When a negligible increase in price will bring down the demand to zero and a negligible decrease in price will increase the demand to infinity, it is known as the perfectly elastic demand. This type of change in demand is only theoretical and not seen in real life. The perfectly elastic demand can be shown in a table as below:

Price in rupees	Demand in Kg
10	100
10.01	0
9.99	∞

In the table when the price is rupees 10, the demand is 100 Kg. When there is a negligible increase in price from rupees 10 to rupees 10.01, the demand decreases to zero and a negligible decrease in price from rupees 10 to 9.99 rupees, the demand increases to infinity. This is a perfectly elastic demand. It can be shown in a diagram as below:



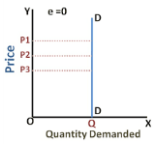
In the diagram, DD is the perfectly elastic demand curve which is a horizontal straight line and parallel to X-axis. This means that a negligible increase in price will bring down the demand to zero and a negligible decrease in price will increase the demand to infinity.

2. Perfectly inelastic demand (Ep=0)

Whatever increase or decrease in price, the demand remains constant is a perfectly inelastic demand. This can be shown in a table as below:

Price in rupees	Demand in Kg
10	100
50	100
2	100

In the table, when the price is rupees 10, the demand is 100 Kg. When the price increases to rupees 50, the demand is constant at 100 Kg and when the price decreases to rupees 2, the demand is constant at 100 Kg. This can be shown in a diagram as below:



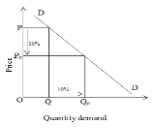
In the diagram, DD is the perfectly inelastic demand curve which is a vertical straight line and parallel to Y-axis. This means that whatever increase or decrease in price of the goods, the demand remains constant.

3. Unitary Elastic demand (Ep=1)

When the percentage change in price is equal to the percentage change in demand, it is unitary elastic demand. The change in price is equal to change in demand. This can be shown in a table as below:

Price in rupees	Demand in Kg
10	200
15	100

In the table the change in price from rupees 10 to rupees 15 is by 50% and the change in demand from 200 Kg to 100 Kg is also by 50%. This is a unitary elastic demand. It can be shown in a diagram as below:



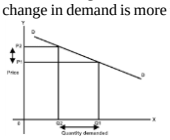
In the diagram, DD is the unitary elastic demand curve which has a gentle slope. The decrease in price from P to P0 is equal to the increase in demand from Q to Q0.

4. Relatively elastic demand (Ep> 1)

When the percentage change in demand is more than the percentage change in price , it is a relatively elastic demand. A small change in price will bring a bigger change in demand. This can be shown in a table as :

Price in rupees	Demand in Kg
10	200
15	50

In the table the change in price from rupees 10 to rupees is by 50% and the change in demand from 200 Kg to 50 Kg is by 75%. The change in demand is more than the change in price. This is a relatively

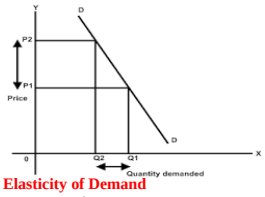


elastic demand. It can be shown in a diagram as below:
In the diagram, DD is the demand curve which has a flat slope. The decrease in demand from Q1 to Q2 is more than the increase in price from P1 to P2.

5. Relatively inelastic demand (Ep< 1)
When the percentage change in price is more than the percentage change in demand, it is a relatively inelastic demand. A big change in price will bring about a smaller change in demand. It can be shown in a table as:

Price in rupees	Demand in Kg
10	100
20	50

In the table the increase in price from rupees 10 to rupees 20 is by 100 % and the decrease in demand from 100 Kg to 50 Kg is by 50 %. The change in price is more than the change in demand. This can be shown in a diagram as below:
In the diagram, DD is the demand curve which has a steep slope. The increase in price from P1 to P2 is more than the decrease in demand from Q to Q1.



2.Income Elasticity of Demand
Income elasticity is defined as the percentage (proportionate) change in quantity demanded due to the percentage (proportionate) change in the income of the consumer.

Types of Income Elasticity of Demand
1.Positive income elasticity of demand (Ey>0): When the demand for a commodity increases with increase in income and decreases with a decrease in income, it is the positive income elasticity of demand. For most goods, the income elasticity is positive. Such goods are called normal goods. It can be explained in a table as :

Income in rupees	Demand in Kg
5000	10
6000	15

In the table, when the income increases from rupees 5000 to rupees 6000, the demand also increases from 10 Kg to 15 Kg and vice-versa. This is positive income elasticity of demand.
It can be shown in a diagram as below:
In the diagram, DD is the positively sloping demand curve. When the income of the consumer increases from I to I1, the demand also increases from Q to Q1 and vice –versa. The positive income elasticity of demand can be further divided into three types as:

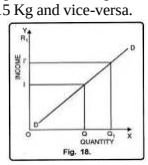
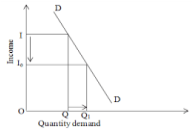


Fig. 18.

Income elasticity of demand more than unity (Ey>1)
2.Negative income elasticity of demand (Ey<0): When the demand for a commodity increases with a decrease in income and decreases with an increase in income, it is negative income elasticity of demand. The income elasticity will be negative in the case of low quality or *Giffen* goods. It can be explained in a table as below:

Income in rupees	Demand in Kg
5000	10
6000	5

In the table, when the income increases from rupees 5000 to rupees 6000, the demand decreases from 10 Kg to 5 Kg and vice-versa. This is negative income elasticity of demand. It can be shown in a diagram as below:

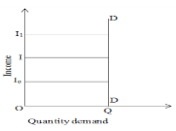


In the diagram, DD is the negatively sloping demand curve. When the income of the consumer decreases from I to Io, the demand for the commodity increases from Q to Q1.

3.Zero income elasticity of demand (Ey=0):
When the demand for a commodity does not change whatever increase or decrease in the income of the consumer, it is the zero income elasticity of demand. This type of elasticity is seen in case of necessity for life goods. It can be explained with a table as below:

Income in rupees	Demand in Kg
5000	10
10000	10
2000	10

In the table, when the income increases from rupees 5000 to rupees 10,000 or decreases to rupees 2000, the demand remains constant as 10 Kg. This is zero elasticity of demand. It can be shown in a diagram as:



In the diagram, DD is a demand curve vertical straight line and parallel to Y-axis. When the income of the consumer increases from I to I1 or decreases to Io, the demand remains constant at OQ.

Cross Elasticity of Demand
Cross elasticity of demand is defined as the percentage (proportionate) change in quantity demanded of x goods due to percentage (proportionate) change in price of Y goods (X and Y are substitutes or complementary goods).
There are two types of cross elasticity of demand: Positive cross elasticity and Negative cross elasticity.
1. Positive cross elasticity of demand:
When the X and Y goods are substitutes, the cross elasticity of demand will be positive. The increase in the price of Y good will lead to the increase in the quantity demanded of X good and a decrease in price of Y good will lead to a decrease in demand of X good. For example: When the price of tea(X goods) increases, the demand for coffee(Y goods) also increases and when the price of tea decreases, the demand for coffee also decreases.
The positive cross elasticity of demand can be shown in a table as:

Price of Y good in rupees	Demand for X good in Kg
100	10
150	15

In the table , when the price of Y good increases fro rupees 100 to rupees 150, the demand for X good also increases from 10 Kg to 15 Kg. This is positive cross elasticity of demand. It can be shown in a diagram as:

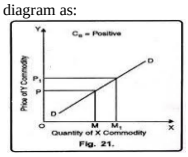


Fig. 21.

In the diagram, DD is the positively slopping demand curve. When the price of Y good increases from P to P1, the demand for X good also increases from OM to OM1 and vice-versa.

2. Negative cross elasticity of demand
When the X and Y goods are complement, the cross elasticity of demand will be negative. The increase in price of Y goods will lead to a decrease in demand of X goods and decrease in price of Y goods will lead to an increase in demand for X goods.
For example: When the price of car increases, the demand for petrol will decrease and when the price of car decreases, the demand for petrol increases. The negative cross elasticity of demand can be shown in a table as below:

Price of Y good in rupees	Demand for X good in Kg
100	10
150	8

In the table, when the price of Y good increases from rupees 100 to rupees 150, the demand for X good decreases from 10 Kg to 8 Kg. This is negative cross elasticity of demand. It can be shown in a diagram as:

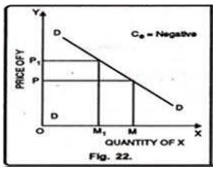
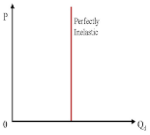


Fig. 22.

In the diagram, DD is a negatively slopping demand curve. When the price of Y good increases from P to P1, the demand for X good decreases from OM to OM1 and vice-versa.

Types /degrees of price elasticity of supply
There are five types or degrees of price elasticity of supply as:
Perfectly elastic supply (Es =∞)
When a negligible increase in price will bring down the supply to zero and a negligible decrease in price will increase the supply to infinity is called perfectly elastic supply. This concept is only hypothetical and rarely found in the world. It can be explained din a diagram as below:
In the diagram, s is the perfectly elastic supply curve which is a horizontal straight line and parallel to X axis. The change in price cannot be shown and a negligible increase or decrease in price will make the demand zero or infinity.



Perfectly inelastic supply (Es = 0)
Whatever increase or decrease in price, the supply remains constant is called perfectly inelastic supply. It can be explained in a diagram as below: In the diagram, the vertical curve is the perfectly inelastic supply curve. It is a vertical straight line and parallel to Y-axis. This means whatever increase or decrease in price, the supply remains constant.
Unitary elasticity of supply (Es =1)
When the percentage change in supply is equal to the percentage change in price, it is called unitary elasticity of supply. It can be explained in a diagram as below:

In the diagram SS is the unitary elastic supply curve. It is positively sloping with a gentle slope. The 5 change in supply (10%) is equal to the % change in price(10%).

Relatively elastic supply (Es>1)
When the % change in supply is more than the % change in price, it is called relatively elastic supply. It can be explained in a diagram as shown below:

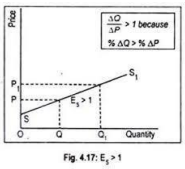
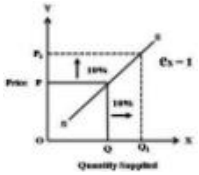


Fig. 4.17: $E_s > 1$

In the diagram ss is the relatively elastic supply curve. It is positively sloping with a flat slope. The % increase in supply from Q to Q1 is more than the % increase in price from P to P1.
Relatively inelastic demand (Es<1)
When the % change in supply is less than the % change in price, it is called relatively inelastic supply. It can be explained in a diagram as shown below:

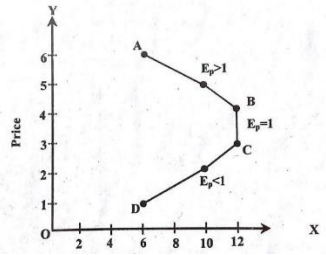


In the diagram S is the relatively inelastic supply curve. It is positively sloping with a steep slope. The % increase in price from Po to P1 is more than the % increase in supply from Qo to Q1.

Explain the total outlet method to measure the price elasticity of demand
Total Outlay Method
Total outlay method, also known as total expenditure method of measuring price elasticity of demand was developed by Professor Alfred Marshall. According to this method, price elasticity of demand can be measured by comparing total expenditure on a commodity before and after the price change.
While comparing the expenditure, we may get one of three outcomes. They are
i) Elasticity of demand will be greater than unity (Ep > 1);- When total expenditure increases with fall in price and decreases with rise in price, the value of PED will be greater than 1. Here, rise in price and total outlay or expenditure move in opposite direction.
ii) Elasticity of demand will be equal to unity (Ep = 1):- When total expenditure on commodity remains unchanged in response to change in price of the commodity, the value of PED will be equal to 1.
iii) Elasticity of demand will be less than unity (Ep < 1):- When total expenditure decreases with fall in price and increases with rise in price, the value of PED will be less than 1. Here, price of commodity and total outlay move in same direction.

