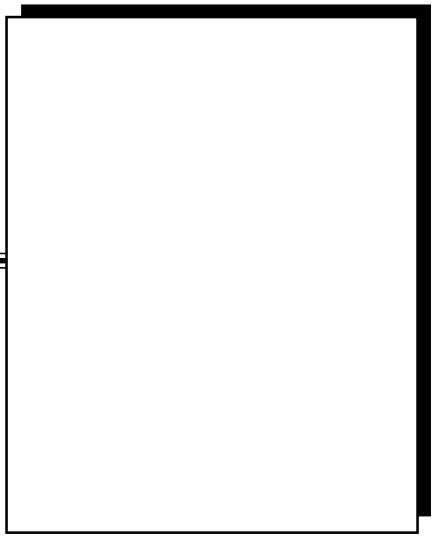
1



RAGNAR FRISCH

3rd March, 1895 - 31st Jan 1973

Macro Economics Introduction

1.0 Macro Economics Introduction
1.1 Nature of Macroeconomics
1.2 Importance of Macro Economics
1.3 Limitations of Macro Economics
1.4 The Circular Flow of Income
1.5 Circular Flow in a Two Sector Economy
1.6 Circular Flow in a Three- Sector Closed Economy
1.7 Foreign Sector - Circular Flow in a Four-sector Open Economy
1.8 Importance of the Circular Flow
1.9 National Income
1.10 Concepts of National Income
1.11 Methods of Measuring National Income
1.12 Importance of National Income Analysis
1.13 Difficulties in Measuring of National Income

1.0 Macro Economics Introduction

Two distinct approaches have been followed in economic analysis. One approach, termed as micro, views the economics system as constituted by a number of small units such as individual consumers, firms and industries etc. The second approach is called as macro and it views the entire economic system as single indivisible unit for the purpose of analysis of economic problems and application of economic policies to pursue different goals like stability, maximum employment and growth.

The term 'micro' has been derived from the Greek word 'mikros' which means 'small'. In micro economic approach the attention is concentrated on a very small part or the individual units. Hanson terms it as "atomistic individualistic approach". K.E Boulding has described "micro-economics as the study of the particular firms, particular households, individual prices, wages, income, individual industries and particular commodities". Thus micro economics is the study of the behaviour of individual consumers, firms or workers.

The term 'macro' has also been derived from another Greek word 'makros' means 'large'. Thus it is the opposite of micro. The word itself was coined in 1933 by Ragnar Frisch. Macro economics implies a study of economic aggregates the wholes. The problem like full employment, unemployment, economic stability and economic growth cannot be accurately investigated through the examination of infinitesimally small units like individual consumers, producers, workers or firms. Hanson has interpreted macro-

The business sector, in turn, makes payments to the households for the services rendered by the latter to the business, wage payments for labour services, interest for capital, and rent for land and profit for entrepreneur supplied, etc. Thus payments go around in a circular manner from the business sector to the household sector and from the household sector to the business sector, as shown by arrows in the output portion of the figure.

There are also flows of goods and services in the opposite direction to the money payments flows. Goods flow from the business sector to the household sector in the product market, and services flow from the household sector to the business sector in the factor market, as shown in the inner portion of the figure. These two flows give GNP=GNI.

Circular Flow with saving and Investment Added : The actual economy is not as explained above. In an economy, "inflows" and "leakages" occur in the expenditure and income flows. Such leakages are saving, and inflows or injections are investment which equals each other. Figure 1.2 shows how the circular flow of income and expenditure is altered by the inclusion of saving and investment.

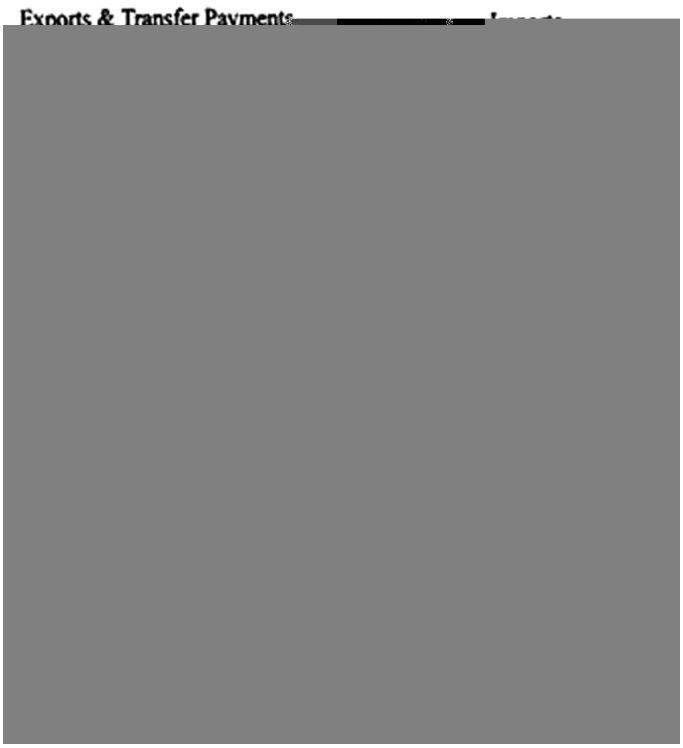
Expenditure has now two alternative paths from household and product markets:

1. Directly via consumption expenditure
2. Indirectly via investment expenditure

In Figure 1.2 there is a capital or credit market in between saving and investment flows from households to business firms. The capital market refers to a number of financial institutions such as commercial banks, savings banks, loan institutions, the stock and bond markets, etc. The capital market coordinates the saving and investment activities of the households and the business firms. The households supply saving to the capital market and the firms, in turn, obtain investment funds from the capital market.

Now the government makes investment and for this purchases goods from firms and also factors of production from households. Thus government purchases of goods and services are an injection in the circular flow of income and taxes are leakages. If government purchases exceed net taxes then the government will incur a deficit equal to the difference between the two, i.e., government expenditure and taxes. The government finances its deficit by borrowing from the capital market which receives funds from households in the form of saving. On the other hand, if net taxes exceed government purchases the government will have a budget surplus. In this case, the government reduces the public debt and supplies funds to the capital market which are received by firms.

1.7 Foreign Sector - Circular Flow in a Four-sector Open Economy



So far the circular flow of income and expenditure has been shown in the case of a closed economy. But the actual economy is an open one where foreign trade plays an important role. Exports are an injection or inflows into the economy. They create incomes for the domestic firms. When foreigners buy goods and services produced by domestic firms, they are exports in the circular flow of income. On the other hand, imports are leakages from the circular flow. They are expenditures incurred by the household sector to purchase goods from foreign countries.

These exports and imports in the circular flow are shown in Figure 1. 4. Take the inflows and outflows of the household, business and government sectors in relation to the foreign sector. The household sector buys goods imported from abroad and makes payment for them which is a leakage from the circular flow. The households may receive transfer payments from the foreign sector for the services rendered by them in foreign countries.

On the other hand, the business sector exports goods to foreign countries and its receipts are an injection in the circular flow. Similarly, there are many services rendered by business firms to foreign countries such as shipping, insurance, banking, etc. for which they receive payments from abroad.

Business sector also receive royalties, interests, dividends, profits, etc. for investments made in foreign countries. On the other hand, the business sector makes payments to the foreign sector for imports of capital goods, machinery, raw materials, consumer goods, and services from abroad. These are the leakages from the circular flow. Like the business sector, modern governments also export and import goods and services, and lend to and borrow from foreign countries.

Similarly, the government receives payments from foreigners when they visit the country as tourists and for receiving education, etc. and also when the government provides shipping, insurance and banking services to foreigners through the state-owned agencies. It also receives royalties, interest, dividends etc. for investments made abroad. These are injections into the circular flow. On other hand, the leakages are payments made for the purchase of goods and services to foreigners.

Figure 1.4 shows the circular flow of the four-sector open economy with saving, taxes and imports shown as leakages from the circular flow on the right hand side of the figure, and investment, government purchases and exports as injections into the circular flow on the left side of the figure. Further, imports, exports and transfer payments have been shown to arise from the three domestic sectors-the household, the business and the government. These outflows and inflows pass through the foreign sector which is also called the "Balance of Payments Sector."

If exports exceed imports, the economy has a surplus in the balance of payments. And if imports exceed exports, it has a deficit in the balance of payments. But in the long run, exports of an economy must balance its imports. This is achieved by the foreign trade policies adopted by the economy.

Important points to Remember

★ The term 'micro' has been derived from the Greek word 'mikros' which means 'small'.

★ The term 'macro' has also been derived from another Greek word 'makros' means 'large'.

★ The terms 'micro' and 'macro' coined in 1933 by Ragnar Frisch.

★ The origin of macroeconomic theory, also known as the general theory of income and employment, as a branch of economic theory is traceable in the writings of the early economists.

★ The systematic study of macroeconomic analysis began in the 18th century with the physiocrats. The famous physiocratic **Tableau Economique** was constructed in 1758 by Francois Quesney.

★ Keynes is regarded as the father of new economics and his theory is called "New Economics".

★ Macroeconomics is also known as the theory of income and employment, or simply income analysis.

★ Macroeconomics "deals with aggregates of these quantities; not with individual incomes but with the national income, not with individual prices but with the price levels, not with individual output but with the national output."

★ Macroeconomics is extremely useful from the point of view of economic policy. Modern governments, especially of the underdeveloped economies, are confronted with innumerable national problems.

★ The economics of growth is also a study in macroeconomics. It is on the basis of macroeconomics that the resources and capabilities of an economy are evaluated. Plans for the overall increase in national income, output, and employment are framed and implemented so as to raise the level of economic development of the economy as a whole.

★ In Macroeconomic analysis the "fallacy of composition" is involved, i.e., aggregate economic behaviour is the sum total of individual activities. But what is true of individuals is not necessarily true of the economy as a whole. For instance, savings are a private virtue but a public vice.

★ The circular flow of income and expenditure refers to the process whereby the national income and expenditure of an economy flow in a circular manner continuously through time.

★ The idea of the circular flow was present in the book Essay on the Nature of Trade in General - 1730 of Richard Cantillon. Francois Quesnay developed and visualized this concept in the so-called Table Economy.

★ The household sector owns all the factors of production, that is, land, labour and capital. This sector receives income by selling the services of these factors to the business sector.

★ The business sector consists of producers who produce products and sell them to the household sector or consumers. Thus the household sector buys the output of products of the business sector.

★ In real terms, national income is the flow of goods and services produced in the economy in a particular period-a year. Modern economy is a money economy. Thus, national income of the country is expressed in money terms.

★ GNP = C + I + G + NX + NFIA (NX = (X–M), NFIA = (R–P).

★ GDP = C + I + G + NX or (X–M)

★ Net Domestic Product = NDP = GDP – Depreciation

★ Net National Product at Factor Cost = NNP_{FC} = NNP_{MP} – Indirect Taxes + Subsidies

★ Gross Domestic Product is defined as the total market value of all final goods and services produced annually within the domestic territory of a country.

★ GDP = C + I + G + NX or (X-M).

★ Net Domestic Product = NDP = GDP – Depreciation

★ Net National Product at Factor Cost =NNPFC = NNPMP – Indirect Taxes + Subsidies

★ Personal Income = National Income – Social Security Contribution – Undistributed Corporate Profits – Corporate Taxes + Transfer Payment.