Cases	Price (P)	Quantity demanded (Q)	Total outlay or expenditure (E = PXQ)	Price elasticity of demand (PED)
I	6	1	6	PED = 10/6, > 1
	5	2	10	
II	4	3	12	PED = 12/12, = 1
	3	4	12	
III	2	5	10	PED = 6/10, < 1
	1	6	6	

When the information from the above table is plotted in the graph, we get graph like the one shown below.



In the graph, total outlay or expenditure is measured on the X-axis while price is measured on the Y-axis. In the figure, the movement from point A to point B shows elastic demand as we can see that total expenditure has increased with fall in price.
The movement from point B to point C shows unitary elastic demand as total expenditure has remained unchanged with the change in price. Similarly, the movement from point C to point D shows inelastic demand as total expenditure as well as price has decreased.
Total outlay method of measuring price elasticity of demand does not provide us exact numerical measurement of elasticity of demand but only indicates if the demand is elastic, inelastic or unitary in nature. Therefore, this method has limited scope.

Uses of Price elasticity of Demand
Uses of Price elasticity of Demand
1. Product Pricing:
By using the concept of price elasticity of demand, the business firms can determine whether a decline in price is better or a rise in price is better to increase sales, total revenue, and the profitability of the business. Generally, the lower price is fixed for the elastic product and the higher price is for the inelastic product.
2. Price Discrimination
It is the act of charging different prices to different buyers in different markets for identical products. It is one of the major attributes of a monopolist seller. Low price is charged in the market where there is elastic demand and the higher price is charged in the market in which price elasticity is relatively low.
3. Pricing and nationalization of Public Utilities
Public utilities are very important for the daily life of all the people living in the country and generally, their demand is inelastic. If they are left at the hand of the private sector, they might be charged a very high price and there will reduction in the people's welfare. Therefore, the elasticity of demand is used while deciding which economic undertaking should be controlled by public authority and which is left on the hand of the private sector. Similarly, the pricing problem of public utility is also solved by price elasticity.
4. Pricing of Product
Joint In the case of a joint product like wool and mutton, paddy and straw, chicken and eggs, etc. their pricing issue is solved with the help of price elasticity. The separate pricing is very difficult in such cases or the separate cost of predication is not known in such type of joint product. Thus, the concept of price elasticity of demand is used to determine their separate price.
5. Demand Forecasting
The value or coefficient of price elasticity of demand is useful to forecast the future demand of a commodity. The determination of elasticity will let know a business firm about the percentage change in demand with one percentage change in price. So given the value of elasticity of demand, future demand forecasting would become easy.

Uses of Income Elasticity:
1. Demand Forecasting
If the income elasticity of the particular product, the rate of increase in the income of the target market is known then the firm can easily forecast the demand for its products. Thus the knowledge of income elasticity of demand gives an idea of how much to produce at a different level of income. In the long-run, the demand for luxurious products may become income elastic. Thus the business firms may formulate their business strategies accordingly.
2. Classification of Goods
The income elasticity of demand helps to classify the commodities. Whether the product is a normal good, luxurious normal good, essential good, inferior good, or neutral good, we can easily classify with the help of the coefficient of income elasticity of demand. If the coefficient of income elasticity of demand is positive, the commodity is normal, if greater than one, the commodity is luxurious, the coefficient is positive but less than one then the commodity is essential, if it is negative then the good is inferior and when it is zero then the commodity is neutral good.
3. Helpful in Strategic Decisions
The business can classify all the people into different classes based on the measurement of income elasticity of demand. They can then produce their product accordingly. The firm produces high-quality expensive products if its strategy is to target the richer class of society. In contrast, they focus to produce normal and low priced goods if they have the strategy to cover the comfort and common type of market and class of people. Thus, the business firm can classify the entire market into different classes based on income elasticity of demand and accordingly formulate business policies and strategies.
4. Helpful to Government for Policy Formulation
The governmental organs also use the concept of income elasticity of demand in the formulation of different types of policies. For example, for the imposition of taxation, the government can use the concept of income elasticity of demand. The income elasticity of demand is highly elastic for luxurious goods and it is less elastic for

normal goods. Thus which good is to be taxed can be seen from the point of income elasticity also.

Uses of Cross Elasticity:

1. Categorization of Goods

The concept of cross elasticity of demand is useful for the categorization of goods. If the cross elasticity is positive then two goods are substitutes and in the case of negative two goods are complementary. Similarly, if cross elasticity is zero then goods are independent. After knowing the commodities the firms can formulate their policies accordingly.

2. Pricing Policy Related to Own Goods

The products produced by anyone company are in many ways related to the output of other company's products. Thus their demand is directly affected by the pricing policies of other producing firms. By knowing the cross elasticity the business firm can get information regarding the pricing policies of other competitors and they can formulate the best price for their products.

3. Establishment of Interrelation between Industries

Based on the measurement of cross elasticity of demand different industries got to know their relation as to whether they are related to each other complementarily or they are substitutable. In case they are substitutable they cannot raise their prices without making consideration and coordinating with other industries. Similarly, if they are related complementarily, they also cannot directly alter their strategies without negotiating their complement industries. So it establishes a king of interdependence between industries of the economy.

4. Classification of Market

The market can be classified based on cross elasticity of demand. The higher the value of cross elasticity of demand between goods, the higher will be the competition in the market and vice-versa. If the cross elasticity is infinite, the market structure is perfectly competitive. If it is zero, the market is a monopoly.

5. Pricing Policy Related to Other's Product

Different firms produce a different line of products. They may be substitutes (a cream company produces varieties of creams) and complementary (a company may produce toothpaste and toothbrush). Thus the pricing of such products can be done with the help of the concept of cross elasticity of demand.

Unit 3: Theory of Consumer's Behaviour

Cardinal utility: Cardinal utility is the utility wherein the satisfaction derived by the consumers from the consumption of good or service can be measured numerically. Ordinal utility states that the satisfaction which a consumer derives from the consumption of product or service cannot be measured numerically.

The cardinal utility theory or approach was proposed by classical economists, Gossen (Germany), William Stanley Jevons (England), Leon Walras (France), and Karl Menger (Austria).

Later on a neo-classical economist, Alfred Marshall brought about significant refinement in the cardinal utility theory. Therefore, cardinal utility theory is also known as neo-classical utility theory.

Assumptions Of Cardinal Utility:

Utility is measurable

The basic assumption of the cardinal utility approach is that utilities of commodities can be quantified. According to Marshall, money is used to measure the utilities of commodities. This implies that the amount of money that a customer is willing to pay for a particular commodity is a measure of its utility.

Marginal utility of money is constant

The cardinal utility approach assumes that money must measure the same amount of utility under all circumstances. To put simply, the utility derived from each unit of money remains constant.

Utilities are additive

As per this assumption, the utility derived from various commodities consumed by an individual can be added together to derive the total utility. Suppose an individual consumes X1, X2, X3,….Xn units of commodity X and derives U1, U2, U3,….Un until respectively, the total utility that the individual derives from n units of the commodity can be expressed as follows:

Un = U1(X1) + U2(X2) + … + Un (Xn)

Explain the condition of consumer's equilibrium According to Utility Analysis.

A consumer is in a state of equilibrium when he maximizes his satisfaction by spending his given income on different goods and services. Any deviation or change in the allocation of income under the given circumstance will lead to a fall in total satisfaction.

For one-commodity case: Rupee worth of satisfaction actually received by the consumer is equal to the marginal utility of money as specified by the consumer himself.

Condition 1 : MU(of good X) = MU(of money) OR , PRICE(of good X) = MU(of money)

Reason: Price paid by the consumers should be exactly equal to the money value of MU that he derives. In case P(of X) is lesser than the MU(of money), he should be prompted to buy more of good X. Higher consumption will lead to a fall in MU. The consumption of good X would stop only when P(of good X) will be equal to MU(in terms of money). Likewise, if P(of X) is greater than MU(in terms of money), the consumer will be prompted to buy less of good X, leading to a fall in MU.

Condition 2: Marginal utility of money remains constant.

Condition 3: Law of marginal utility holds good.

For two-commodity case: Rupee worth of marginal utility of money should be same across good X and good Y, and equal to marginal utility of money.

Reason: In case rupee worth of satisfaction (MU of good X/ price of good X) is greater for good X than good Y, the consumer will be prompted to buy more of good X and less of good Y. This would lead to a fall in marginal utility of good X and a rise in marginal utility of good Y. This process would continue till MU(of good X)/ Price of good X = MU(OF GOOD Y)/ Price of good Y = MU(of money) . In case rupee worth of satisfaction (MU of good y/ price of good Y) is greater for good Y than good X, the consumer will be prompted to buy more of good Y and less of good X. This would lead to a fall in marginal utility of good Y and a rise in marginal utility of good X.

Derivation of Demand Curve:

A demand curve has been defined as a curve that shows a relationship between the quantity-demanded of a commodity and its price assuming income, the tastes and preferences of the consumer and the prices of all other goods constant. To draw an individual demand curve the information regarding prices of a commodity at different levels and their corresponding quantities demanded is required. The price-consumption curve can provide this information.

Fig. 3.16 illustrates the way in which the individual demand curve can be derived from the price consumption curve. When a demand curve is to be drawn, units of money are measured on the vertical axis while the quantity of a commodity for which demand curve is to be drawn are shown on the horizontal axis.

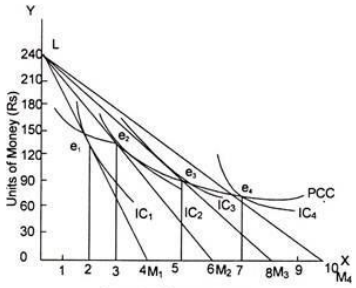


Fig.3.16 Derivation of Individual Demand Curve

Exception of demand curve:

There are a few situations in which the general rule that demand curves slope down doesn't apply. Giffen goods violate the law of demand because of unique circumstances. On these rare occasions, increasing the price of a good can increase the amount of it people buy. This outcome can occur when the product in question is essential and a price increase crowds out the ability to buy other items. Imagine the price of potatoes goes up, which makes buying meat unaffordable. Consequently, the person diverts what money would have gone to meat toward more potatoes. Veblen goods also violate the law of demand. In these situations, a buyer interprets a higher price for a signal of higher quality. You can imagine this situation playing out with a bottle of wine. If the label looks cheap and has a low price, people assume it's a low-quality wine. But, if you put that same wine in a fancy bottle with a higher price tag, you might end up with more sales.

Information asymmetry can also upset the law of demand and change the shape of demand curves. One example is called a "lemon problem," in which a buyer and a seller don't have the same information about a product. Consider a used car. The buyer knows that the seller has more information about the quality of the car than she does. Therefore, she might try to interpret the price as an indication of quality. If the seller puts a low price on the vehicle, the buyer might be put off, thinking the car is a piece of junk. That's the opposite response to a price reduction a demand curve would expect.

Ordinal Utility: In economics, an ordinal utility function is a function representing the preferences of an agent on an ordinal scale. The Ordinal Utility approach is based on the fact that the utility of a commodity cannot be measured in absolute quantity, but however, it will be possible for a consumer to tell subjectively whether the commodity derives more or less or equal satisfaction when compared to another.

Assumptions of Ordinal Utility: Rationality: It is assumed that the consumer is rational who aims at maximizing his level of satisfaction for given income and prices of goods and services, which he wish to consume. He is expected to take decisions consistent with this objective.

Ordinal Utility: The indifference curve assumes that the utility can only be expressed ordinally. This means the consumer can only tell his order of preference for the given goods and services. Transitivity and Consistency of Choice: The consumer's choice is expected to be either transitive or consistent. The transitivity of choice means, if the consumer prefers commodity X to Y and Y to Z, then he must prefer commodity X to Z. In other words, if X= Y, Y = Z, then he must treat X=Z. The consistency of choice means that if a consumer prefers commodity X to Y at one point of time, he will not prefer commodity Y to X in another period or even will not consider them as equal.

Nonsatiety: It is assumed that the consumer has not reached the saturation point of any commodity and hence, he prefers larger quantities of all commodities.

Diminishing Marginal Rate of Substitution (MRS): The marginal rate of substitution refers to the rate at which the consumer is ready to substitute one commodity (A) for another commodity (B) in such a way that his total satisfaction remains unchanged. The MRS is denoted as DB/DA. The ordinal approach assumes that DB/DA goes on diminishing if the consumer continues to substitute A for B.

Explain the marginal rate of substitution (MRSxy) suitable graph.

The marginal rate of substitution (MRS) is the amount of a good that a consumer is willing to consume compared to another good, as long as the new good is equally satisfying. MRS is used in indifference theory to analyze consumer behavior.

The marginal rate of substitution is the slope of the indifference curve at any given point along the curve and displays a frontier of utility for each combination of "good X" and "good Y."

When the law of diminishing MRS is in effect, the MRS forms a downward, negative sloping, convex curve showing more consumption of one good in place of another.

Formula and Calculation of the Marginal Rate of Substitution (MRS)

The marginal rate of substitution (MRS) formula is:

$$|MRS_{xy}| = \frac{dy}{dx} = \frac{MU_x}{MU_y}$$

where:

$x, y =$ two different goods

$\frac{dy}{dx} =$ derivative of y with respect to x

$MU =$ marginal utility of good x, y

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Properties of indifference curve:

* Indifference curves never cross. If they could cross, it would create large amounts of ambiguity as to what the true utility is.
* The farther out an indifference curve lies, the farther it is from the origin, and the higher the level of utility it indicates. As illustrated above on the indifference curve map, the farther out from the origin, the more utility the individual generates while consuming.
* Indifference curves slope downwards. The only way an individual can increase consumption in one good without gaining utility is to consume another good and generate the same amount of utility. Therefore, the slope is downwards sloping.
* Indifference curves assume a convex shape. As illustrated above in the indifference curve map, the curve gets flatter as you move down the curve to the right. It illustrates that all individuals experience diminishing marginal utility, where additional consumption of another good will generate a lesser amount of utility than the prior.

Marginal rate of substation: In economics, the marginal rate of substitution (MRS) is the amount of a good that a consumer is willing to consume compared to another good, as long as the new good is equally satisfying. MRS is used in indifference theory to analyze consumer behavior.

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where:

$x, y =$ two different goods

$\frac{dy}{dx} =$ derivative of y with respect to x

$MU =$ marginal utility of good x, y

Price line and Consumers Equillibrium: The Ordinal Approach to Consumer Equilibrium asserts that the consumer is said to have attained equilibrium when he maximizes his total utility (satisfaction) for the given level of his income and the existing prices of goods and services. The ordinal approach defines two conditions of consumer equilibrium:

Necessary Condition or First Order Condition: Under the first order condition, the consumer reaches his equilibrium in the same manner as he does under the cardinal approach of the two-commodity model. isexpressed as:

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

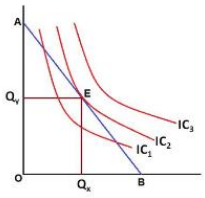
By implication,

$$\frac{MU_x}{MU_y} = MRS_{x,y}$$

Thus, the necessary condition of the cardinal approach to consumer equilibrium can be written as:

$$MRS_{x,y} = \frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

Supplementary or Second Order Condition: The first order condition is necessary but not sufficient. Thus, the second order or supplementary condition requires that the necessary condition must be accomplished at the highest possible indifference curve on the indifference map. In the figure above, there are three indifference curves, Viz. IC1, IC2, and IC3 presenting a hypothetical indifference map of the consumer. AB is the hypothetical budget line. At point 'E', the indifference curve IC2 and Budget line AB intersect and hence, therefore, the slope of IC2 = AB. At this point, both the necessary condition and the supplementary condition get fulfilled, and hence, the consumer attains equilibrium at point 'E'.



Price effect: Price effect is the change experienced in the demand of certain good or service after there's a modification of its price. It can also refer to the consequence that a certain event has in the price of a financial instrument.

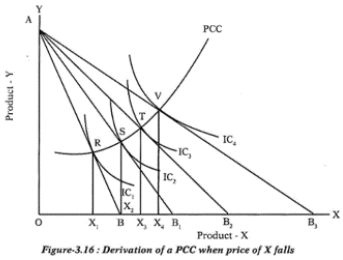


Figure-3.16 : Derivation of a PCC when price of X falls

Derivation of PCC: The price effect can be defined as an effect of a change in price of a product on consumer's equilibrium and on the quantity consumed of that product by the consumer, price of other product and the income of the consumer remaining same. Such a price effect, with regard to a fall in the price of product X.

Based on it, we may observe that —

i. The consumer is in a state of equilibrium at point R, given his initial budget line as AB and an indifference map consisting of four indifference curves, IC1 to IC4. At equilibrium, the consumer is on IC1 consuming OX1 of product X.

ii. Both the conditions of equilibrium are satisfied at this point. That is, the budget line is forming a tangent at point R on IC1 and the indifference curve is convex to the point of origin.

iii. When price of the product X falls, the budget line shifts from point B on the X-axis to point B1 and becomes flatter. This implies that at a lower price, the consumer is capable of buying a larger quantity of X (OB1) than before (OB). Since the price of Y remains unchanged, there will be no change in point A on the Y-axis.

As such, the new budget line assumes the shape AB1 and the consumer finds his equilibrium at point S on IC2. At this point, the consumer opts for OX2 of X. Such an effect is also in accordance with the law of demand which implies a larger demand of the product at a lower price.

iv. A further fall in the price of X will shift the budget line further away from the point of origin on the X-axis to the point B2 forming a new budget line AB2 and the consumer's equilibrium at point T on the IC3. The consumption of X, as a result, further increases to OX3.

v. The equilibrium point will shift further to the point V on the budget line AB3 when the price of X further falls and the consumption of X will increase to OX4.

vi. Thus, as the price of X continue to fall, the budget line will keep on moving away from the point of origin and the consumer's equilibrium will shift representing higher & higher consumption of X.

vii. If all the points of equilibrium viz., R, S, T and V, are joined, the curve so formed is termed as price consumption curve (PCC). As the name indicates, the PCC shows a relationship between changes in con-sumption as a result of change in price of one of the two products.

viii. One can further observe that slope of a PCC varies at different price levels.

a. At lower price levels, it assumes a positive slope and becomes upward looking. This can be noticed between points S and V on the PCC.

b. At middle level of prices, i.e. between R and S, it becomes somewhat horizontal.

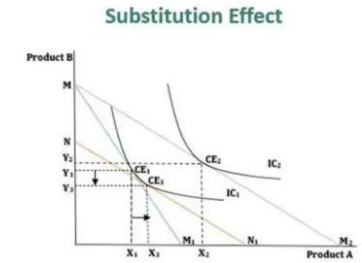
c. While at higher levels of prices, prior to R, it takes a negative slope and, thus, the PCC assumes a downward looking shape.

Income Effect: The income effect in microeconomics is the change in demand for a good or service caused by a change in a consumer's purchasing power resulting from a change in real income. This change can be the result of a rise in wages etc., or because existing income is freed up by a decrease or increase in the price of a good that money is being spent on.

Derivation of ICC: In economics and particularly in consumer choice theory, the income-consumption curve (also called income expansion path and income offer curve) is a curve in a graph in which the quantities of two goods are plotted on the two axes; the curve is the locus of points showing the consumption bundles chosen at each of various levels of income.

Substitution Effect: The substitution effect is the decrease in sales for a product that can be attributed to consumers switching to cheaper alternatives when its price rises. A product may lose market share for many reasons, but the substitution effect is purely a reflection of frugality. If a brand raises its price, some consumers will select a cheaper alternative.

The above graph presents the substitution effect. Consider product A and product B substitutable to each other. Then, the consumer buys a combination of products A and B. The indifference curve represents its satisfactory combinations and tangent to the budget line. At the current purchasing power, the line MM1 represents the budget line tangent to the indifference curve at CE1 (X1, Y1), the consumer equilibrium point. Therefore, it indicates maximum satisfaction; consumer purchases X1 quantity of product A and Y1 quantity of product B. When the price of product B rises and product A price remains the same, the budget line rotates, forming a new budget line



NN1. The new line tangent to the same indifference curve at CE3 (X3, Y3). It indicates that in reaction to the price rise, the consumer reduced the quantity of product B and increased the quantity of product A. Therefore, the new combination falls in the same indifference curve. Hence enjoying the same level of satisfaction. Furthermore, a new budget line, M1M2, can emerge due to the income effect. When income increases, consumers move to a higher indifference curve (IC2), showing greater affordability.

Decompose the total price effect (PE) into income effect (IE) and substitution effect (SE), using Hick's method under the indifference curve analysis.

The Hicksian Method:- Hicks has separated the substitution effect and the income effect from the price effect through compensating variation in income by changing the relative price of a good while keeping the real income of the consumer constant.

Suppose initially the consumer is in equilibrium at point R on the budget line PQ where the indifference curve I_1, is tangent to it at point R in Figure 32. Let the price of good X fall. As a result, his budget line rotates outward to PQ, where the consumer is in equilibrium at point T on the higher indifference curve I_1 .

The movement from R to T or B to E on the horizontal axis is the price effect of the fall in the price of X. With the fall in the price of X, the consumer's real income increases.

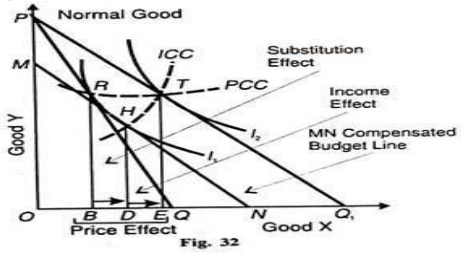


Fig. 32

To make the compensating variation in income in order to isolate the substitution effect, the consumer's money income is reduced equivalent to PM of Y or Q_1N of X by drawing the budget line MN parallel to PQ_1, so that it is tangent to the original indifference curve I_1 at point H.

The movement from the R to H on the I_1, curve is the substitution effect whereby the consumer increases his purchases of X from B to D on the horizontal axis by substituting X for Y because it is cheaper.

It may be noted that when there is a fall (or rise) in the price of good X, the substitution effect always leads to an increase (or decrease) in its quantity demanded. Thus the relation between price and quantity demanded being inverse, the substitution effect of a price change is always negative, real income being held constant.

This is known as the Slutsky Theorem, named after Slutsky who first stated it in relation to the Law of Demand.

To isolate the income effect from the price effect, return the income which was taken away from the consumer so that he goes back to the budget line PQ_1, and is again in equilibrium at point T on the curve

The movement from point H on the lower indifference curve I_1, to point T on the high indifference curve I_2 is the income effect of the fall in the price of good X. By the method of compensating variation in income, the real income of the consumer has increased as a result of the fall in the price of X.

The consumer purchases more of this cheaper good X thus moving on the horizontal axis from D to E. This is the income effect of the fall in the price of a normal good X. The income effect with respect to the price change for a normal good is negative. In the above case, the fall in the price of good X has increased the quantity demanded by DE via the increase in the real income of the consumer.

Thus the negative income effect DE of the fall in the price of good X strengthens the negative substitution effect BD for the normal good so that the total price effect BE is also negative, that is, a fall in the price of good X has led, on both counts, to the increase in its quantity demanded by BE.

Unit 4 Revenue and Cost Curves

Various concept of Cost

- Actual and Opportunity Cost
- Implicit and Explicit Cost
- Accounting and Economic cost

Actual Cost

- The expenditure, which is actually incurred by the firm in payment for labor, raw materials, plant, building machinery, equipment, traveling an transport, fuel, etc.
- The total money expenses recorded in the books of accounts for all practical purpose is the actual cost
- Actual cost concept comes under the account of cost concept.

Opportunity Cost

- The loss of income due to opportunity foregone.
- It refers to what an input could earn in its next best alternative job.
- It arises due to scarcity and alternative uses of resources.
- Any economic resources is defined as the value of the best commodity which could have been produced by the use of the same resources that can be used to produce many thing.