★ Disposable Income = Personal Income – Direct Taxes.

★ Per capita income refers to the average income of an individual in a particular year.

★ Per Capita Income = $\frac{\text{National Income}}{\text{Population}}$

★ **Value added Method or Product Method:** In this method the contribution of each enterprise to the generation of flow of goods and services is measured. Under this method the economy is divided into different industrial sectors such as agricultural, fishing, mining, construction, manufacturing, trade and commerce, transport, communications, insurance companies, lawyers, doctors, teachers and other services.

★ **Income Method:** This method approaches national income from distribution side. According to this method, the net income payments received by all citizens of a country in a particular year are added up, i.e., net incomes that accrue to all factors of production by way of net rents, net wages, net interest and net profits are all added together but incomes received in the form of transfer payments are not included in it.

★ **Expenditure Method:** Expenditure method arrives at national income by adding up all expenditures made on goods and services during a year. Income can be spent either on consumer goods or capital goods.

* * *

2

J.M. KEYENS

5th June 1883 - 21st April 1946

Theories of Income and Employment

2.0 Introduction to Keynesian Theory

2.1 Keynesian Theory of Income and Employment

2.2 Keynesian Consumption Function

2.3 Saving Function

2.4 Factors Determining Consumption Function

2.5 The Concept of Multiplier

2.6 Employment Multiplier

2.7 Acceleration Principle

2.8 Keynes Income Employee Theory - Review

2.9 Keynes Theory - Underdeveloped Economies

2.0 Introduction to Keynesian Theory:

Classical economists were of the view that there is always a tendency towards full employment in the economy. This view of them was based upon their belief in Say's Law of Markets. They thought that when there is unemployment in the economy, then, given the free and perfect competition in the economy, certain economic forces automatically operate in such a way that the condition of full employment is restored. During the period 1929-33, there occurred great depression in the capitalist countries which caused huge unemployment of labour and other resources in those countries and as a result level of national income fell down. Due to depression many factories were closed in these countries and factories which were working were also not being used to their full productive capacity. Thus, the classical theory of full employment was proved empirically wrong.

In this background, Keynes wrote his book, General Theory of Employment, Interest and Money in 1936. Prior to Keynes no satisfactory explanation was given of the factors determining the level of employment in the economy. The classical and the neoclassical economists almost neglected the problem of unemployment. They regarded unemployment as a temporary phenomenon and assumed that there is always a tendency towards full employment. It was Keynes who led a vigorous and systematic attack on the traditional theory of employment and replaced it with a more general and more realistic theory. Keynes bought about such a fundamental and important change in our economic thought at that time that the Keynesian theory is generally known as 'new economics'. By being impressed by the fundamental and revolutionary nature of changes in our economic theory of Keynes, many economists called his theory as the Keynesian Revolution.

Keynes' main criticism of the classical theory was on the following two grounds:

1. The classical prediction that full- employment equilibrium will be achieved in the long-run was not acceptable to Keynes, who wanted to solve the short run problem of unemployment. According to Keynes, in the long-run there is no problem; in the long-run, we are all dead.

2. Keynes criticised the classical assumption of self - regulating economy. The great depression of 1930s led Keynes to believe that full employment equilibrium in the economy was not be automatically achieved in the short period; and that government intervention was necessary to tackle the problem of the economy.

   Keynes' theory of employment is called the effective demand theory of employment. According to this theory, unemployment arises due to the deficiency to effective demand and the method of remove unemployment is to raise effective demand.

2.1 Keynesian Theory of Income and Employment

In the Keynesian theory of income and employment determination, principle of effective demand occupies a significant place. Keynes has used two key terms, namely, aggregate demand price and aggregate supply price, for determining effective demand. Aggregate demand price and aggregate supply price together contribute to determine effective demand, which further helps in estimating the level of employment of an economy at a particular period of time.

In an economy, the employment level depends on the number of workers that are employed, so that maximum profit can be drawn. Therefore, the employment level of an economy is dependent on the decisions of organizations related to hiring of employee and placing them. The level of employment can be determined with the help of aggregate supply price and aggregate demand price. Let us study these two concepts in detail.

Effective Demand: The principle of 'effective demand' is basic to Keynes' analysis of income, output and employment. Economic theory has been radically changed with the introduction of this principle. Stated briefly, the Principle of Effective Demand tells us that in the short period, an economy's aggregate income and employment are determined by the level of aggregate demand which is satisfied with aggregate supply. The principle of effective demand occupies an integral position in the Keynesian theory of employment. The general theory has the basic observation that total demand determines total employment. A deficiency of effective demand causes unemployment.

Aggregate Demand Price: Aggregate demand price is the total amount of money that an organization expects to receive from the sale of output produced by a specific number of workers. In other words, the aggregate demand price signifies the expected sale receipts received by the organization by employing a specific number of workers. Aggregate demand price schedule refers to the schedule of expected earnings by selling the product at different levels of employment. The higher the level of employment, greater the level of output would be. Consequently, increase in the employment level would increase the aggregate demand price. Thus, the slope of aggregate demand curve would be upward to the right.

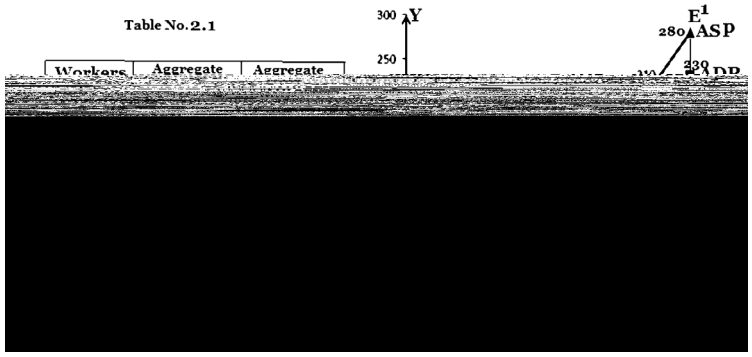
For example, we assume that entrepreneurs earns 50 crores of income by selling a certain quantity of goods in the market by employing a fixed number of 5 lakh workers in the economy, then this revenue is called aggregate demand price. Aggregate demand prices are listed in Table 2.1. Aggregate demand prices are different at different employment levels in the table. As employment size increases in the economy, aggregate demand prices also increases. But they are increasing at a decreasing rate. Connecting all the points of aggregate demand prices at different employment levels we will get aggregate demand curve. This is shown in Figure 2.2.

Aggregate Supply Function: Aggregate supply price refers to the total amount of money that all organizations in an economy should receive from the sale of output produced by employing a specific number of workers. In simpler words, aggregate supply price is the cost of production of products and services at a particular level of employment. It is the total amount of money paid by organizations to the different factors of production involved in the production of output. Therefore, organizations would employ the factors of production until they can recover the cost of production incurred for employing them. A certain minimum amount of price is required for inducing employers to offer a specific amount of employment.

If an organization does not get an adequate price so that cost of production is covered, then it employs less number of workers. Therefore the aggregate supply price varies according to different number of workers employed. Aggregate supply price schedule is a schedule of minimum price required to induce the different quantities of employment.

For example, if the economy expects to employ a certain number of 5 lakh workers and produce a certain quantity of goods, the revenue expected by the movement is at least 30 crores. The minimum aggregate supply prices required to employ more and more number of workers and produce goods at different levels are shown in Table 2.1. Thus, higher the price required to induce the different quantities of employment, greater the level of employment would be. Therefore, the slope of the aggregate supply curve is upward to the right. Connecting all the points of aggregate supply prices at different employment levels we will get aggregate supply curve. This is shown in Figure 2.2.

Determination of the Level of Employment - Effective Demand: In Fig. 2.2, ADP is the Aggregate Demand Price and ASP the Aggregate Supply Price. The point E where the ADP curve is cut by the ASP is called the point of effective demand. It may be noted that there are so many points on the aggregate demand curve ADP, but all these points are not effective except point E. In the diagram, aggregate supply price shows the minimum proceeds which are just necessary to induce entrepreneurs to provide varying amounts of employment; the aggregate demand price shows the proceeds expected from the sale of outputs resulting from various amounts of employment.



Before these curves intersect each other at E, ASP lies below the ADP so that at the level of employment the expected sale proceeds are greater than the minimum sale proceeds necessary, showing that the employers will be induced to provide increased amount of employment. At point E, ADP is intersected by ASP' and entrepreneurs' expectations of proceeds are realised.

It may, however, be noted that the economy is no doubt, in equilibrium at the point E, for here the entrepreneurs do not have the tendency either to increase or decrease employment. But Keynes makes a singular contribution to economic analysis by saying that E may or may not be a point of full employment equilibrium. If, however, some workers still remain unemployed when ADP and ASP are equalised, in that case, it will be known as Underemployment Equilibrium. Aggregate demand and aggregate supply might be equal at full employment; this will be so if investment happens to equal the gap between the aggregate supply price corresponding to full employment and the amount which consumers choose to spend on consumption out of full employment income.

Keynes believed that private investment in a capitalist economy is never sufficient to fill such a gap. To achieve full employment from N to N_1 (30 Lakhs to 35 Lakhs), Keynes suggested that in the short period government can raise aggregate demand in the economy through public investment which is not profit-motivated.

2.2 Keynesian Consumption Function

The relationship between income and consumption is called consumption function. Keynes says that many factors affect the consumption function, which is a major component of aggregate demand. The consumption function states that aggregate real consumption expenditure of an economy is a function of real national income. This is called the Keynesian Consumption Function. The classical economists used to argue that consumption was a function of the rate of interest such that as the rate of interest increased the consumption expenditure decreased and vice versa. Keynes stated that the rate of interest may have some influence on consumption but the real income was the important determinant of consumption.

The aggregate consumption function states that real consumption is a function of real income and then the consumption function can be written as C = f(Y) where C is real consumption expenditure and Y is real national income. This is the Keynesian Consumption Function. The straight line consumption function has a constant slope at all points. The (MPC) marginal propensity to consume decreases as income increases.

As people's Disposable incomes increase, the consumption expenditure also increases. The increase in consumption expenditure (ΔC), however, is less than the increase in income (ΔY). For example, as a result of increase Rs.1000 in disposable income leads to an increase in consumption expenditure less than Rs.1000. This is the fundamental psychological law of Keynes. Keynes states in his General Theory, based on psychological knowledge, it is generally believed that people increase their consumption whenever their incomes increase, but they can undoubtedly rely on the Fundamental Psychological Law, which states that an increase in income is less than an increase in consumption. According to Keynes the consumption function must possess the following characteristics:

Aggregate real consumption expenditure is a stable function of real income.

The marginal propensity to consume (MPC) or the slope of the consumption function defined as ΔC/ΔY must lie between zero and one i.e. MPC >0,< 1.

The average propensity to consume (APC) or the proportion of income spent on consumption defined as C/Y should be decreasing as income increases. From the relation between marginal and average we know that, when average falls, marginal is below average. Thus, when the average propensity to consume (APC) falls, the marginal propensity to consume (MPC) must be lower than the APC.

The marginal propensity to consume (MPC) itself probably decreases or remains constant as income increases.

In view of the above summary, we can conclude that, if the current levels of income increases, the consumption expenditure will also increases, but the rate of increase in consumption expenditure will be lower than the increase in income. This reduces both the Average Propensity to Consume and the Marginal Propensity to Consume. Marginal Propensity to Consume, however, is less than Average Propensity to Consume. For this reason there is no proportional relationship between income and consumption expenditure.

Average Propensity to Consume: Average propensity to Consume is the ratio between total disposable income and total consumption. The average propensities consume measures of how much of the total income is consumed at given level of income. In the table 2.3 consumption expenditure illustrated at different levels income.

$$\text{Average Propensity to Consume} = (APC) = \frac{\text{Present Total Consumtion}}{\text{Present Total Disposable Income}} = (C / Y)$$

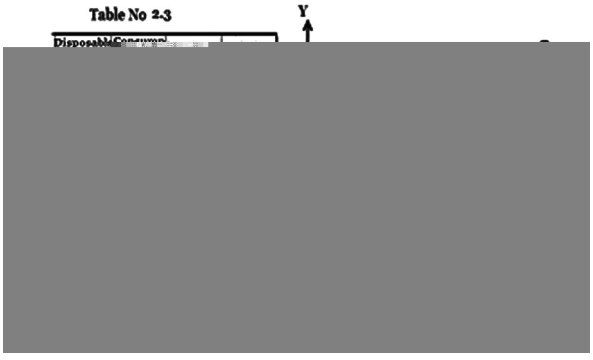
Marginal Propensity to Consume: The marginal consumption ratio is the ratio between the change in total consumption expenditure and the change in disposable income.

$$\text{Marginal Propensity to Consume (MPC)} = \frac{\text{Proportionate change in Consumption}}{\text{Proportionate change in Disposable Income}} = (\Delta C/\Delta Y)$$

These four characteristics specify the shape of the consumption function. It can be seen clearly that, if we draw a straight line consumption function with a positive intercept with the vertical axis, and intersecting the 45° line from above, it will satisfy all the four characteristics. In Fig. 2.4 we draw Y on the horizontal axis and C on the vertical axis.

In table 2.3 we described the relationship between disposable income, consumption expenditure, average consumption and marginal consumption behaviors. Considering the relationship between disposable income and consumption expenditure, we find that, the level of disposable income increases consumption expenditure is also increasing steadily. But the increase in consumption expenditure is less than the increase in disposable income. Connecting the points of consumption expenditures at different income levels we will get a consumption curve, shown in figure 2.4.

In the table 2.3, when the disposable income levels were increasing, average propensity to consume decreased from infinity(∝) to 0.29. In the beginning consumption expenditure is 20 crores, even though the level of disposable income is zero. This is known as autonomous consumption. While the disposable income increases to 40 crores, consumption expenditure also increased to 40 crores. Here the average propensity to consume is equal to one. As the disposable income levels are increases, the proportion allocated to consumer expenditure is steadily decreasing.



According to Keynes's analysis, the marginal propensity to consume trend is lower than the average propensity to consume trend. As the income levels increases, average propensity to consume and marginal propensity consume tend to decrease. Therefore, Keynes notes that there is a disproportionate relationship between disposable income and consumption expenditure, in the short term. In the table 2.3, consumer expenditure is higher than disposable income when income is less than Rs 40 crore. However, there is a question, how much people can afford to spend beyond income. The answer is that people use savings in the form of bonds in the past. If the country's imports exceed exports, the consumption expenditure may exceed the income. Similarly, the use of inventories may exceed consumption expenditure over the income.

A straight line function, $C = \alpha + \beta Y$, is used to estimate the relationship between disposable income and consumption in the short term.

C = Consumption expenditure,
α = Autonomous consumption,
β = Marginal propensity to consume.

2.3 Saving Function

Saving is that part of income which is not spent on current consumption. The relationship between saving and income is called saving function. Simply put, saving function or propensity to save relates the level of saving to the level of income. It is the desire or tendency of the households to save at a given level of income. Thus, saving (S) is a function (f) of income (Y).

Symbolically: S = f (Y)

Two noteworthy features of saving function are:

1. Saving can be negative (-) at zero or low level of income.
2. As Income increases, savings also increases. Saving is residual income of households that is left after consumption.

   Algebraically: S = Y-C

As incomes of the people's increases, meanwhile their consumption expenditure also increases, but increase in consumption expenditure (ΔC), however, is less than the increase in income (ΔY). For this reason, the proportionate change in the consumption expenditure is gradually decreases and the savings component is increases. Based on fundamental psychological law, people generally increases their consumption as their income increases, but the savings component increases gradually as consumption expenditure decreases. This is illustrated in table 2.5.

Average Propensity to Save: The average propensity to save is the ratio between total disposable income and total savings. Average propensity to save explains the total consumption expenditure (C), at different income (Y) levels. Average propensity to save is explained in table 2.5. S/Y represents the average propensity to save.

$$\text{Average Propensity to Save (APS)} = \frac{\text{Present Total Savings}}{\text{Present Total Disposal Income}} = \frac{S}{Y}$$

Marginal Propensity to save: The marginal propensity save is the ratio of change in savings (ΔS) to the change in disposable income (ΔY). This means that the proportionate savings from the increased income will be added. This is illustrated in Table 2.5.

$$\text{Marginal Propensity to save (MPS)} = \frac{\text{Change in Savings}}{\text{Change in Disposal Income}} = \frac{\Delta S}{\Delta Y}$$

Table 2.5 presents the variables like disposable income, consumption expenditure, savings, average propensity to consume, marginal propensity to consume, average propensity save and marginal propensity save etc. The relationship among the variables, explained in detail in the table 2.5. In the table, when the income level is zero, the consumption level is 20 crore. This is known as autonomous consumption. At this point, expenditure is more than disposable income. While the disposable income increases to 40 crores, consumption expenditure also increased to 40 crores. Here the average propensity to consume is equal to one. As the disposable income levels are increases, the proportion allocated to consumer expenditure is steadily increases at decreasing rate.

As the income levels are increases, average propensity to consume and marginal propensity consume tend to decrease. Therefore, Keynes notes that there is a disproportionate relationship between disposable income and consumption expenditure. In the table 2.5 consumer expenditure is higher than disposable income when income is less than Rs 40 crore. However, there is a question, how much people can afford to spend beyond their income. The answer is that people uses savings in the form of bonds in the past. If the country's imports exceed exports, the consumption expenditure may exceed the income. Similarly, the use of inventories may exceed consumption expenditure over the income.

Table No 2.5

When disposable income increases to 40 crores, the consumption expenditure is also 40 crores. At this level of income the savings are null. As the income levels are increases, the proportion allocated to consumer spending is steadily decreasing, while savings are increasing. When we observe the relationship between average propensity to consume and average propensity to save in the table, we came to know that, the values of APC and APS are equal to one (1) at any given income level. Likewise when we observe the relationship between marginal propensity to consume and marginal propensity to save in the table, we can find, the values of MPC and MPS are equal to one (1) at any given income level.

For example, at income Rs 20 crore, the average propensity to consume (APC) is 1.50 and the average propensity to save (APS) is -0.50, and income at 70 crores the average propensity to consume (APC) is 0.71 and the average propensity to save (APS) is 0.29 equal to one.

1.Average propensity to consume (APC) + Average propensity to save (APS) = 1

$\therefore$ APC + APS = 1
$\therefore$ APS = 1-APC
$\therefore$ APC = 1-APS.

For example, at income 70 crores, the marginal propensity consume (MPC) is 0.33, the marginal propensity save (MPS) is 0.67, at income110 crores, the marginal propensity consume (MPC) is 0.25 while the marginal propensity save (MPS) is 0.75 equal to one.

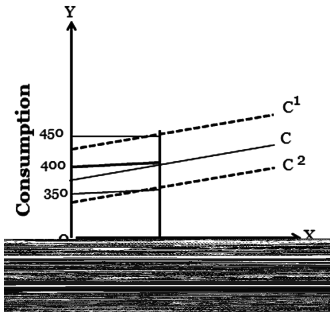
2. Marginal propensity to consume + Marginal propensity to save = 1

$\therefore$ MPC + MPS = 1
$\therefore$ MPS = 1-MPC
$\therefore$ MPC = 1-MPS

2.4 Factors Determining Consumption Function

The relationship between income and consumption is called consumption function. Keynes says that many factors affect the consumption function, which is a major component of aggregate demand. The consumption function states that aggregate real consumption expenditure of an economy is a function of real national income. This is called the Keynesian Consumption Function. Changes takes place in consumption expenditure due to changes in income are called marginal propensity to consume. However, a shift in consumption function results a change in consumption expenditure. Keynes considers consumption function is stable and associated with changes in income leads to changes in consumption. According to Keynes, consumption increases as income increases. Similarly, if income is reduced, the consumption expenditure also reduced.

How the consumption function changes when changes in other factors which were determine consumption expenditure other than income is explained in figure 2.6. In this figure the consumption trend line, is shifting up or down. The initial consumption trend line is C curve in the map, when the income is constant at 500 crores; the consumption expenditure is 400 crores. However, when the factors which determine consumption behavior change and the consumption expenditure increases, the consumption trend line shifted to C^1 and consumption expenditure increased to 450 crore at the same income level 500 crores. If the consumption expenditure is reduced due to changes in other factors which were determine consumption expenditure other than income, the consumption trend line has moved down to C^2 and consumption expenditure reduced 350 crores at the same income level 500 crores.



According to Keynes, aggregate real consumption expenditure depends on aggregate real national income, other things remaining constant. The factors other than the level of income that affect consumption can be divided into Subjective factors and objective factors.

Subjective factors are psychological ones that cannot be quantitatively measured. Objective factors are considered to be economic variables that can be measured quantitatively. Structural factors include aspects particularly relevant for the problem of aggregation. Let us first consider the subjective or psychological factors affecting consumption.

1. Subjective factors: The subjective factors consists of basic values, states of mind, attitudes, etc., which cannot be measured in quantitative terms. In his General Theory Keynes mentioned 8 subjective factors that promote savings. They are 1) Precaution, 2) Foresight, 3) Future calculation, 4) Growth (improvement) 5) Independence 6) Enterprise 7) Pride, 8) Greedy (avarice).

Apart from these he mentioned the motives-for consumption, such as, “enjoyment, short-sightedness, generosity, miscalculation, ostentation and extravagance.” He called them subjective factors that are unlikely to change significantly in the short-run. Psychological factors, such as, expectations and attitudes do influence consumption. Rational behaviour suggests that a consumer who expects an increase in income or in price level would consume more than one who expects no such changes. Keynes accepted this logic but felt that expectations can be ignored because different people in an economy will have different expectations, and such expectations will probably cancel out each other in the aggregate analysis.

1. The marginal efficiency of capital is determined by the supply price of capital assets on the one hand and the prospective yield on the other. Prospective yield, in turn, depends upon future expectations. This explains why the marginal efficiency of capital and hence investment expenditure fluctuates.

2. Rate of interest is a monetary phenomenon and is determined by the demand for money (liquidity preference) and the quantity of money. Liquidity preference depends upon three motives- transaction motive, precautionary motive, and speculative motive. Quantity of money is regulated by the monetary authority.

3. The essence of the whole theory of employment is that employment (= output = income) depends upon effective demand. Effective demand expresses itself in the whole of total spending of the community, i.e., consumption expenditure and investment expenditure. A fundamental principle is that as income of the community increases, consumption will increase, but by less than the increase in income. Thus, in order to increase the level of employment, investment must be increased. Investment must be high enough to fill the gap between income and consumption. Government expenditure is considered the most effective weapon to fight unemployment.