Implicit Cost

- The value of factor input owned and used by the firm or the entrepreneur in its own production process.
- Such cost does not appear in the accounting system or book of accounts because does not require expenses of money by the firm.
- It must be taken unto account while calculating economics profit.
- The concept of implicit cost is similar to the concept of opportunity cost.

Explicit Cost

- Payment made by a firm for the use of inputs purchased or hired from outside or other.
- It is the cost of inputs/production, which requires an expense of money by the firm.
- The cost include wages to hire labour, interest on borrowed capital, rent on land and building, expenditure on raw materials etc.
- It is similar to the concept of actual cost or money cost or accounting cost.

Accounting Cost

- The cost that evolves direct payment of money by entrepreneur to the varies factors of production.
- The factors of production which the entrepreneur hires from outside constitutes the accounting cost.
- Accounting cost are recordable on books of account.
- Accounting cost includes money cost like wages and salaries, prices of raw materials and all such payment that needs to be recorded on book of account.
- The concept of accounting cost

(Relationship and difference between short run and long run average cost curves)

Short Run Average Cost Curve:

In the short run, the shape of the average total cost curve (ATC) is U-shaped. The short run average cost curve falls in the beginning, reaches a minimum and then begins to rise. The reasons for the average cost to fall in the beginning of production are that the fixed factors of a firm remain the same. The change only takes place in the variable factors such as raw material, labor, etc.

As the fixed cost gets distributed over the output as production is expanded, the average cost, therefore, begins to fall. When a firm fully utilizes its scale of operation (plant size), the average cost is then at its minimum. The firm is then operating to its optimum capacity. If a firm in the short run increases its level of output with the same fixed plant; the economies of that scale of production change into diseconomies and the average cost then begins to rise sharply.

Long Run Average Cost Curve:

In the long run, all costs of a firm are variable. The factors of production can be used in varying proportions to deal with an increased output. The firm having time-period long enough can build larger scale or type of plant to produce the anticipated output.

The shape of the long run average cost curve is also U-shaped but is flatter that the short run curve as it is illustrated in the following diagram:

Diagram and Example:

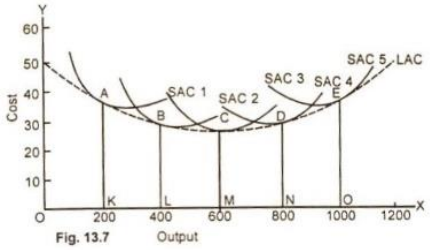


Fig. 13.7

In the diagram 13.7 given above, there are five alternative scales of plant SAC1 SAC2, SAC3, SAC4 and, SAC5. In the long run, the firm will operate the scale of plant which is most profitable to it.

For example, if the anticipated rate of output is 200 units per unit of time, the firm will choose the smallest plant It will build the scale of plant given by SAC1 and operate it at point A. This is because of the fact that at the output of 200 units, the cost per unit is lowest with the plant size 1 which is the smallest of all the four plants. In case, the volume of sales expands to 400, units, the size of the plant will be increased and the desired output will be attained by the scale of plant represented by SAC2 at point B.

If the anticipated output rate is 600 units, the firm will build the size of plant given by SAC3 and operate it at point C where the average cost is $26 and also the lowest. The optimum output of the firm is obtained at point C on the medium size plant SAC3.

If the anticipated output rate is 1000 per unit of time the firm would build the scale of plant given by SAC5 and operate it at point E. If we draw a tangent to each of the short run cost curves, we get the *long run average cost (LAC) curve.*

The LAC is U-shaped but is flatter than tile short run cost curves. Mathematically expressed, the long-run average cost curve is the envelope of the SAC curves.

In this figure 13.7, the long-run average cost curve of the firm is lowest at point C. CM is the minimum cost at which optimum output OM can be, obtained.

Revenue Curve under Perfect competition:

Perfect competition is the term applied to a situation in which the individual buyer or seller (firm) represent such a small share of the total business transacted in the market that he exerts no perceptible influence on the price of the commodity in which he deals.

Thus, in perfect competition an individual firm is price taker, because the price is determined by the collective forces of market demand and supply which are not influenced by the individual. When price is the same for all units of a commodity, naturally AR (Price) will be equal to MR i.e., AR = MR. The revenue schedule for a competitive firm is shown in the table 5.

Table 5

Units	TR	AR	MR
1	5	5	5
2	10	5	5
3	15	5	5
4	20	5	5
5	25	5	5

In table 5 we find that as output increases, AR remains the same i.e. Rs. 5. Total revenue increases but at a constant rate. Marginal revenue is also constant i.e. Rs. 5 and is equal to AR.

4.Monopolistic competition: It is a type of imperfect market where there are many buyers and sellers selling differentiated product at different prices. The products are close substitutes to each other but not homogenous.

There exits the elements of both monopoly and perfect competition in this market. This type of market is more realistic in the world.

Revenue Curve under Imperfect Competition:

When a firm is working under conditions of monopoly or imperfect competition, its demand curve or AR curve is less than perfectly elastic, the exact degree of elasticity being different in different market situations depending upon the number of sellers and the nature of product.

In other words, the demand/AR curve has a negative slope and the MR curve lies below it. This is because the monopolist seller ordinarily has to accept a lower price for his product, as he increases his sales.

Under imperfect competition conditions, total revenue increases at a diminishing rate. It becomes maximum and then begins to decline.

The position of various revenue curves is shown in Table 7:

Table 7

Price	Units Sold	TR	AR	MR
6	1	6	6	6
5	2	10	5	4
4	3	12	4	2
3	4	12	3	0
2	5	10	2	−2

In table 7, 2 units can be sold at a unit price of Rs. 5, bringing in total revenue of Rs. 10. When 3 units are sold, the price per unit is lowered to Rs. 4 to make it possible for larger quantity to be sold. The total revenue in this case is Rs. 12.

The marginal unit is not bringing in Rs. 4 which is its price, but only Rs. 2. This is because the additional one unit is sold at Re. one less and the first 2 units which could have been sold for Rs. 5 are also sold at Rs. 4. i.e., Re. one less.

Features of Monopolistic competition

-There are a large number of buyers and sellers in the market
-The firms sell differentiated products at different prices
-There are no restrictions to the entry and exit of firms in the market
-There will be many firms in the market producing different products which are closely related but not perfect substitutes.

c. Oligopoly

It is a type of market structure where there are a few sellers selling differentiated products at different prices in the markets. The sellers have some control on the supply and price of the products in the market.

Features of Oligopoly

-The products sold in the market are differentiated without perfect substitutes
-The prices of the products are different.
-The sellers have control on the supply and price of the products
-There is a great importance of advertisement of the products

4.2: Concept of Total, average and marginal revenue

Derivation of average and marginal revenue curves from total revenue under perfect competition

Under perfect competition, the goods bought or sold are homogeneous. So, the price or the average revenue remains same and constant for all the units of the goods.

As all the units are sold at the same price, the addition to total revenue is also same. So, the marginal revenue also remains same and constant for all the units of goods. The average and marginal revenue of all the goods remains same and constant as shown in a table below:

Units of goods sold	Average revenue	Total revenue	Marginal revenue
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10
5	10	50	10

In the table, AR and MR are constant and equal to each other and TR increases continuously at a constant rate.

Derivation of AR and MR curves from TR curve under Monopoly Market

Under Monopoly market, the goods bought and sold are not homogeneous. The prices of the products bought or sold are different.

The monopolist follows sales maximization policy and will reduce the price of additional units of products to sell more. So, the average revenue will go on decreasing.

As the additional units of products are sold at reduced price, the addition to total revenue will also go on decreasing. This will make marginal revenue to go on decreasing with every additional units of products sold.

Thus, under Monopoly market, both average and marginal revenue will go on decreasing as shown in the table below:

Units sold	Total revenue	Average revenue	Marginal revenue
1	10	10	10
2	18	9	8

3	24	8	6
4	28	7	4
5	30	6	2
6	30	5	0
7	28	4	-2

In the table, the total revenue first increases, reaches the maximum and then declines. Both average and marginal revenues decline but at different rates. The average revenue is always positive nut marginal revenue becomes zero and even negative.

Costs and Cost Curves

Cost refers to the expenditure incurred in the production of goods and services in paying rent to land, wages to labourers, interest to capital and profit to entrepreneurs for their contribution in the production process.

There are different types of costs as:

Fixed costs: It refers to the cost incurred on the foxed factors of production like land, buildings, machines, furniture, insurance, etc. This cost remains constant at all levels of production. Even at zero production, there is fixed cost and it remains valid only in the short-run as in the long- run all costs become variable.

Variable cost: It refers to the cost incurred on the variable factors of production like labour, raw-materials, fuel, transport, etc. This cost increases with increase in production. At zero production, there will be no any variable cost.

Short-run cost: In the short-run, as the time is short and not sufficient, some factors of production like land, buildings, capital, machines, etc. cannot be changed and are fixed costs. Only labour, raw-materials, fuel, transport, etc. can be changed and are the variable factors. So, in the short-run there are both fixed and variable factors of production. The expenditures incurred on both the fixed factors and the variable factors of production is called short-run costs.

Lon-run costs: In the long-run, as the time is long and sufficient, all factors of production like land , labour, capital, organization, fuel, transport, insurance, etc. can be changed and are all variable factors. So, in the long-run all factors of production are variable and the expenditure incurred on these variable factors is called long-run costs.

Explain the relationship between average cost & marginal cost

Ans: The relationship between the marginal cost and average cost is the same as that between any other marginal-average quantities. When marginal cost is less than average cost, average cost falls and when marginal cost is greater than average cost, average cost rises.

There are several ways to measure the costs of production, and some of these costs are related in interesting ways. For example, average cost (AC), also called average total cost, is the total cost divided by quantity produced; marginal cost (MC) is the incremental cost of the last unit produced. Here's how average cost and marginal cost are related:

$$MC(q) < AC9q) \rightarrow AC\ decreasing$$
$$MC(q) > AC9q) \rightarrow AC\ increasing$$

The relationship between average and marginal cost can be easily explained via a simple analogy. Rather than think about costs, think about grades on a series of exams.

Assume that your average grade in a course is 85. If you were to get a score of 80 on your next exam, this score would pull your average down, and your new average score would be something less than 85. Put another way, your average score would decrease.

If you scored 90 on that next exam, this grade would pull your average up, and your new average would be something greater than 85. Put another way, your average score would increase.

If you scored 85 on the exam, your average would not change.

Returning to the context of production costs, think of average cost for a particular production quantity as the current average grade and marginal cost at that quantity as the grade on the next exam.

One typically thinks of marginal cost at a given quantity as the incremental cost associated with the last unit produced, but marginal cost at a given quantity can also be interpreted as the incremental cost of the next unit. This distinction becomes irrelevant when calculating marginal cost using very small changes in quantity produced.

Following the grade analogy, average cost will be decreasing in quantity produced when marginal cost is less than average cost and increasing in quantity when marginal cost is greater than average cost. Average cost will be neither decreasing nor increasing when marginal cost at a given quantity is equal to average cost at that quantity.

Perfect competition market

Under perfect competitive market structure, the nature of AR and MR parallel to horizontal axis. It is due to constant price of the commodity.

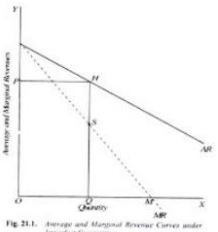
Graphically, it can be shown as below.

I the figure, AR and MR represent average revenue and marginal revenue curve. AR curve slope horizontal i.e. parallel to X - axis, the MR the coincides with the AR curve, due to the constancy in price at each level of output.

Under Imperfect market (monopoly)

Under Monopoly market structure price of product various inversely with quantity demanded of the product as the result the nature of AR and MR both are downwards sloped.

Graphically, it can be shown as below



In figure, AR and MR represents average revenue and marginal revenue curve both are downward slope from left to right.

The concept of the various short-run costs are:

Total Cost: There are three short-run total costs as:

Total Fixed Cost (TFC): It refers to the total expenditure incurred on fixed factors of production.

TFC = TC - TVC where,

TFC= Total Fixed Cost, TC = Total Cost, TVC = Total Variable Cost

Total Variable Cost (TVC): It refers to the expenditure incurred on the variable factors of production.