Determination of Equilibrium Level of Employment:

The central problem of the General Theory is, what determines the level of employment? Keynes' answer is, effective demand. Effective demand is the logical starting point of Keynes' theory of employment. Effective demand means desire plus ability and willingness to buy, i.e., actual expenditure. Effective demand depends upon aggregate demand function and aggregate supply function. Aggregate demand function represents different amounts of money which the entrepreneurs expect to get from the sale of output at varying levels of employment. Or, to put it differently, aggregate demand function reveals planned or intended expenditure at different levels of income.

2.9 Keynes Theory – Underdeveloped economies

Now the question is, whether Keynes' 'General Theory' is in any way applicable to underdeveloped economies like India? How far Keynes proposed "General Theory" solves the problem of unemployment in developing economies? Before answering the questions first we understood Keynes theory in detail. While developing his theory, he kept in mind only the industrialized countries such as England and America. In nutshell, at that time the problems of developing countries did not attract his attention. That's why before applying the Keynesian theory to the problems of developing countries, it is necessary to understand the nature of the problems in those countries.

In developing countries like India, the problem of unemployment is not only institutional, but it is chronic one. The problem of unemployment in these countries is not lack of aggregate demand, but due to lack of capital. Whereas, the problem of unemployment in capitalist developed countries is the lack of aggregate demand. Moreover it is only temporary in developed countries. Therefore, the proposed Keynes theory for the prevention of the unemployment problem does not contribute to the prevention of unemployment in developing countries.

In general aggregate demand in developing countries is higher than aggregate supply. Keeping the Keynes theory in mind, the government increases its expenditure to solve the unemployment problem in these countries. As a result, aggregate demand is still rising, and the unemployment problem is not a solved, moreover inflationary condition prevails in the economy. The investment multiplier effect that Keynes has suggested in these countries may not give effective results

As for the theoretical apparatus and model of 'General Theory', J.A. Schumpeter, in his book "Ten Great Economists" had ruled out the direct, immediate applicability to all countries. He wrote: "Those who seek universal truths, applicable to all places and at all times had better not waste their time on the General Theory". The idea was that the socio-institutional assumptions underlying the theory related mainly to U.K. or at least to advanced, rich, industrialized, nature economics of the West. Schumpeter also considered the policy implications of Keynes' theory as not only irrelevant to countries other than England but also as positively harmful. He observed: "Practical Keynesianism is a seedling which cannot be transplanted into foreign soil ; it dies there quickly and becomes poisonous before it dies....left in English soil this seedling is a healthy thing and promises both fruit and shade..... all this applies to every bit of advice that Keynes offered."

Keynes never wrote for the economic development of undeveloped countries. Keynes wanted to give theoretical respectability to the allegedly 'interventionist' policies of public works, deficit financing and deficit budgets. He was evolving an anti-depression and later an anti-inflation policy for a temporarily ailing mature, capitalist economy. Under-developed economies differ fundamentally in their nature, structure and problems; as such a downright applicability of Keynes' theory or policy is out of the question. The problem of depression and unemployment in advanced economies is like the temporary ailment of an otherwise healthy man to whom specialized Keynesian sugar-coated pills can be given to cure him and get him going. The problem of underdeveloped countries is that of a chronic patient, weak, debilitated anemic and suffering from many ailments at a time. For the latter, a balanced well-considered prescription will not be enough. He needs tonic.

The massive unemployment, disguised unemployment and lower incomes are the result of the stagnation of centuries and cannot be overcome within a short span of a few years. Again, most of the underdeveloped economies are not closed economics because the organized sector here is altogether foreign-trade oriented and suffers from fluctuations in business activity on account of the variations in international trade. The problem in less developed countries is how to increase savings, capital formation and how to raise efficiency of labour. It is only after these factors have been obtained that the supply of output can be increased. This is essentially a long run process. Thus, it appears as if Keynes had assumed away the real problems of an under-developed economy.

Important Points to Remember

★ In the Keynesian theory of income and employment determination, principle of effective demand occupies a significant place. Keynes has used two key terms, namely, aggregate demand price and aggregate supply price, for determining effective demand.

★ The principle of 'effective demand' is basic to Keynes' analysis of income, output and employment.

★ Aggregate demand price is the total amount of money that an organization expects to receive from the sale of output produced by a specific number of workers.

★ Aggregate supply price refers to the total amount of money that all organizations in an economy should receive from the sale of output produced by employing a specific number of workers.

★ The relationship between income and consumption is called consumption function. Keynes says that many factors affect the consumption function, which is a major component of aggregate demand.

★ The aggregate consumption function states that real consumption is a function of real income and then the consumption function can be written as C = f(Y) where C is real consumption expenditure and Y is real national income.

★ Keynes states in his General Theory, based on psychological knowledge, it is generally believed that people increase their consumption whenever their incomes increase, but they can undoubtedly rely on the Fundamental Psychological Law, which states that an increase in income is less than an increase in consumption.

★ **Average Propensity to Consume (APC)** = $\frac{\textit{Present Total Consumtion}}{\textit{Present Total Disposable Income}}$ = C / Y.

★ **Marginal consumption (MPC)** = $\frac{\textit{Proportionate change in Consumption}}{\textit{Proportionate change in Disposable Income}}$ = ÄC / ÄY.

★ Saving is that part of income which is not spent on current consumption. The relationship between saving and income is called saving function. Simply put, saving function or propensity to save relates the level of saving to the level of income.

★ **Average Propensity to Save** (APS) = $\frac{\textit{Present Total Savings}}{\textit{Present Total Disposal Income}} = \frac{S}{Y}$.

★ **Marginal Propensity to save** (MPS) = $\frac{\textit{Change in Savings}}{\textit{Change in Disposal Income}} = \frac{\Delta S}{\Delta Y}$.

★ The subjective factors consists of basic values, states of mind, attitudes, etc., which cannot be measured in quantitative terms. In his General Theory Keynes mentioned 8 subjective factors that promote savings. They are 1) Precaution, 2) Foresight, 3) Future calculation, 4) Growth (improvement) 5) Independence 6) Enterprise 7) Pride, 8) Greedy (avarice).

★ Factors which are influenced by changes in the consumption behavior as a result of changes in the economy are called objective factors

★ The theory of multiplier occupies an important place in the modern theory of income and employment. The concept of multiplier was first of all developed by F.A. Kahn in the year 1931.

★ The multiplier value can be specified in three ways.

K = ΔY / ΔI

K = 1 / MPS

K = 1 / 1 - MPC

★ Symbolically $\alpha = \Delta I/\Delta C$, where α stands for acceleration coefficient; ΔI denotes the net changes in investment outlays; and ΔC denotes the net change in consumption outlays.

3

Knut Wickell

20th Dec 1851 - 3rd May 1926

Investment and Theories of Interest

3.0 Introduction

3.1 Meaning of Investment

3.2 Definition of Investment

3.3 Types of Investment

3.4 Determinants of Investment

3.5 Marginal Efficiency of Capital (MEC)

3.6 Determination of Equilibrium Investment

3.7 Theories of Interest

3.8 Classical theory of Interest

3.9 Neo classical theory of Interest

3.10 Keynes' theory of Interest

3.0 Introduction:

Investment plays an important role in economic development. The level of economic activities depends up on the level of investment. Higher the level of investment, higher will be the economic activities. Lower the level of investment, lower will be the economic activities. According to Keynes' theory of employment, the level of national income and employment depends up on the level of aggregate demand. The aggregate demand consists of two components, i.e., consumption demand and investment demand. Consumption demand is stable in short run. Hence investment demand is only the determinant of level of income and employment.

Income and employment is positively related to the level of investment. Greater the level of investment, greater will be the level of income and employment.

I = investment; Y = National income; N= employment

3.1 Meaning of Investment

Increase in the production of capital goods in a specific period of time is called investment. New addition to the stock of capital such as plants, machines, trucks, factory buildings, equipment, tools, etc. is known as the investment. This type of investment leads to increase in level of aggregate demand and level of income and employment.

Investment Expenditure: The expenditure spent on consumer goods is known as consumption expenditure. The expenditure spent on capital goods or productive goods is called as investment expenditure. Buying of old capital assets or capital goods, stocks will not be treated as investment expenditure. This represents the transfer of existing capital assets only. The expenditure which is used to buy new capital goods and equipments only treated as investment expenditure.

3.2 Definitions of Investment

"Investment refers to the new addition to the stock of physical capital such as plants, machines, trucks, construction of public works like dams, roads, buildings etc. " J.M. Keynes.

"Increase in production of current year capital goods compare to the previous year production" Edward Shapiro.

"An addition to the capital is investment." **Joan Robinson.**

3.3 Types of Investment

Investment can be classified into many kinds. The following are the important types of investment.

1. Gross investment: Gross investment is the total amount spent on new capital assets during the specific period of time. This can be denoted as I_g .

2. Net investment: Net investment refers to the net addition to the existing capital stock. This can be denotes as I_n. We can get net investment by subtracting the depreciation of the capital from the gross investment. This can be shown by an equation as given below.

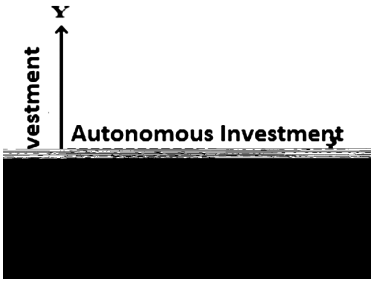
$I_n = I_g - D$ I_n = Net investment, I_g = Gross investment D = Depreciation

3. Government/Public investment: Investment made by the Central, State and Local governments is called public or government investment. The main motto of the government investment is welfare of the people. Ex: construction of roads and defence investment etc.

4. Private Investment: Investment made by the individuals, private firms or non-governmental organizations is called as private investment. The main motto of the private investment is to earn the profits. This type of investment depends up on the MEC (expected rate of profit) and rate of interest.

5. Financial Investment: Buying of existing bonds, shares, equities and securities by an individual is called as financial investment. This type of investment does not affect the aggregate demand and level of income and employment in the economy.

6. Real Investment: Production of new capital assets like new plants, machines, construction of new factory buildings, construction of roads, railways, educational institutions by the government for the welfare of the society is known as real investment. This type of investment leads to increase in level of income and employment.



7. Autonomous Investment: The investment which does not depend up on the changes in the level of income and rate of interest is known as autonomous investment. Most of the investment undertaken by the government is the autonomous investment. Autonomous investment can be denoted by $\mathbf{I_A}$.

The autonomous investment is income/rate of interest inelastic. Autonomous investment does not affected by the changes in income or rate of interest. Hence the autonomous investment curve is perfectly elastic. I.e. parallel to the OX (horizontal) axis, shown in the figure 3.1.

8. Induced Investment: the investment which is motivated by the income or rate of profit is called as induced investment. Induced investment will change due to changes in the income/profit/rate of interest. All the investments in private sector are induced investments. Because the private investors are invests on the basis of profit or income only. Induced investment can be denoted by $\mathbf{I_i}$. Induced investment is income elastic. Induced investment is a function of income.