TVC = TC – TFC where,

TVC = Total Variable Cost, TC = Total Cost, TFC = Total Fixed Cost

Total Cost (TC): It is the sum of total fixed cost and total variable cost.

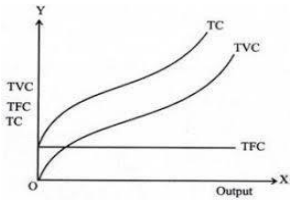
TC = TFC + TVC where,

TC = Total Cost, TFC = Total Fixed Cost, TVC = Total Variable Cost.

The concepts of TFC, TVC and TC can be explained in a table as shown below:

Units of output	TFC	TVC	TC
0	20	-	20
1	20	20	40
2	20	30	50
3	20	45	65
4	20	80	100
5	20	150	170

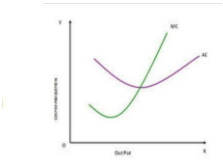
In the table, the TFC remains constant at all levels of production. Even at zero output, the TFC is constant. The TVC increases with increase in output. At zero output TVC is also zero. The TC is the sum of TFC and TVC. It increases continuously with increases in output.



The concept of TFC, TVC and TC can be explained in a diagram as shown below:

In the diagram TFC is the total fixed cost curve. It is a horizontal straight line and parallel to X-axis. This means that the TFC remains constant at all levels of production.

TVC is the total variable cost curve. It starts from the point of origin and increases continuously, slowly first and then faster.TC is the total cost curve runs parallel to the TVC curve. It is the summation of TFC and TVC curves.



Average cost: There are three short-run average costs as:

Average Fixed Cost (AFC) : It can be calculated by dividing total fixed cost by number of output.

AFC=TFC/N where AFC=Avg Fixed Cost, TFC=Total Fixed Cost

N= Number of output

Average Variable Cost (AVC): It can be calculated by dividing total variable cost by the number of output.

AVC=TVC/ N where, AVC=Average Variable Cost,TVC=Total Variable Cost

N = Number of output

Average Cost/Total Average Cost (TC/ TAC): It is the sum of average fixed cost and average variable cost

It can be calculated by dividing total cost by thye number of output.

AC/TAC = AFC +AVC where,

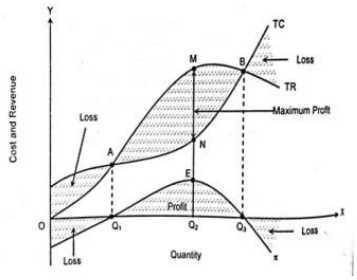
AC/ TAC = Average Cost/ Total Average Cost

AFC = Average Fixed Cost, AVC = Average Variable Cost

AC/TAC = TC/ N where,

AC/TAC = Average Cost/ Total Average Cost

TC = Total Cost, N = Number of output.



Marginal Cost (MC)

It is the addition to total cost due to one more unit of output produced. It is the cost for one particular unit of output produced.

MC= ΔTC/ΔN where,

MC = Marginal cost ΔTC = Change in Total cost

ΔN = Change in unit of output

MCn = TCn – TCn-1 where,

MCn = Marginal cost of n unit of output

TCn = Total cost of N-1 unit of output

TCn-1 = Total cost of n-1 unit of output.

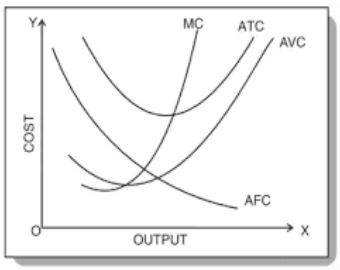
The concepts of AFC, AVC, AC/TAC and MC can be explained in a table as shown below:

Unit of output	TFC	TVC	TC	AFC	AVC	AC/TAC	MC
0	20	0	20	-	-	-	-
1	20	20	40	20	20	40	20
2	20	30	50	10	15	25	10
3	20	50	70	6.6	16.6	23.3	20
4	20	80	100	5	20	25	30
5	20	140	160	3.3	28	31.3	60

In the table, AFC decreases continuously, first faster and then slowly. The AVC first decreases, reaches the minimum and again increases. The AC is the sum of AFC and AVC which first decreases, reaches minimum and again increases. The MC also first decreases, reaches the minimum and again increases.

In the diagram, AFC is the average fixed cost curve. It decreases continuously, first faster and then slowly. AVC is the average variable cost. It is U-shaped, which decreases first, reaches the minimum and again increases. AC is the average cost curve which is the summation of AFC and AVC curves. It is also U-shaped. MC is the marginal cost curve. It is also U-shaped but both the rise and fall of MC curve is faster than AC curves. The marginal cost curve cuts the average cost curves at their minimum points.

The AFC, AVC, AC AND MC can be shown in a diagram as below:



Relation between Average and Marginal costs

The relation between average and marginal costs can be explained with the help of a diagram as shown below:

In the beginning, both AC and MC decreases but MC decreases faster than AC.

MC curve reaches its minimum point and starts to rise earlier than AC curve.

Both AC and MC costs increase after reaching their minimum points but marginal cost increases faster than average cost. Both average and marginal costs are U-shaped but the marginal cost has a steeper slope and average cost has a flatter slope.

When average cost is minimum, it is equal to marginal cost.

Marginal cost curve cuts the average cost curve at the minimum points from below.

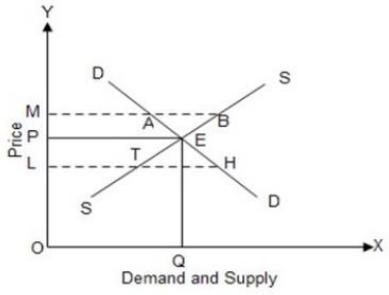
Unit 5: (market structure)

Price and Output Determination Under Perfect Competition Market

The above table shows the inverse relationship between market price and market demand and the positive relation between market price and market supply. When the price is Rs 3 the quantity demand and quantity supply are equal (15, 15) sp Rs 3 it the equilibrium price and 15 kg output is the equilibrium quantity. The price of the commodity will be determined when the supply and demand are equal to each other. It can be explaining by the following figure.

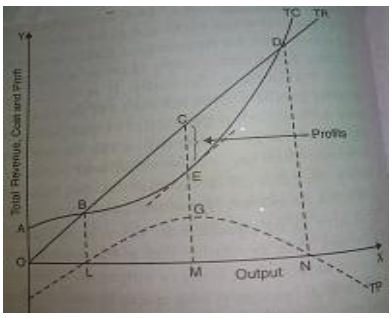
In this figure, DD and SS are the demand and supply curve. Point E is the equilibrium point where the equilibrium price level op and equilibrium output OQ determined. There is excess supply by AM amount if price rises from OP to OP2 thus there will be pressure to fall in the price unless and until quantity demand becomes equal to quantity supply at OP price. When the industry decreases the price from OP to OP1 there is excess demand over supply by BN amount as a result industry will raise the price until quantity demand becomes equal to quantity supply at OP price. Finally, the industry will be in equilibrium at point E where equilibrium price OP and output is OQ.

Price in Rs	Quantity demand in kg	Quantity supply in kg	Relation
1	25	5	D>S
2	20	10	D>S
3	15	15	D=S
4	10	20	D<S
5	5	25	D<S



Theory of Price and Output Determination

The equilibrium of a firm by TR-TC approach under perfect competition can be explained in a diagram as shown below:



-In the diagram, before point B and after point D (before OL and after ON outputs), the firm incurs loss because total cost is greater than total revenue.

-At points B and D (at OL and ON output), the firm neither earns profit nor incur loss because total revenue is equal to total cost. These points B and D are called the break-even points.

-Between B and D points (between OL and ON outputs), the firm earns profit because total revenue is greater total cost.

-At OM output, the firm earns maximum profit or the point of equilibrium of the firm because the distance between total revenue and total cost is the maximum (this shown by CE in the diagram).

The equilibrium of the firm by TR – TC approach under monopoly market can be explained in a diagram as shown below:

-In the diagram, before Points A and after point B (before OQ1 and after OQ3 outputs), the firm incurs loss because total cost is more than total revenue.

-At points A and B (at OQ1 and OQ3 outputs), the firm nether earns profit nor incurs loss because the total revenue is equal to total cost. These are the break-even points of the firm.

-Between points A and C (between OQ1 and OQ3 outputs), the firm earns profit because the total revenue is more than total cost.

-The firm earns maximum profit and is in equilibrium at OQ2 output because the difference between total revenue and total cost is maximum (This is shown by MN in the diagram).

Equilibrium of a firm under MC = MR approach

MC = Marginal cost and MR= Marginal revenue

Under MC = MR approach, for a firm to be in equilibrium, the following two conditions of equilibrium should be fulfilled.

First-order condition/ necessary condition where marginal revenue is equal to Marginal cost

Second order condition/sufficient condition where marginal cost curve cuts the marginal revenue curve from below

The equilibrium of a firm under MC-MR approach in perfect competition can be explained in a diagram as shown below:

In the diagram, both the conditions of equilibrium are fulfilled at point Q2, where,

Marginal cost = Marginal revenue

Marginal cost curve has cut Marginal revenue curve from below

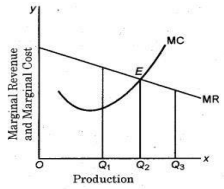
So, point Q2 is the equilibrium of the firm and Q2L2 is the equilibrium output at OP price.

At point Q1, the firm cannot be in equilibrium as only one condition of equilibrium is fulfilled here

MC = MR but MC curve has cut MR curve from above and not below.

So, Q1 cannot be the equilibrium of the firm.

The equilibrium of a firm by MC= MR approach under monopoly market can be explained in a diagram as shown below:



In the diagram, both the conditions of equilibrium of a firm under MC=MR approach is fulfilled at point E where,

Marginal cost = Marginal revenue

Marginal cost curve has cut the marginal revenue curve from below

So, it is the equilibrium point of the firm and EQ2 is the equilibrium output of the firm

Meaning and features of perfect competition

Meaning: Perfect competition is a market structure characterized by the absence of rivalry among individual firms. There are a large number of buyers and sellers producing homogeneous products with free entry and exit of firms into or out of the market.

Features of perfect competition

1.Large number of buyers and sellers: In perfect competition, there are a large number of buyers and sellers. A single seller is like a drop in the ocean and cannot influence the price and are the price-takers. The price is determined by market demand and supply.

2.Homogeneous products: The products bought and sold in the market are homogeneous and identical in shape, size, colour, design, weight, quality, quantity, etc. They are perfect substitutes to one another. So, the prices of the products are same.

3.Free entry and free exit of firms: The firms/ individual sellers can enter or leave the industry/ market without any restrictions.

4.Perfect knowledge: All the buyers and sellers have perfect knowledge or information about the price and quality of products bought and sold in the market. So, the sellers cannot charge more price and the buyers will not pay more price. So, the price of the products remain same within the market.

5.Perfect mobility of factors: All the factors of production are perfectly mobile within the market and can be taken to any parts of the market/industry.

No transport cost added: In perfect competition, the transport cost will not be added to the price of the products. So, the price remains the same all throughout the market.

6.No government interference: There is no government interference in the market. It stands only as a supervisor. The market demand and supply determine the price of products.

Explain equilibrium of the form in Monopoly market

Under monopoly, for the equilibrium and price determination there are two different conditions which are:

1. Marginal revenue must be equal to marginal cost.
2. MC must cut MR from below.

However, there are two approaches to determine equilibrium price under monopoly viz.;

1. *Total Revenue and Total Cost Approach.*
2. Marginal Revenue and Marginal Cost Approach.

Total Revenue and Total Cost Approach.

Monopolist can earn maximum profits when difference between TR and TC is maximum. By fixing different prices, a monopolist tries to find out the level of output where the difference between TR and TC is maximum. The level of output where monopolist earns maximum profits is called the equilibrium situation. This can be explained with the help of fig. 2.