$\mathbf{I_i = f(Y)}$, I_i = induced investment; Y = income

There is direct relationship between income and induced investment. Induced investment increases with the rise in income. Induced investment decreases with the fall in income. Hence induced investment line slopes upward from left to right (positive slope), shown in the figure 3.2.

9. Ex-Ante Investment: Ex-Ante means planned. Ex-Ante investment refers to the amount of investment which firms plan to invest at different levels of income in the economy. It is also called as intended investment, planned investment, voluntary investment and desired investment.

10. Ex-Post Investment: Ex-Post means actual or realised. Ex-Post investment refers to the realised or actual investment in an economy during a year. This is also called as actual investment, unplanned investment and unintended investment.

3.4 Determinants of Investment

The level of investment is mainly depends upon the MEC and rate of interest. There are several other factors, which affect the investment. The following are the important determinants of investment.

1. Rate of Interest: This is the most important determinant of investment. The level of investment is inversely related with the rate of interest. Other things remaining constant, higher the rate of interest lower will be the level of investment. Lower the rate of interest higher will be the level of investment.

$i \longrightarrow I$

$i \longrightarrow I$

2. Marginal Efficiency of Capital (MEC): According to Keynes the expected rate of profit from a new capital asset is called MEC. MEC is another important determinant of level of investment. Investors compare the rate of interest and rate of profit that they expected, i. e MEC. If MEC is greater than the rate of interest investors induced to invest more. If MEC is lower than the rate of interest investors induced to invest less.

$MEC > i \longrightarrow I$

$MEC < i \longrightarrow I$

3. Inventions and Innovations: Advances of technology and introduction of new products and processes are also affects the level of investment. Advanced technology and innovations tend to raise the inducement to invest. The absence of innovations and inventions tend to low inducement to invest.

4. Availability of Credit: Availability of credit facilities tends to raise the investment in the economy. Non availability of credit facilities will discourage the investment.

5. Business Expectations: Business expectations are very uncertain. Expectations may change quickly and drastically in response to the general mood of the business community, rumours, political climate etc. the optimistic expectations tend to increase in investment. Pessimistic thinking of business community, tend to decrease in investment.

6. Liquid Assets: Possesses of liquid assets by the investors also affect the level of investment. If the investors possess large liquid assets the inducement to invest is high. If the investors possess few liquid assets the inducement to invest is low.

7. Growth of Population: Growth of population tends to growing market for all types of goods produced in the economy. To meet the demand of an increasing population, investment will increase. On the other hand a decline in population results lowering the inducement to invest.

8. Expected Demand for Products: The expected demand for products is also affects the level of investment. If the expected demand for products is high, inducement to investment also will be high. If the expected demand for products is low, inducement to investment also will be low.

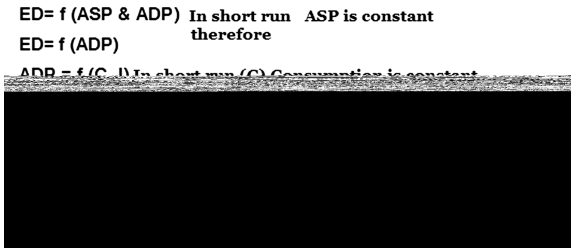
9. State Policy: The economic policy of the government also influences the level of investment. If the state imposes high taxes on corporations, the inducement to invest will be the low. If the government encourages the firms by providing low interest rate credit, infrastructure facilities and subsidies etc tend to invest more.

10. Political Climate: If there is political instability in the country or war with other countries, the inducement to invest will be low. On the other hand political stability and peaceful atmosphere in the country tend to raise the inducement to invest.

3.5 Marginal Efficiency of Capital (MEC)

According to Keynes, the level of income and employment in the economy depends on the level of effective demand. The effective demand is determined by two factors - Aggregate Supply Price (ASP) and Aggregate Demand Price (ADP). The aggregate demand price itself depends on two factors: Consumption expenditure (C) and investment expenditure (I). In the short run the consumption expenditure is remain constant. Therefore, in the short run aggregate demand price depends on investment expenditure only. Meanwhile Investment expenditure depends on two factors: interest rate and marginal efficiency of capital. In the short run, the interest rate remains constant. Therefore, investment is determined by marginal efficiency of capital.

Therefore marginal efficiency of capital increases the level of investment increases. When the level of investment increases, the aggregate demand and effective demand increases,. as a consequence the income and employment levels also increases. Keynes opined that marginal efficiency of capital plays an important role in determining income and employment levels in the economy.



Definition - Marginal Efficiency of Capital: Marginal Efficiency of Capital refers to the expected profitability of a capital asset. It may be defined as the rate of discount which equates the present value of a series of cash flows obtainable from an income-earning asset like a machine over its entire economic life to the cost of the machine. Thus the marginal efficiency of capital is the percentage of profit expected from a given investment on a capital asset. Investment continues as long as the marginal efficiency of capital is greater than the rate of interest. Thus, the level of investment is determined at the point where the marginal efficiency of capital is equal to the market rate of interest. ." This can be explained by the following formula:

$$Sp = \frac{R_1}{(1+r)} + \frac{R_2}{(1+r)^2} + \frac{R_3}{(1+r)^3} \ldots\ldots \frac{R_n}{(1+r)^n}$$

R_1, R_2, R_3 .....R_n = Expected returns annually over the life of the capital asset

r = discount rate or marginal capital efficiency.

SP = Supply Price of machine.

Example: Suppose the life span of a machine is 2 years

First year expected returns are = Rs 1100

Second year Expected Returns are= Rs 2420

Suppose discount rate (r) is 10%. What is the supply price or current value of the machine?

$$SP = \frac{1100}{(1+10\%)} + \frac{2420}{(1+10)^2}$$
$$= \frac{1100}{(1+0.1)} + \frac{2420}{(1+0.1)^2}$$
$$= \frac{1100}{(1.1)} + \frac{2420}{(1.1)^2}$$
$$= \frac{1100}{1.1} + \frac{2420}{1.21}$$
$$= \frac{11000}{11} + \frac{242000}{121}$$
$$= 1000 + 2000 = 3000$$

The supply price of machine is Rs. 3,000

3.6 Determination of Equilibrium Investment

According to Keynes, the volume of investment in a community depends mainly on two factors: the marginal efficiency of capital and the rate of interest on long-term loans. Both the factors are highly unstable, the former being more unstable than latter. The marginal efficiency of capital is the highest rate of return over cost expected from producing one more unit of a particular type of capital asset.

Generally Investors were make investment by comparing marginal efficiency of capital with the interest rate. Investment is profitable when marginal efficiency of capital is higher than the interest rate. Investment is not profitable if marginal efficiency of capital is below the interest rate. Equilibrium of investment is determined at the point, where the marginal efficiency of capital is equal to the interest rate.

Marginal Efficiency of Capital > Interest Rate ↑ Investment

Marginal Efficiency of Capital < Interest Rate ↓ Investment

Marginal Efficiency of Capital = interest rate →← equilibrium investment

Relationship between Investment - Marginal Efficiency of Capital – Interest Rate

The marginal efficiency capital is different at different investment levels. Generally, when the marginal efficiency capital decreases, the size of the investment increases. If the marginal efficiency capital increases, the size of the investment decreases. This means, there is an inverse relationship between investment and marginal efficiency of capital. So that, the MEC curve or the investment demand curve has a negative slope. It is, leaning from left to right.

In Table 3.3 the marginal efficiency of capital (MEC) is decreasing as the investment volume increases. At an investment of Rs 10,000 crore, the interest rate is 5% and the marginal efficiency of capital (MEC) is 7%. So the investment will be raised to Rs 20,000 crore. Here the marginal efficiency of capital (MEC) is more (6%) than the interest rate (5%). The investment will be raised further to Rs 30,000 crore. At investment of Rs 30,000 crore, the marginal efficiency of capital (MEC) is equal to (5%) the interest rate. If the investment is raised more than this (Rs. 40,000), the marginal efficiency of capital (MEC) is 4%, less than the interest rate 5%. Therefore, no investor, invest more than Rs. 30,000 crore. Hence Rs. 30,000 crores of investment is called equilibrium investment. The point at where the interest rate and the marginal efficiency of capital are intersects each other or found equal called investment equilibrium. in the table 3.4 equilibrium investment point is 'E'.

Determination of Equilibrium Interest Rate: According to classical economists, capital supply and capital demand, together determines the interest rate. The equilibrium interest rate is determined at point, where capital supply and capital demand curves intersect each other.

Equilibrium Interest Rate ⟶ Capital Supply = Capital Demand

i = Savings (S) = Investment (I)

Table 3.9 denotes that at 5% interest rate the capital supply is 1000 crores, while the capital demand is 5000 crores. When the interest rate increased to 25%, the capital supply (savings) increased to 5000 crores and the capital demand decreased to 1000 crores. This reveals that there is a positive relationship between interest rate and capital supply and a negative relationship between interest rate and capital demand. So the capital supply curve (SS) is slopes upwards from left to the right and the capital demand curve (II) is slopes downwards from the left to the right. This is illustrated in diagram 3.10

Figure 3.10, denotes that, the capital supply and capital demand on OX axis and interest rate on the OY axis. The 'SS' curve represents capital supply and 'II' curve represents capital demand (investment). The curves 'SS' and 'II' are equilibrium at point "e", where both curves are intersecting each other. At the equilibrium point "e", the capital supply and capital demand are equal (S = I). In the figure the interest rate (15%) oi, is called the equilibrium interest rate or natural interest rate.

The classical economists called this equilibrium rate of interest at the natural rate of interest. They held that if the market rate of interest was higher than the natural or the equilibrium rate of interest, the supply of savings would exceed the demand and the market rate of interest must fall to the natural rate. Similarly, if the market rate of interest is lower than the natural rate, the demand of savings will exceed the supply, till it rises to become equal to the natural rate of interest.

3.9 Neo-Classical Theory of Rate of Interest

The loanable funds theory was first enunciated by a Swedish economist, K. Wicksell. Other Swedish economists who refined his ideas include G. Myrdal, Lindahl and B.Ohlin. In England D.H. Robertson developed the theory. It includes the monetary as well as the non-monetary aspects of interest. A slight variant of the classical demand for and supply of capital theory of interest is called the neo-classical (Loanable Funds) theory of the rate of interest. According to this theory, the rate of interest is determined by the demand for and supply of loanable funds.

The classical theory did not take into consideration the importance of monetary factors like cash, credit, hoardings etc. The fact that the demand for money may also arise from the desire to hoard, was not given any heed in the classical theory of the rate of interest. It regarded interest as the function of saving and investment and may be expressed as i = *f* (S, I). The loanable funds theory takes into account the role of the credit and hoarding, and considers the rate of interest to be the function of all variables of supply (S) and demand (D) side of the loanable funds.

i = f Σ) S, ΣD)

I = interest rate, **Σ**S = Total supply of loanable funds,

ΣD =Total demand of loanable funds.

Loanable Funds - Supply :

i ↑ S ↑
i ↓ S ↓

Savings (S): Savings by individuals or households constitute the most important source of loanable funds. At a given level of income, the larger would be the savings, the higher is the rate of interest and vice versa.

Dishoarding (DH): This is another important source of loanable funds. It means bringing out hoarded money of previous periods and making it available for investment. At a low rate of interest there is no encouragement to lend and people hoard money to fulfill their desire for liquidity. But at a higher rate of interest people dishoard money and add to the loanable funds for investment purposes.

i ↑ DH ↑
i ↓ DH ↓

Disinvestment (DI): Loanable funds are also provided sometimes through disinvestment. It takes place when due to structural changes the existing stock of capital equipment is allowed to wear out without being replaced. This happens when, part of the revenue from the sale of the products instead of going into capital replacement, goes into the market for loanable funds. This kind of disinvestment is encouraged when the rate of interest is high.

i ↑ DI ↑
i ↓ DI ↓

Bank credit (BM): Bank credit money constitutes yet another source of loanable funds. Banks advance loans to business houses by creating credit which is an addition to the supply of funds. Other things remaining the same, the banks have a tendency to lend more at higher rates of interest and vice versa.

i ↑ BM ↑
i ↓ BM ↓

Loanable Funds - Demand

Investment: A major part of the demand for loanable funds comes from business houses which borrow funds for various business purposes like the purchases of raw materials, capital equipment or building up inventories. They will demand more funds in case the rate of interest is low. The demand for loanable funds for investment purposes, therefore, is interest elastic.

$i \downarrow I \uparrow$

$i \uparrow I \downarrow$

Consumers: Another major source of demand for loanable funds comes from consumers who want to borrow funds for consumption purposes. People want to borrow more funds when they want to spend more than their current income or resources, e.g., consumers may ask for more loans to spend on durable goods like cars, scooters, etc. A lower rate of interest will naturally stimulate the demand for loanable funds for consumption purposes and vice versa.

$i \downarrow C \uparrow$

$i \uparrow C \downarrow$

Liquidity or Hoarding: The third source of demand for loanable funds comes from those who want to hold idle cash balances for satisfying their desire for liquidity. At higher rate of interest, people will hold less on account of the higher loss involved in holding cash balances while at a lower rate of interest people will hold more money because the loss involved is not much.

$i \downarrow H \uparrow$

$i \uparrow H \downarrow$

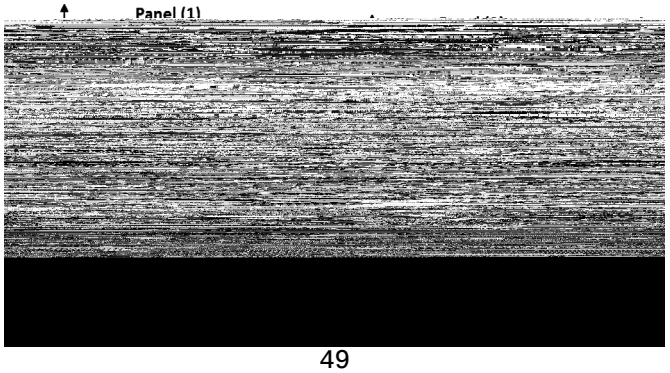
Thus, in the market there are lenders who supply loanable funds and there are borrowers who demand loanable funds. Rate of interest will be such as will bring the demand for and supply of loanable funds into equilibrium. The loanable funds theory filled in the deficiencies of the old classical theory of interest by taking into consideration the role of credit on the rate of interest. The neo-classical formulation of loanable funds theory of interest represents an improvement on the classical theory, in as much as the term 'loanable funds' is wider in scope.

Determination of Equilibrium Interest Rate: According to neoclassical theory of interest rate, the equilibrium of interest rate is determined, where the supply and demand for the loanable funds are equal.

Equilibrium Rate of Interest → Loanable Funds Supply = Loanable Funds Demand

$$i = \Sigma S = \Sigma D$$

How the equilibrium rate of interest is determined is illustrated in Figure 3.11. Loanable funds denoted on the OX axis and the interest rate is on the OY axis. In Figure 3.11 (1), the loanable funds influenced factors of both supply and demand side were shown separately. In Figure 3.11 (2), the aggregate value of loanable funds of supply (ΣS) and demand (ΣD) were drawn.



The individual curves in the loanable funds supply (S, DH, DI, and BM) have a positive slope. Therefore, the total supply curve (ΣS) for loanable funds generated by all these combinations also has a positive slope. Similarly, the individual curves of demand for loanable funds (I, C, H) have a negative slope. So the sum of the loanable demand (ΣD) for loanable funds generated by all these combinations is also negative slope. The total supply curve (ΣS) and total demand curve (ΣD) for loanable funds are intersected at point E. At point 'E' the Supply and the demand for loanable funds are equal (ΣS=ΣD). Here the total amount for loanable funds is OQ and the equilibrium interest rate is Oi.

Criticisms of Loanable Funds Theory: The loanable funds theory is not a new theory, but only a modified version of the classical theory; in essence, it is the classical saving and investment theory. As such, it is open to the same criticism as the classical theory is. Though the loanable funds theory has improved upon the classical theory in some respects, it has its own defects too.

1. **Unrealistic Integration of Real and Monetary Factors:** The neoclassical economists attempted to combine the monetary factors with the real factors in the loanable funds theory. But they did not succeed in this attempt. The two sets of factors are completely different in their origin, nature and impact and cannot be combined directly.
2. **Unrealistic Assumption of Full Employment:** The theory is based on the unrealistic assumption of full employment. According to Keynes, less-than-full employment, and not full employment, is a normal feature of a capitalist economy. Thus, the theory fails to apply in the real world.
3. **Unrealistic Assumption of Constant Income:** The loanable funds theory assumes that the income level of the community remains constant and the changes in investment have no effect on it. But the reality is that when the volume of investment increases as a result of a fall in the rate of interest, it leads to an increase in the income level.
4. **Saving and Investment Equality:** The loanable funds theory implies that saving-investment equality is established through changes in the rate of interest. Keynes criticized this view and believed that it is the changes in income, and not the rate of interest, that brings about equality between saving and investment.

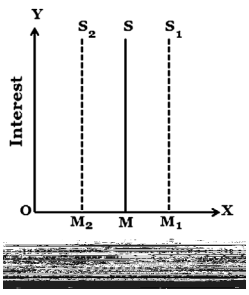
Indeterminate Theory: Like the classical theory, the loanable funds theory is also indeterminate. According to Hansen, it does not tell clearly how the rate of interest is determined. In this theory, the rate of interest depends upon the loanable funds and the loanable funds depend upon savings. But savings depend upon the income level. Income level depends upon the level of investment and the volume of investment depends upon the rate of interest. In this way we are caught in a vicious circle. The rate of interest cannot be determined with the help of this theory.

3.10 Keynes' Theory of Interest Rate

J.M. Keynes, in his book 'General Theory of Employment Interest and Money', has proposed a new interest theory, criticizing both classical and neoclassical interest theory. The determinants of the equilibrium interest rate in the classical model are the **'real'** factors of the supply of saving and the demand for investment. On the other hand, in the Keynesian analysis, determinants of the interest rate are the **'monetary'** factors alone. Keynes' analysis concentrates on the demand for and supply of money as the determinants of interest rate. Interest is the price paid for borrowed funds. People like to keep cash with them rather than investing cash in assets. Thus, there is a preference for liquid cash.

Liquidity Preference: Keynes has introduced a new concept of liquidity preference to explain the rate of interest. Liquidity preference refers to the convenience of holding cash. This constitutes the demand for money to hold. According to this theory, the rate of interest is the payment for parting with liquidity. People, out of their income, intend to save a part. How much of their resources will be held in the form of cash and how much will be spent depend upon what Keynes calls liquidity preference, Cash being the most liquid asset, people prefer cash. However, the rate of interest in the Keynesian theory is determined by the demand for money and supply of money.

i = f (MS, MD) i = Interest Rate MS = Money Supply, MD = Money Demand



Money Supply: The supply of money in a particular period depends upon the policy of the central bank of a country. Keynes opined that the money supply is stable at a given time. Money supply curve, SM has been drawn parallel to the OY axis (perfectly inelastic) as it is institutionally given.

The MS curve in Figure 3.12 indicates a fixed money supply at a given point in time. Suppose after some time the Central Bank increased the money supply, then the money supply curve M_1S_1 shifts to the right. If the money supply is reduced, the money supply curve M_2S_2 shifts towards the left.

Demand for Money: The demand for money is a demand to hold an asset. The desire for liquidity or demand for money arises because of three motives:

1) Transaction motive (2) Precautionary motive (3) Speculative motive.

1. Transaction motive: Money is needed for day-to-day transactions. As there is a gap between the receipt of income and spending, money is demanded. Incomes are earned usually at the end of each month or fortnight or week but individuals spend their incomes to meet day-to-day transactions. Since payments or spending are made throughout a period and receipts or incomes are received after a period of time, an individual needs **'active balance'** in the form of cash to finance his transactions. This is known as transaction demand for money or need- based money—which directly depends on the level of income of an individual and businesses.

2. Precautionary Demand for Money: Future is uncertain. That is why people hold cash balances to meet unforeseen contingencies, like sickness, death, accidents, danger of unemployment, etc. The amount of money held under this motive, called **'Idle balance'**, also depends on the level of money income of an individual. The relationship between precautionary demand for money and the volume of income is normally a direct one.

The above two types of money demands are taken together as L_1,

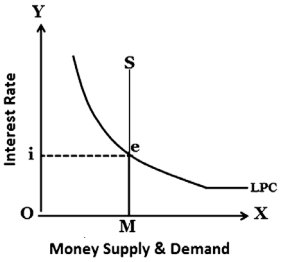
L_1 = f (Y), L_1 = Transaction motive and Precautionary motive, Y = income level.

Determination of Equilibrium Rate of Interest: According to Keynes, the equilibrium rate of interest is determined by the demand for money and the supply of money.

Equilibrium rate of interest = Supply of money = Demand for money

$i \leftrightarrow MS = MD\ (LP)$

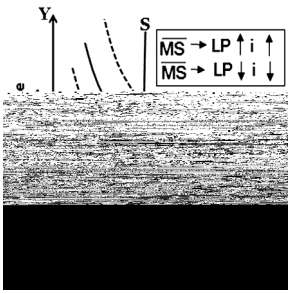
In figure 3.14 the Supply of Money curve MS is vertical to OY axis denotes perfect inelasticity nature of money supply. OM is the total amount of money supplied by the central bank. The demand for money curve MD or LPC has a negative slope. These two curves MS and LPC are intersecting each other and become equal at point "e". The point "e" is the equilibrium rate of interest. Now the interest is determined as Oi. If any changes either supply of money or demand for money curves, than the equilibrium interest rate also changes.



Money Supply & Demand

Figure 3.14

Supply of Money is Constant – Changes in Demand for Money: Figure 3.15 explains how the equilibrium rate of interest is determined, when the supply of money is constant and changes were happened in the demand for money. Suppose the demand for money increases, the equilibrium rate of interest is increases. If the demand for money decreases, the equilibrium rate of interest also decreases. The MS curve denotes that the supply of money is constant at OM. At point 'e' the demand for money curve LPC and supply of money MS are intersecting each other. So the equilibrium rate of interest is Oi. If the demand for money curve LPC_1 increases, than the equilibrium is determined at e_1 and the equilibrium rate of interest also increases to Oi_1. Suppose the demand for money curve LPC_2 decreases, than the equilibrium is determined at e_2 and the equilibrium rate of interest also decreases to Oi_2.