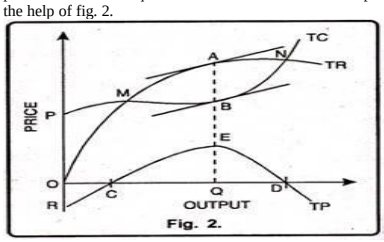


Fig. 2.

In Fig. 2, TC is the total cost curve. TR is the total revenue curve. TR curve starts from the origin. It indicates that at zero level of output, TR will also be zero. TC curve starts from P. It reflects that even if the firm discontinues its production, it will have to suffer the loss of fixed costs.

Total profits of the firm are represented by TP curve. It starts from point R showing that initially firm is faced with negative profits. Now as the firm increases its production, TR also increases. But in the initial stage, the rate of increase in TR is less than TC.

Therefore, RC part of TP curve reflects that firm is incurring losses. At point M, total revenue is equal to total cost. It shows that firm is working under no profit, no loss basis. Point M is called the breakeven point. When firm produces more than point M, TR will be more than TC. TP curve also slopes upward. It shows that firm is earning profit. Now as the TP curve reaches point E then the firm will be earning maximum profits. This amount of output will be termed as equilibrium output.

Marginal Revenue and Marginal Cost Approach:

According to marginal revenue and marginal cost approach, a monopolist will be in equilibrium when two conditions are fulfilled i.e., (i) MC=MR and (ii) MC must cut MR from below.

The study of equilibrium price according to this analysis can be conducted in two time periods.

1. The Short Run
2. The Long Run

1. Short Run Equilibrium under Monopoly:

Short period refers to that period in which the monopolist has to work with a given existing plant. In other words, the monopolist cannot change the fixed factors like, plant, machinery etc. in the short period. Monopolist can increase his output by changing the variable factors. In this period, the monopolist can enjoy super-normal profits, normal profits and sustain losses.

These three possibilities are described as follows:

Super Normal Profits:

If the price determined by the monopolist in more than AC, he will get super normal profits. The monopolist will produce up to the level where MC=MR. This limit will indicate equilibrium output. In Figure 3 output is measured on X-axis and price on Y-axis. SAC and SMC are the short run average cost and marginal cost curves while AR or MR are the average revenue or marginal revenue curves respectively.

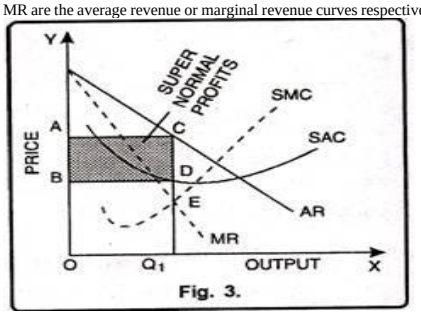


Fig. 3.

The monopolist is in equilibrium at point E because at point E both the conditions of equilibrium are fulfilled i.e., MR = MC and MC intersects the MR curve from below. At this level of equilibrium the monopolist will produce OQ_1 level of output and sells it at CQ_1 price which is more than average cost DQ_1 by CD per unit. Therefore, in this case total profits of the monopolist will be equal to shaded area ABDC.

Normal Profits:

A monopolist in the short run would enjoy normal profits when average revenue is just equal to average cost. We know that average cost of production is inclusive of normal profits. This situation can be illustrated with the help of fig 4.

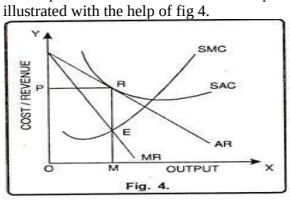


Fig. 4.

In Fig. 4 the firm is in equilibrium at point E. Here marginal cost is equal to marginal revenue. The firm is producing OM level of output. At OM level of output average cost curve touches the average revenue curve at point P. Therefore, at point 'P' price OR is equal to average cost of the total product. In this way, monopoly firm enjoys the normal profits.

Minimum Losses:

In the short run, the monopolist may have to incur losses. This situation occurs if in the short run price falls below the variable cost. In other words, if price falls due to depression and fall in demand, the monopolist will continue to produce as long as price covers the average variable cost. Once the price falls

Below the average variable cost, monopolist will stop production. Thus, a monopolist in the short run equilibrium has to bear the minimum loss equal to fixed costs. Therefore, equilibrium price will be equal to average variable cost. This situation can also be explained with the help of Fig. 5.

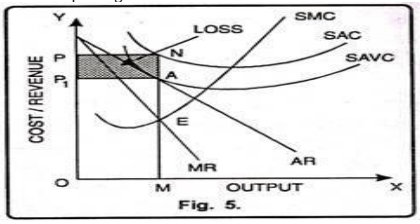


Fig. 5.

In Fig. 5 monopolist is in equilibrium at point E. At point E marginal cost is equal to marginal revenue and he produces OM level of output. At OM level of output, equilibrium price fixed by the monopolist is OP_1. At OP1 price, AVC touches the AR curve at point A.

It signifies that the firm will cover only average variable cost from the prevailing price. At OP_1 price, firm will bear loss of fixed cost i.e., A per unit. The firm will bear the total loss equal to the shaded area PP_1 AN. Now if the price falls below OP_1, the monopolist will stop production. It is so because if he continues production, he will have to bear the loss of variable costs along with fixed costs.

2. Long Run Equilibrium under Monopoly:

Long-run is the period in which output can be changed by changing the factors of production. In other words, all variable factors can be changed and monopolist would choose that plant size which is most appropriate for specific level of demand. Here, equilibrium would be attained at that level of output where the long-run marginal cost cuts marginal revenue curve from below. This can be shown with the help of Fig. 6.

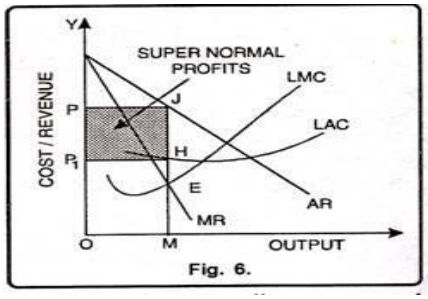


Fig. 6.

In Fig. 6 monopolist is in equilibrium at OM level of output. At OM level of output marginal revenue is equal to long run marginal cost and the monopolist fixes OP price. HM is the long run average cost? Price OP being more than LAC i.e., HM which fetch the monopolist super normal profits. Accordingly, the monopolist earns JM – HM = JH super normal profit per unit. His total super normal profits will be equal to shaded area $PJHP_1$.

Use the TR- TC approach and explain how a perfect perfectly comparative form of short run equilibrium

Producer's equilibrium is the level of the output of a commodity which gives the maximum profit to the producer of the commodity. A firm is in equilibrium if there is no scope for either increasing the profit income or reducing its loss by changing the quality of the output. Therefore, we have Profit (π) = Total Revenue – Total Cost = TR – TC

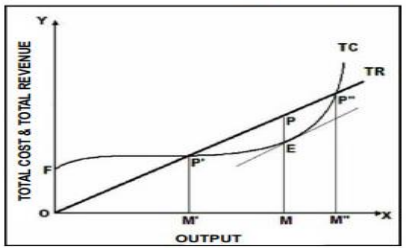
TR – TC Approach

According to this approach, the producer's equilibrium has two conditions:

The difference between TR and TC is maximum

Even if one more unit of output is produced, then the profit falls. In other words, the marginal cost becomes higher than the marginal revenue if one more unit is produced.

Equilibrium of a Firm using TR and TC Curve



In the figure above, the X-axis shows the levels of output and Y-axis shows total costs and total revenues. TC is the Total Cost Curve and TR is the Total Revenue Curve. Also, P is the equilibrium point where the distance between TR and TC is maximum.

Further, you can see that before the point P' and after the point P'', TC>TR. Therefore, the producer must produce between P'P'' or M'M''.

At the point P, a tangent drawn to TC is parallel to TR. In other words, at point P, the slope of TC is equal to the slope of TR. This equality is not achieved at any other point.

Describe the derivation of short-run supply curve of a firm under the perfect competition

Supply curve indicates the relationship between price and quantity supplied. In other words, supply curve shows the quantities that a seller is willing to sell at different prices.

According to Dorfman, "Supply curve is that curve which indicates various quantities supplied by the firm at different prices". The concept of supply curve applies only under the conditions of perfect competition.

The Short-Run Supply Curve of the Perfectly Competitive Firm!

As is known, the short-run is a period in which more quantity of the good is produced by working the given capital equipment or plant more intensively by employing more amounts of the variable factors. We know that the firm under perfect competition produces that amount of the good at which marginal cost equals price.

Since the price for a perfectly competitive firm is given and constant for it, price line will be a horizontal straight line. The horizontal coordinate of a point on the rising marginal cost curve measures the quantity of the good that the firm will produce at that price. The short-run marginal cost curve of the firm therefore indicates the quantities which the firm will produce in the short run at different prices.

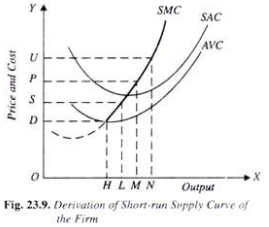


Fig. 23.9. *Derivation of Short-run Supply Curve of the Firm*

Consider Figure 23.9 at price OP, the firm will produce and offer for sale OM quantity of the good, because at OM quantity of the good, price OP equals marginal cost. Similarly, at price OU the quantity produced or supplied will be ON, since price OU equals marginal cost at output ON. Likewise, at price OS, the firm will produce and supply OL quantity of the product. It is thus clear that short-run marginal cost curve of the firm ii in fact the short-run supply curve of the firm. The firm will not produce any output at a price below OD, since it will not be fully recovering its variable costs. Thus, only the part of the short run marginal cost curve which lies above the average variable cost forms the short-run supply curve of the firm.

In Fig. 23.9 the thick portion of the short-run marginal cost curve SMC represents the short-run supply curve of the firm. Since under perfect competition marginal cost must be rising at the equilibrium output, the short-run supply curve of the firm must always slope upward to the right.

It should be noted that in our analysis of deriving short-run supply curve of the firm, we have assumed that following the rise in price when the firm expands its output or supply, prices of resources or inputs it uses for production do not go up.

It is a valid assumption because an individual firm under perfect competition is only one among many and its demand for inputs or resources is insignificant part of the total market demand for them

and therefore the increase in demand for these resources by the firm as it expands will have no effect on their prices.

Unit-6

Circular flow of income and expenditure in two sector economy:

Real flows of resources, goods and services have been shown in fig. in the upper loop of this fig, the resources such as land, capital and entrepreneurial ability flow from households to business firms as indicated by the arrow mark.
In opposite direction to this, money flows from business firms to the households as factor payments such as wages, rent, interest and profits.
In the lower part of the fig, money flows from households to firms as consumption expenditure made by the households on the goods and services produced by the firms, while the flow of goods and services is in opposite direction from business firms to households.
Thus we see that money flows from business firms to households as factor payments and then it flows from households to firms. Thus there is, in fact, a circular flow of money or income. This circular flow of money will continue indefinitely week by week and year by year. This is how the economy functions. It may, however, be pointed out that this flow of money income will not always remain the same in volume.

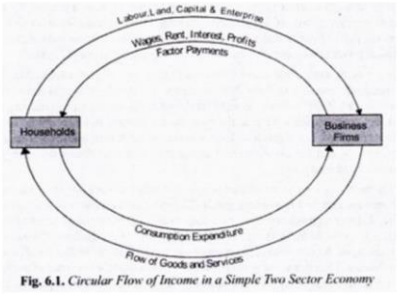


Fig. 6.1. *Circular Flow of Income in a Simple Two Sector Economy*

Circular Income Flow in a Three Sector Economy with Government:

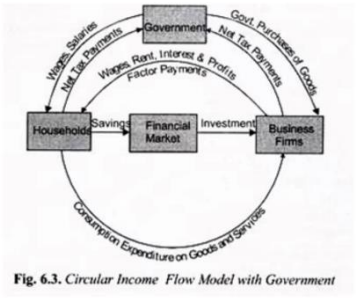


Fig. 6.3. *Circular Income Flow Model with Government*

Here we will concentrate on its taxing, spending and borrowing roles. Government purchases goods and services just as households and firms do. Government expenditure takes many forms including spending on capital goods and infrastructure (highways, power, communication), on defence goods, and on education and public health and so on. These add to the moneyflows which are shown in Fig. 6.3 where a box representing Government hasbeen drawn. It will be seen that government purchases of goods and servicesfrom firms and households are shown as flow of money spending on goodsand services. Government expenditure may be financed through taxes, out of assets or byborrowing. The money flow from households and business firms to the government is labelled as tax payments in Fig. 6.3 This money flow includesall the tax payments made by households less transfer payments receivedfrom the Government. Transfer payments are treated as negative tax payments.
It follows from above that the inclusion of the Government sector significantly affects the overall economic situation. Total expenditure flow in the economy is now the sum of consumption expenditure (denoted by C), investment expenditure (I) and Government expenditure (denoted by G). Thus
Total expenditure (E) = C+I+G.....(i)
Total income (K) received is allocated to consumption (C), savings (S) and taxes (T).Thus
Y C+S+T... (ii)
Since expenditure) made must be equal to the income received (Y), from equations (i) and (ii) above we have C+I+G C+S+T... (iii)
Since C occurs on both side of the equation (iii) and will therefore be cancelled out, we have
I+G ST...(iv)
By rearranging we obtain G-T S-I... (v)
Equation (v) is very significant as it depicts what would be the consequences if government budget is not balanced, that is, if Government expenditure (G) is greater than the tax revenue (7), that is, G >T, the government will have a deficit budget. To finance the deficit budget, the Government will financial market. borrow from the

For this purpose, then private investment by business firms must be less than the savings of households.

Money Income Flow in the four sector open economy

We now turn to explain the money flows that are generated in an open economy, that is, economy which have trade relations with foreign countries. Thus, the inclusion of the foreign sector will reveal to us the interaction of the domestic economy with foreign countries. Foreigners interact with the domestic firms and households through exports and imports of goods and services as well as through borrowing and lending operations through financial market. The above figure illustrates additional money flow that occours in open economy. If exports are equal to the imports, there exist a balance of trade. Generally they are not equal to each other. If value of exports exceeds the value of imports then the trade surplus occours like wise the trade deficit occours if the scenario is reversed. In open economy countries interact through lending and borrowing funds i.e financial market.When there is a trade surplus in the economy, that is, when exports (X) exceed imports (M), net capital inflow will take place. By net capital inflow we mean foreigners will borrow from domestic savers to finance their purchases of domestic exports. In this way as a result of net capital inflow domestic savers will lend to foreigners, that is, acquire foreign financial assets.
From the circular flows that occur in the open economy the national income must be measured by aggregate expenditure that includes net exports, that is, X-M where X represents exports and M represents imports. Imports must be subtracted from the total expenditure on foreign produced goods and services to get the value of net exports. Thus, in the open economy.
National income = C + I + G + NX
Where NM represents net exports
Since national income can be either consumed, saved or paid as taxes to the government we have ,
C+ I + G + NX = C + S + T

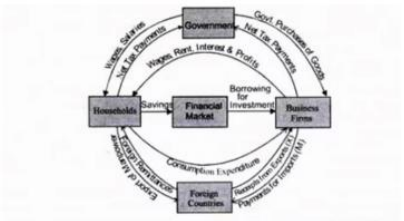


Fig. 6.4. *Circular Flow of Income in an Open Economy with Government and Foreign Sector*

GDP:- GDP stands for "Gross Domestic Product" and represents the total monetary value of all final goods and services produced (and sold on the market) within a country during a period of time (typically 1 year).
The formula for calculating GDP with the expenditure approach is the following:
GDP = private consumption + gross private investment + government investment + government spending + (exports – imports).
Though GDP is typically calculated on an annual basis, it is sometimes calculated on a quarterly basis as well. In the U.S., for example, the government releases an annualized GDP estimate for each fiscal quarter and also for the calendar year. The individual data sets included in this report are given in real terms, so the data is adjusted for price changes and is, therefore, net of inflation.
Types of Gross Domestic Product :
Nominal GDP
real GDP
GDP Per capita
GDP growth rate
GDP Purchase power parity

NDP:- Net domestic product (NDP) is an annual measure of the economic output of a nation that is calculated by subtracting depreciation from gross domestic product (GDP).
NDP accounts for capital that has been consumed over the year in the form of housing, vehicle, or machinery deterioration. The depreciation accounted for is often referred to as capital consumption allowance and represents the amount needed to replace those depreciated assets.
NDP = GDP – Depreciation
Net domestic product is sometimes considered a better economic indicator than GDP since the former also reveals the amount of investment spent improving the obsolete equipment to maintain the production level. An increase in depreciation alone can push up the GDP level, but it does not indicate improvements in that country's social and economic well-being.
Therefore, NDP may give a better insight into a country's economic health by considering its net investment. When the net investment is positive, the economy grows. When the net investment is negative, the investment cannot even cover the depreciation to maintain the present output level, which indicates the economy declines. A zero net investment means the country's capital stock is constant.

GNP:- Gross national product (GNP) is an estimate of the total value of all the final products and services turned out in a given period by the means of production owned by a country's residents. GNP is commonly calculated by taking the sum of personal consumption expenditures, private domestic investment, government expenditure, net exports, and any income earned by residents from overseas investments, minus income earned within the domestic economy by foreign residents. Net exports represent the difference between what a country exports minus any imports of goods and services.
GNP measures the total monetary value of the output produced by a country's residents. Therefore, any output produced by foreign residents within the country's borders must be excluded in calculations of GNP, while any output produced by the country's residents outside of its borders must be counted.GNP does not include intermediate goods and services to avoid double-counting since they are already incorporated in the value of final goods and services.

NNP:- Net national product (NNP) is the monetary value of finished goods and services produced by a country's citizens, overseas and domestically, in a given period.It is the equivalent of gross national product (GNP), the total value of a nation's annual output, minus the amount of GNP required to purchase new goods to maintain existing stock, otherwise known as depreciation.
NNP is often examined on an annual basis as a way to measure a nation's success in continuing minimum production standards. It can be a useful method to keep track of an economy as it takes into account all its citizens, regardless of where they make their money, and acknowledges the fact that capital must be spent to keep production standards high.
The formula for NNP is :
NNP=MVFG+MVFS−Depreciation
where:
MVFG=market value of finished goods
MVFS=market value of finished services

National income at factor cost (NI)

Factor cost or national income by type of income is a measure of national income or output based on the cost of factors of production, instead of market prices. This allows the effect of any subsidy or indirect tax to be removed from the final measure.
The concept of factor cost is focusing on the cost incurred on the factor of production. It can be defined as the actual cost incurred on goods and services produced by industries and firms is known as factor costs. Factor costs include all the costs of the factors of production to produce a given product in an economy. It includes the costs of land, labor, capital and raw material, transportation etc. They are used to produce a given quantity of output in an economy. The factor cost does not include the profits made by the producing firms or industries or the tax which they incur on producing those goods and services. We can simply categorize it as the cost of producing a product from unfinished good to a semi finished good or a finished good up to the desired output level.

Personal Income

Personal income refers to all income collectively received by all individuals or households in a country. Personal income includes compensation from a number of sources, including salaries, wages, and bonuses received from employment or self-employment, dividends and distributions received from investments, rental receipts from real estate investments, and profit sharing from businesses.
Personal income has a significant effect on consumer consumption. As consumer spending drives much of the economy, national statistical organizations, economists, and analysts track personal income on a quarterly or annual basis.

Disposable personal income

Disposable income, also known as disposable personal income (DPI), is the amount of money that an individual or household has to spend or save after income taxes have been deducted.At the macro level, disposable personal income is closely monitored as one of the key economic indicators used to gauge the overall state of the economy.
To calculate your disposable income, you will first need to know what your gross income is. For an individual, gross income is your total pay, which is the amount of money you've earned before taxes and other items are deducted. From your gross income, subtract the income taxes you owe. The amount left represents your disposable income.

Per capita income

Per capita income is a measure of the amount of money earned per person in a nation or geographic region. Per capita income can be used to determine the average per-person income for an area and to evaluate the standard of living and quality of life of the population.
Per capita income for a nation is calculated by dividing the country's national income by its population.
Per capita income as a metric has limitations that include its inability to account for inflation, income disparity, poverty, wealth, or savings.
Per capita income counts each man, woman, and child, even newborn babies, as a member of the population. This stands in contrast to other common measurements of an area's prosperity, such as household income, which counts all people residing under one roof as a household, and family income, which counts as a family those related by birth, marriage, or adoption who live under the same roof.

Nominal GDP vs Real GDP

Basis	Nominal GDP	Real GDP
Meaning	Value of all the goods and services produced by an economy at current market prices.	Value of all the good and services produced by an economy, its investments, government spendings and exports.
GDP Data	The value of the total product is seen to be higher because it does not reduce inflation.	The value of the total product appears low because inflation is reduced in it.
Reliability	Less reliable in comparison to Real GDP.	More reliable in comparison to Nominal GDP.
Worth	High	Low
Uses	Compares different quarters of an FY.	Compares two or more FY.
Financial Growth	Analyzing is difficult	Analyzing is easy
Size of India's economy	2.93 trillion dollars (2019)	Rs.1,40,77,586 Lakh Crores (2018-19)
India's position in the world	Fifth-largest in the world.	Data Unavailable

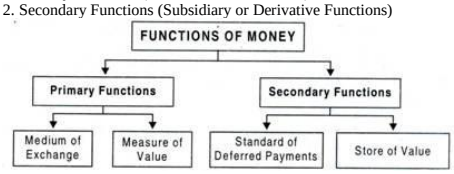
GDP Deflator

The GDP (gross domestic product) price deflator, also known as the GDP deflator or the implicit price deflator, measures the changes in prices for all the goods and services produced in an economy.
Using the GDP price deflator helps economists compare the levels of real economic activity from one year to another.
The GDP price deflator is a more comprehensive inflation measure than the Consumer Price Index (CPI) index because it isn't based on a fixed basket of goods.
The following formula calculates the GDP price deflator:
GDP Price Deflator = (Nominal GDP ÷ Real GDP) × 100

Unit- 7: money, banking and international trade

Explain the Primary and Secondary Function of Money?

Primary and Secondary Functions of Money are
1. Primary Functions (Main or Basic Functions)
2. Secondary Functions (Subsidiary or Derivative Functions)



1. Primary Functions:
Primary Functions include the most important functions of money, which it must perform in every country,
These are:
(i) Medium of Exchange:- Money, as a medium of exchange, means that it can be used to make payments for all transactions of goods and services. It is the most essential function of money. Money has the quality of general acceptability So, all exchanges take place in terms of money.
1. This function has removed the major difficulty of lack of double coincidence of wants and inconveniences associated with the barter system.
2. Use of money allows purchase and sale to be conducted independently of one another.
3. This function of money facilitates trade and helps in conducting transactions in an economy.
4. Money has no power to satisfy human wants, but it commands power to purchase those things, which have utility to satisfy human wants.
For, "How does money separate the acts of sale and purchase", refer HOTS.
(ii) Measure of Value (Unit of Value):- Money as measure of value means that money works as a common denomination, in which values of all goods and services are expressed.
1. By reducing the value of all goods and services to a single unit (i.e. price), it becomes very easy to find out the exchange ratios between them and comparing their prices.
2. This function facilitates maintenance of business accounts, which would be otherwise impossible.
3. Money helps in calculating relative prices of goods and services. Due to this reason, it is regarded as a Unit of Account'. For instance, 'Rupee' is the unit of account in India, 'Pound' in England and so on.

2. Secondary Functions:

These refer to those functions of money which are supplementary to the primary functions. These functions are derived from primary functions and, therefore, they are also known as 'Derivative Functions'.

The major secondary functions are:

(i) Standard of Deferred Payments:- Money as a standard of deferred payments means that money acts as a 'standard' for payments, which are to be made in future. Every day, millions of transactions take place in which payments are not made immediately. Money encourages such transactions and helps in capital formation and economic development of the economy.