Demand for Money is Constant – Changes in Supply of Money: Figure 3.16 explains how the equilibrium rate of interest is determined, when the demand for money is constant and changes were happened in the supply of money. Suppose the supply of money increases, the equilibrium rate of interest is decreases. If the supply of money decreases, the equilibrium rate of interest is increases. The LPC curve denotes that the demand for money is constant. At point 'e' the demand for money curve LPC and the supply of money MS are intersecting each other. So the equilibrium rate of interest is Oi. If the supply of money curve M_1S_1 increases, than the equilibrium is determined at e_1 and the equilibrium rate of interest also decreases to Oi_1. Suppose the supply of money curve M_2S_2 decreases, than the equilibrium is determined at e_2 and the equilibrium rate of interest increases to Oi_2.

Criticism :

1. It has been pointed out that the rate of interest is not a purely monetary phenomenon. Real forces like productivity of capital and thriftiness also play an important role in the determination of the rate of interest.

2. Keynes makes the rate of interest independent of the demand for investment funds. In fact, it is not so independent. The cash-balances of the businessmen are largely influenced by their demand for savings for capital investment. The demand for capital investment depends upon the marginal revenue productivity of capital. Therefore, the rate of interest is not determined independently of the marginal productivity of capital or marginal efficiency of capital, as Keynes calls it.

3. Liquidity preference is not the only factor governing the rate of interest. There are several other factors which influence the rate of interest by affecting the demand for and supply of investable funds.

4. This theory does not explain the existence of different rate of interest prevailing in the market at the same time.

5. Keynes ignores saving or waiting as a source or means of investible funds. To part with liquidity without there being any saving is meaningless.

6. The Keynesian theory explains interest in the short run only. It gives no clue to the rates of interest in the long run.

7. Finally, exactly the same criticism applies to Keynesian theory itself on the basis of which Keynes rejected the classical and loanable funds theories. Keynes's theory of interest, like the classical and the loanable funds theories, is indeterminate.

Important Points to Remember

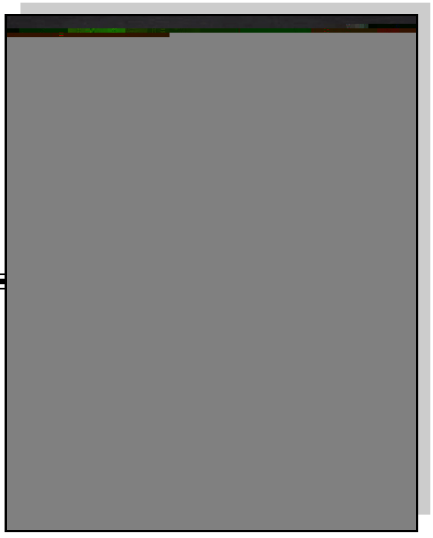
- ★ Investment plays an important role in economic development. The level of economic activities depends up on the level of investment. Higher the level of investment, higher will be the economic activities. Lower the level of investment, lower will be the economic activities.
- ★ Income and employment is positively related to the level of investment. Greater the level of investment, greater will be the level of income and employment.
- ★ "Investment refers to the new addition to the stock of physical capital such as plants, machines, trucks, construction of public works like dams, roads, buildings etc. " J.M. Keynes..
- ★ Gross investment is the total amount spent on new capital assets during the specific period of time.
- ★ Net investment refers to the net addition to the existing capital stock.
- ★ The investment which does not depend up on the changes in the level of income and rate of interest is known as autonomous investment. Most of the investment undertaken by the government is the autonomous investment.
- ★ The investment which is motivated by the income or rate of profit is called as induced investment. Induced investment will change due to changes in the income/profit/rate of interest. All the investments in private sector are induced investments.
- ★ Ex-Ante investment refers to the amount of investment which firms plan to invest at different levels of income in the economy. It is also called as intended investment, planned investment, voluntary investment and desired investment.
- ★ Ex-Post investment refers to the realised or actual investment in an economy during a year. This is also called as actual investment, unplanned investment and unintended investment.

$$Sp = \frac{R_1}{(1+r)} + \frac{R_2}{(1+r)^2} + \frac{R_3}{(1+r)^3} \ldots\ldots \frac{R_n}{(1+r)^n}$$

- ★ The level of investment is mainly depends upon the MEC and rate of interest.
- ★ Marginal Efficiency of Capital refers to the expected profitability of a capital asset. It may be defined as the rate of discount which equates the present value of a series of cash flows obtainable from an income-earning asset like a machine over its entire economic life to the cost of the machine.
- ★ Prof. Marshall has said "The payment made by borrower for the use of a loan is called Interest."
- ★ According to Prof. J. S. Mill – "Interest is the remuneration for mere abstinences."
- ★ Prof. Keynes has said – "Interest is the reward of parting with liquidity for a specified period."
- ★ Prof. Wicksell "Interest may be defined as a payment made by the borrower of capital by virtue of its productivity as a reward for his capitalist's abstinence."

- ★ Gross interest is the total amount which borrower pays to lender. Gross interest includes net interest, Insurance against Risk, Reward for Management and Payment for Inconvenience.
- ★ Net interest is the payment made for using the services of capital alone. After all the above items have been deducted from gross interest, what is left is the payment pure and simple for the use of capital. This is net or pure interest.
- ★ The classical theory rate of interest is determined by the supply of capital and demand for capital under free and perfect competition. Savings and investments were treated as real factors. So this theory is also called as real theory of interest.
- ★ According to classical economists, capital supply and capital demand, together determines the interest rate. The equilibrium interest rate is determined at point, where capital supply and capital demand curves intersect each other.
- ★ The loanable funds theory was first enunciated by a Swedish economist, K. Wicksell. Other Swedish economists who refined his ideas include G. Myrdal, Lindahl and B. Ohlin. In England D.H. Robertson developed the theory.
- ★ According to neoclassical theory of interest rate, the equilibrium of interest rate is determined, where the supply and demand for the loanable funds are equal.
- ★ Keynes has introduced a new concept of liquidity preference to explain the rate of interest. Liquidity preference refers to the convenience of holding cash. This constitutes the demand for money to hold.
- ★ The demand for money is a demand to hold an asset. The desire for liquidity or demand for money arises because of three motives: Transaction motive. 2. Precautionary motive. 3. Speculative motive.
- ★ **Transaction motive:** Money is needed for day-to-day transactions.
- ★ Payments or spending are made throughout a period and receipts or incomes are received after a period of time, an individual needs 'active balance' in the form of cash to finance his transactions. This is known as transaction demand for money or need- based money-which directly depends on the level of income of an individual and businesses.
- ★ **Precautionary Demand for Money:** Future is uncertain. That is why people hold cash balances to meet unforeseen contingencies, like sickness, death, accidents, danger of unemployment, etc. The amount of money held under this motive, called 'Idle balance', also depends on the level of money income of an individual.
- ★ **Speculative Demand for Money:** This sort of demand for money is really Keynes' contribution. The speculative motive refers to the desire to hold one's assets in liquid form to take advantages of market movements regarding the uncertainty and expectation of future changes in the rate of interest.
- ★ The negative sloping liquidity preference curve becomes perfectly elastic at a low rate of interest. According to Keynes, there is a floor interest rate below which the rate of interest cannot fall. This minimum rate of interest indicates absolute liquidity preference of the people. This is what Keynes called 'liquidity trap'.

4



Irving Fisher

27 Feb 1867 - 29 April 1947

Supply of Money & Demand for Money

4.0 Introduction

4.1 Functions of Money

4. 2 Classification of Money

4.3 Money Supply

4.4 Money Multiplier

4.5 Velocity of Money

4. 6 Quantity Theory of Money -Fisher's Transactions Approach

4.7 Quantity theory of money- Criticisms

4.8 Cambridge - Cash Balance Approach

4.9 Superiority of Cash Balances Version

4.10 Keynes's Quantity Theory of Money

4.2 Classification of Money

Money is not uniform in nature and its unit value all over the world of the countries. Money usually depends on the unit of measurement. The monetary unit in our country is calculated as Rupee. It is calculated in the US as a dollar, in Japan as a yen and in England as a pound. Depending on the nature and type of currency, there are many types of currency in use. Money can be classified on the following different bases.

1. Based on Monetary System Criterion/Physical Characteristics of Money
2. Based on Nature of Issuer/Acceptability
3. Based on difference - Value of Money as Money (Money of Account) and Value of Money as Commodity (Money Proper)

I. Monetary System Criterion: Money can be classified into four types based on the monetary system or Physical Characteristics of Money used. 1) Commodity money, 2) Metallic money, 3) Paper money, 4) Credit money.

1. **Commodity money:** Commodity money is money whose value comes from a commodity of which it is made. Commodity money consists of objects having value as well as their value in buying goods. Examples of commodities that have been used as mediums of exchange include gold, silver, copper, salt, peppercorns, tea, shells, cigarettes, cowries and barley etc several types of commodities used as money.
2. **Metallic Money:** Money made of some metal is called metallic money. In the past, metals such as gold, silver, copper and nickel were used as money. Metallic money is divided into three types. 1) Full body or standard money, 2) Token money, 3) Retail (small) coins.

   i. **Full body or Standard Money**: Standard Money is the money of ultimate redemption. The face value of a standard coin is equal to its intrinsic value. In our country, there were one rupee face values of silver coins circulated from 1835 to 1893. At that time the metal value of silver was one rupee.

   ii. **Token Money:** It is that unit of currency the face value for which is higher than its intrinsic value. Ex: India's rupee is a token money.

   iii. **Subsidiary money:** in our country, the standard money is one rupee. However, in order to carry out small transactions, a rupee unit is divided into a hundred units and stated as paise. It was issued as 5, 10, 25 and 50 paise coins for use.

3. **Paper money:** Money made of paper, such as currency notes, is called paper money. Paper money is classified into following parts.

i. **Documentary or Receipt money:** When goods are stored in warehouses and used as proof of receipt, it is treated as document (receipt) money.

ii. **Representative paper money**: Currency notes issued backed by 100 per cent precious metal base is called as representative paper money. If any person wants to convert the note into metal, there is a possibility to change it.

iii. **Convertible paper money**: It is not 100 per cent backed by precious metals. However which can be converted into standard coins at the option of the holder.

iv. **Inconvertible paper money**, which cannot be converted into full-bodied money. Indian one rupee note is a good example of inconvertible paper money. It is issued without the involvement of metallic reserves. As time goes on, Governments observed that people were not converting paper money into metal, so that they began issuing notes worth more than the reserves of gold. In our country the minimum reserves system has been adopted since 1957. Accordingly, Rs 115 crore worth of gold and Rs 85 crore worth of foreign exchange are the minimum reserves is the base for issuing currency. It can be categorized into two types : a) Fiat money and b) Credit money.

a) **Fiat money**: Fiat money is another type of inconvertible paper money. It is that money which circulates in the country, under extra-ordinary circumstances, on the command of the State. It is issued generally at a time of crisis. Fiat money is issued by the government without any backing of reserve.

b) **Credit money:** Credit money is also known as bank money refers to bank deposits kept by people with banks which are payable on demand and can transferred from one party to another via the use of cheque. The cheque is an in instrument used to transfer bank deposits and it offers the some conveniences as money.

II. Nature of Issuer / Acceptability:

Money can be divided into two types based on acceptability.
1) Legal tender Money 2) Optional currency.