This function of money is significant because:

1. Money as a standard of deferred payments has simplified the borrowing and lending operations.
2. It has led to the creation of financial institutions.

(ii) Store of Value (Asset Function of Money):- Money as a store of value means that money can be used to transfer purchasing power from present to future. Money is a way to store wealth. Although wealth can be stored in other forms also, but money is the most economical and convenient way. It provides security to individuals to meet contingencies, unpredictable emergencies and to pay future debts. Under barter system, it was difficult to use goods as a store of wealth due to perishable nature of some goods and high cost of storage.

Money as store of value has the following advantages:

1. Money is available in fractional denomination, ranging from Rs 1 to Rs 1,000.
2. Money is easily portable. So, it is easy and economical to store money as its storage does not require much space.
3. Money has the merit of general acceptability so; it can be easily exchanged for goods at all times.
4. Savings in terms of money are much more secured than in terms of goods.

Explain the cause of inflation various effects of inflation describe?

Inflation is a measure of the rate of rising prices of goods and services in an economy. If inflation is occurring, leading to higher prices for basic necessities such as food, it can have a negative impact on society.

Causes of inflation

Inflation is a measure of the rate of rising prices of goods and services in an economy.

Inflation can occur when prices rise due to increases in production costs, such as raw materials and wages.

A surge in demand for products and services can cause inflation as consumers are willing to pay more for the product.

Effects of inflation

Inflation raises prices, lowering your purchasing power.

Inflation also lowers the values of pensions, savings, and Treasury notes.

Assets such as real estate and collectibles usually keep up with inflation.

Variable interest rates on loans increase during inflation

Bank: - A bank is a financial institution which deals with money. The word 'Bank' is believed to have been derived from the Italian word 'Banco' meaning a bench, which traces its origin to the ancient Roman Empire where the money lenders would set up their stalls in an enclosed courtyard on a long bench called *banco*

Role of banking system in economy

A well- developed banking system is a pre-requisite for economic development of a country .Banks are the financial wheels of economic development. They accelerate the pace of trade and commerce, improve the living standard of the people and thereby develop the economy. The roles of the banking system in any economy are discussed as follows:

1. Mobilization of people's savings: Commercial banks accept deposits from the people in different accounts (fixed, current and saving) and give them interest. This money deposits are utilized by the banks in giving loans to businessmen and industrialists to invest in productive sectors of the economy.
2. Monetization of the economy: Monetization of the economy is necessary for trade and other economic activities. Banks are creators as well as the distributors of money. They spread in different parts of the economy through their branches. People keep money in banks and withdraw in times of need. Thus, there is monetization of the economy through the banking system.
3. Capital formation: Capital formation is a pre-requisite to the economic development of a country. It is the increase in physical and human capital. The banks collect the money from the people in the form of savings and channelize them for productive investments in all sectors. This helps in the capital formation and economic development.
4. Creation of employment opportunities: Establishment of many banks in all parts of the country creates employment opportunities directly. When banks provide loans to businessmen and industrialist for investment, many industries, businesses and development projects will be set up which will create a lot of employment opportunities in the economy.
5. Promotion of foreign trade of a country: All the financial transactions involved in export and import of goods and services between countries are done through banks. Without banks, it is very difficult and almost impossible to conduct foreign trade now. The transfer of money from one country to another is also done through banks.
6. Reduce poverty: The banks give loans to the rural poor at lower rates of interest under different targeted programs. The poor farmers are provided agricultural credit programmes by Agricultural Development Banks and Commercial Banks.

Classification of Banks

There are different types of banks established for different purposes. The main types of banks are:

1. Central Bank: The Central bank is the apex bank of a country. It regulates controls and acts like a guardian of all banking institutions of a country. It is established by the government. The central bank issue notes, works as a bank and an advisor to the government, bankers bank controls credit, regulates the foreign exchanges, prepares monetary policies, and acts as a lender of last resort.
2. Commercial Banks: Commercial banks dominate the banking system in a country. These banks are established primarily to earn profit mainly from the private sectors. They accept deposits, advance loans, facilitate domestic and foreign trade and make other agency functions. Nepal Bank Limited established in 1994 B.S is the first commercial bank of Nepal. Presently, there are about 28 commercial banks in Nepal with their numerous branches. Besides the *Rastriya Banijya Bank*, Nepal Bank Limited and Agricultural Development Banks. All other commercial banks are established by the private sector. Kumari Bank, Himalayan Bank, Bank of Kathmandu, Nabil Bank, Standard Chartered Bank Nepal, Everest Bank, Siddhartha Bank, etc. are some of the commercial banks in Nepal.

The most important functions of commercial banks are discussed below:

1. Accepting deposits:

The most significant and traditional function of commercial bank is accepting deposits from the public. The deposits may be of three types: Saving deposits, Current deposits and fixed deposits. In case of current account, people can withdraw deposits in part or in full at any time he likes without notice.

Usually no interest is paid on them, because the bank cannot utilize these short-term deposits. Savings deposits are payable on demand and money can be withdrawn by cheque. But there are certain restrictions imposed on the depositors of this account. Deposits in this account earn interest at nominal rates. Fixed deposits are made for a fixed period of time. A higher rate of interests is paid on the fixed deposits.

2. Providing loans:

The second important function of the commercial bank is to provide loans against suitable mortgages to the public to fulfill their needs of money. Loans can be granted in the form of cash credit, demand loans, short- term loan, overdraft, discounting of bills etc. Under cash credit system, borrower is sanctioned a credit limit up to which he can borrow from the bank. The interest payable by the borrower is calculated on the amount of credit limit actually drawn. Demand loans granted by a bank are those loans which can be recalled on demand by the bank any time.

Here, the interest is payable on the entire sum of demand loans granted. Short-term loans (like car loans, housing loans etc.) are given as personal loans against some security. The interest is payable on the entire sum of loan granted. In case of overdraft facility, an account holder is allowed to withdraw a sum of money in excess of the amount deposited with the bank.

Here, the borrower who has received this facility, has to pay interest on the amount overdrawn. Another important form of bank lending is through discounting or purchasing the bills of exchange. A bill of exchange is drawn by a creditor on the debtor specifying the amount of debt and also the date when it becomes payable. Such bills of exchange are normally issued for a period of 90 months.

3. Credit Creation:

This is an unique function performed by the commercial banks. A bank has sometimes been called a factory for the manufacture of credit. In the process of acceptance of deposits and granting of loans, commercial banks are able to create credit.

4. Transfer of funds:

Commercial banks are able to transfer funds of a customer to other customer's account through the cheques, draft, mail transfers, telegraphic transfers etc.

5. Agency functions:

In modern time, commercial banks also act as an agent of the customer. However, banks charge fee or commission for these functions.

Agency functions include:

(a) Collection of cheques, bills and drafts,

(c) Payment of interest, installments of loans, insurance premium etc.
(d) Purchase and sale of securities
(e) Transfer of funds through demand drafts, mail transfer etc.

6. Other functions:

Apart from the above important and most popular functions, commercial banks also perform the following other functions:

(a) Payment of credit letters and travellers cheques, gift cheques, bank draft etc.
(b) Dealing in foreign exchange.
(c) Locker services.
(d) Provision of tax assistance and investment advice etc

Functions of Central Bank with special reference to Nepal Rastra Bank

Nepal Rastra Bank is the central bank of Nepal which was established on Baisakh 14, 2013 B.S. Its functions are:

1. Issue of currency notes: Nepal Rastra Bank has the monopoly authority to issue currency notes in Nepal on the basis of the proportionate reserve system. The bank has issued currency of paper and coins of different denominations like 1, 2, 5, 10, 20 25, 50, 100, 500 and 1000 since 2016 B.S.
2. Bank's bank: Just like the commercial banks are the banks of the people, the central bank is the bank of all the commercial and development banks in Nepal. All other banks of the country have their account deposits in the central banks and can withdraw money when needed and can also take loans.
3. Government's bank and advisor: All ministries, departments and offices of the government have their account in a central bank. The central bank is the bank of the government. It is the economic advisor and of the government and helps to formulate economic and fiscal policies that best suit the conditions of the country.
4. Clearing House function: All other banks should keep a cash reserve in the Rastra Bank and the record of their transactions. Different banks have mutual claims and dues. Nepal Rastra Bank can adjust their debit and credit entries in their respective entries on request by the concerned banks. For example: If Nabil Bank has to pay rupees 5 lakhs to Laxmi Bank, Nepal Rastra Bank can deduct rupees 5 lakhs from the accounts of Nabil Bank and add the same amount to the account of Laxmi Bank. This is the clearing house function.
5. Custodian of gold and foreign currency: Nepal Rastra Bank is the custodian of gold, silver and foreign exchanges in the country. It protects the gold, silver and the foreign currency reserves of the country. It also fixes the rates of foreign currency with the home currency on the basis of their demand and supply.

Concept and Importance of International Trade

Trade is the exchange of goods and services between people. Trade can be domestic/internal trade or foreign/external/ international trade.

If the goods and services are bought and sold within the geographical boundary of a country, it is domestic/ internal trade. But if the goods and services are bought and sold across the boundary of a country, it is external/ foreign or international trade. According to Luckeet, *"The purchase of goods and services by the citizens of one country from the citizens of another country is called international trade"*.

Importance of international trade

1. Benefit of specialization: Due to international trade, a country engages in the production of those goods which it can produce efficiently and at lower cost. This is specialization and it will lead to the improvement in quality and enables large scale production of goods and services.
2. Benefit of technological progress: Through international trade, countries get access to new and better technologies of the developed countries. Developing countries like Nepal can import new and advanced technologies from advanced countries and accelerate their economic development.
3. Availability of varieties of goods: All goods needed cannot be produced in any country. Through international trade, different varieties and quality of goods will be available in the markets of the country. This will enable the people to make a choice from among the variety of goods.
4. Availability of raw materials: The foreign trade makes it possible to import the raw materials necessary for the industries from foreign countries. This enables production and hence economic development.
5. Widens the market: The international trade will help to widen the market as the goods can be sold even in the international markets, besides the home market.
6. Creates more employment opportunities: Increase in international trade increases the development of more export-oriented industries. Similarly, more people will be employed in export and import of goods. This creates more job opportunities.
7. Increase in government revenue: Due to increase in international trade, more goods will be exported and imported. This will help the country to earn more revenue through export as well as import taxes, sales tax, etc.

Differences between domestic and foreign trade

Domestic trade	Foreign trade
1. It is carried within the geographical boundary of a country.	1. It is carried out across the boundary of a country
2. The traders have to follow the trade policy of the country.	2. The traders have to follow the trade policy of both the trading countries.
3. The factors of production like land, labour, capital and organization are perfectly mobile within the country.	3. The factors of production are not perfectly mobile between countries. There are certain barriers and restrictions.
4. Only one currency is used	4. More than one currency can be used.
5.The volume of trade can be small	5. The volume of trade can be large.

Differences between BOT (Balance of Trade) and BOP (Balance of Payments)

Balance of Trade	Balance of Payments
1. It is a narrower concept of international trade	It is a broader concept of international trade.
2. It is the volume of exports and imports of a country with the rest of the world.	It is the comprehensive record of all economic transactions of a country with the rest of the world.
3. It includes only the visible and tangible items of trade.	It includes both the visible as well as non-visible items of trade.
4. It is only a part of the economic transaction. So, cannot show the real economic performance of a country.	It is the total economic transaction. So, it shows the real economic performance of a country.

Importance of balance of payment

-Balance of payment serves as an indicator of economic position of a country.
-It provides vital information to understand a country's economic condition.
-It shows the extent of dependence of a country in financial assistance especially of developing countries from developed countries.
-It helps the government to take the appropriate monetary or fiscal policy to make the balance of payment favourable.
It shows the foreign exchange reserve of a country.

A country's balance of payment situation cannot be taken as an indicator of economic prosperity and an unfavorable balance of payment cannot be taken as a reflection of economic failure. But it is a proof of the competitive weakness of a country in the international trade. An unfavorable balance of payment of a country for a long time reflects the presence of some economic problems in the country.