1) **Legal Tender Money:** Legal tender is the money that is recognised by the law of the land, as valid for payment of debt. It must be accepted for discharge of debt. The RBI Act of 1934, which gives the central bank the sole right to issue bank notes, states that "Every bank note shall be legal tender at any place in India in payment for the amount expressed therein". It is referred to as two types. i) Unlimited legal tender money, ii) Limited legal tender money.

i) Unlimited Legal Tender Money: Currency notes are unlimited legal tender and can be offered as payment for dues of any size.

ii) Limited Legal Tender Money: In India, coins function as limited legal tender. Therefore, 50 paise coins can be offered as legal tender for dues up to ¹ 10 and smaller coins for dues up to ¹ 1.

2. **Non Legal Tender money or Optional money:** The currency not issued by a government or central bank is called non-legal tender money or optional money. Credit money is created by commercial banks. Examples for credit money are, cheques, drafts, etc. they are also called optional money. It has no legality. The acceptance or disapproval of this money depends on the will of the individuals.

III. Based on currency difference:

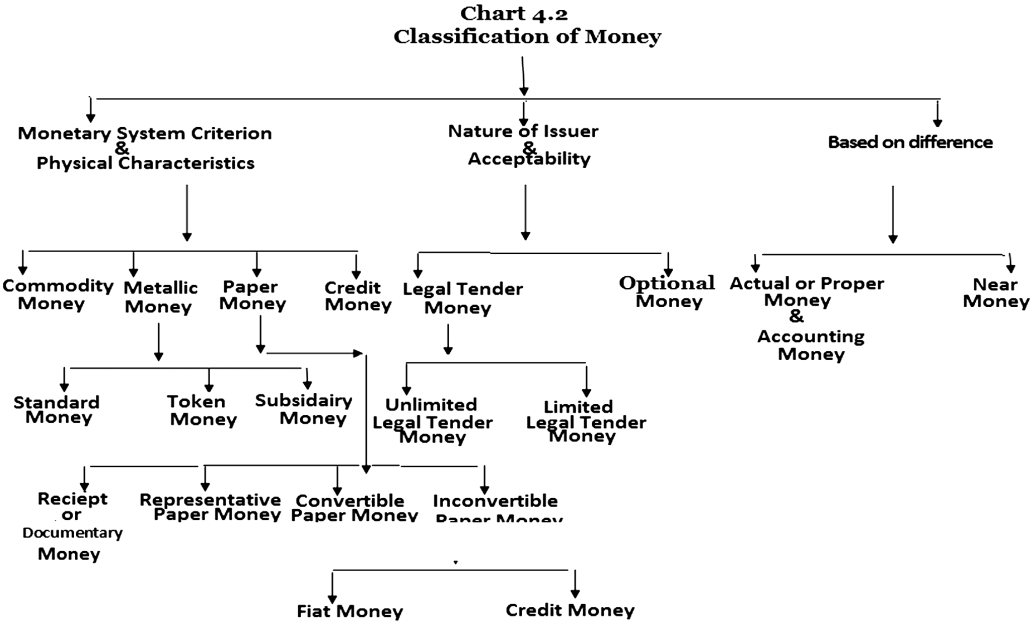
Money can be classified into two types based on difference. 1) a) Proper Money or Actual money, b) Money of Account, 2) Near money

1.a) Proper Money or Actual money: Actual money is that which actually circulates in the economy. It is used as a medium of exchange for goods and services in a country. For example, paper notes of different denominations and coins in actual circulation in India constitute the actual money.

1.b) Money of Account: Money of account is that form of money in terms of which the accounts of a country are maintained and transactions made. For example, rupee is the money of account in India. Generally, actual money and money of account are the same for a country; however, sometimes actual money may be different from the money of account. For example, rupee and paise is the money of account in India. In real practice, however, one paisa coin is nowhere visible.

2. Near Money: Legal tender money has absolute liquidity. With the size of the business growing in the modern economy, credit money has become essential one. The near money examples are, cheques, bonds, treasury bills, time deposits and hundis etc.

Classification of money explained in nutshell Chart No 4.2



4.3 Money Supply

The money supply is the entire stock of currency and other liquid instruments circulating in a country's economy as of a particular time. Briefly money supply is the stock of money in circulation on a specific day. Thus two components of money supply are

1. Currency (Paper notes and coins).
2. Demand deposits of commercial banks.

Again it needs to be noted that total stock of money is different from total supply of money. Supply of money is only that part of total stock of money which is held by the public at a particular point of time. In other words, money held by its users in spendable form at a point of time is termed as money supply.

The stock of money held by government and the banking system are not included because they are suppliers or producers of money and cash balances held by them are not in actual circulation. In short, money supply includes currency held by public and net demand deposits in banks.

Measures of Money supply: The total stock of money in circulation among the public at a particular point of time is called money supply. The measures of money supply in India are classified as M_1, M_2, M_3 and M_4 along with M0. This classification was introduced in April 1977 by Reserve Bank of India. M_1 is the most commonly used measure of money supply because its components are regarded most liquid assets. Each measure is briefly explained below.

Reserve Money (M_0): It is also known as High-Powered Money, monetary base, base money etc.

M_0 = C + R + OD C=Currency in Circulation, **R**=Bankers' Deposits with RBI, OD= other deposits (Non-Government) with RBI. It is the monetary base of economy.

1. M_1 = C + DD + OD. (Narrow Money)

Here C denotes currency (paper notes and coins) held by public, DD stands for demand deposits in banks and OD stands for other deposits in RBI. Demand deposits are deposits which can be withdrawn at any time by the account holders. Current account deposits are included in demand deposits. But savings account deposits are not included in DD because certain conditions are imposed on the amount of withdrawals and number of withdrawals. OD stands for other deposits with the RBI which includes demand deposits of public financial institutions, demand deposits of foreign central banks and international financial institutions like IMF, World Bank, etc.

2. M_2 = M_1 + Post Office Saving Banks

3. M_3= M_1 + Time-deposits of Banks (Broad Money)

4. M_4 = M_3 + Post Office saving.

In practice, M_1 is widely used as measure of money supply which is also called aggregate monetary resources of the society. All the above four measures represent different degrees of liquidity, with M_1 being the most liquid and M_4 is being the least liquid. It may be noted that liquidity means ability to convert an asset into money quickly and without loss of value.

New Money Supply Concepts: In 1997, YV Reddy was appointed as chairman of the Working Group to study monetary supply in our country. In 1998, the working group proposed new money supply measures. Based on the recommendations of the working group, M_2 and M_4 concepts have been dropped from the money supply.

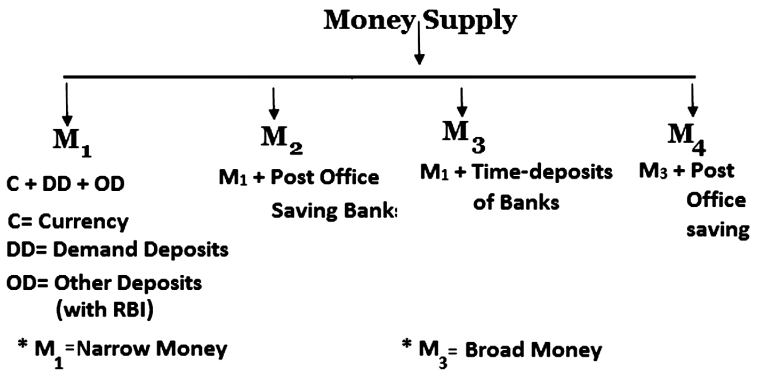
1. M_1 = C + DD + OD. (Narrow Money)
2. M_3 = M_1 + Short term deposits (More than one year) + Short and long-term bank loans (Broad Money)

Presently, M_1 (Narrow money) and M_3 (Broad money) only two concepts are in the money supply. Apart from these two concepts, M_0, money concept also considered as reserve money or High power money. On the recommendations of the Working Group on Money Supply (Dr. Y.V. Reddy, Chairman 1998) introduced three types of liquidity aggregates.

1. L_1 = M_1 + All types of Post office deposits (excluding National Saving Certificates).
2. L_2 = L_1 + Term Deposits of Financial Institutions + Deposit Certificates issued by Financial Institutions + Term Loan Loans of Financial Institutions.
3. L_3 = L_2 + Deposits of people at non-banking financial institutions.

In the chart 4.3 RBI money supply concepts explained in nutshell.

Chart 4.3



4.4 Money Multiplier

The **money multiplier** is the amount of **money** that banks generate with each rupee of reserves. A reserve is the amount that denotes M_0. The **money multiplier** is the ratio of deposits to reserves. Every one rupee of Reserve Bank of India **money** is able to generate around 6 rupees of **money** supply in the economy. A higher value for this ratio, called the **money multiplier**, indicates that the banking system generates a higher **money** supply out of **money** given by central bank.

Money Multiplier Formula :

The **money multiplier** is equal to the change in the total **money** supply divided by the change in the **monetary** base (the reserves).

M_1 Money Multiplier = M_1 / M_0

M_3 Money Multiplier = M_3 / M_0

4.5 Velocity of Money

Velocity of money is shows the rate at which money is being transacted for goods and services in an economy. While it is not necessarily a key economic indicator, it can be followed alongside other key indicators that help determine economic health like GDP, unemployment, and inflation. GDP and the money supply are the two components of the velocity of money formula.

Economies that exhibit a higher velocity of money relative to others tend to be more developed. The velocity of money is also known to fluctuate with business cycles. When an economy is in an expansion, consumers and businesses tend to more readily spend money causing the velocity of money to increase. When an economy is contracting, consumers and businesses are usually more reluctant to spend and the velocity of money is lower.

Since the velocity of money is typically correlated with business cycles, it can also be correlated with key indicators. Therefore, the velocity of money will usually rise with GDP and inflation. Alternatively, it is usually expected to fall when key economic indicators like GDP and inflation are falling in a contracting economy.

Velocity of Money - Key Points

1 Velocity of money is a measurement of the rate at which money is exchanged in an economy.

2 The velocity of money equation divides GDP by money supply.

3 The velocity of money formula shows the rate at which one unit of money supply currency is being transacted for goods and services in an economy.

4 The velocity of money is typically higher in expanding economies and lower in contracting economies.

The Velocity of Money Formula: For this application, economists typically use GDP and either M_1 or M_2 for the money supply. Therefore, the velocity of money equation is written as GDP divided by money supply.

Velocity of Money = GDP / Money Supply

GDP is usually used as the numerator in the velocity of money formula though gross national product (GNP) may also be used as well. GDP represents the total amount of goods and services in an economy that are available for purchase. In the denominator, economists will typically identify money velocity for both M_1 and M_2.

4. 6 Quantity Theory of Money -Fisher's Transactions Approach

The origin of the quantity theory of money as an explanation of changes in the prices as a function of changes in quantity of money can be found in the writings of mercantilists writers. In his monumentally scholarly work entitled "The theory of Prices" Arthur W. Marget has traced the origin of the quantity theory of money in the fifteenth century. According to Joseph A. Schumpeter Jean Bodin was the first discoverer of the quantity theory of money. it was be-lieved by the economists that the quantity of money in the economy is the prime cause of fluctua-tions in the price level. The theory that increases in the quantity of money leads to the rise in the general price was effectively put forward by Irving Fisher in 1911 in his book "The Purchasing Power of Money".

The quantity theory of money seeks to explain the value of money in terms of changes in its quantity. Stated in its simplest form, the quantity theory of money says that the level of prices varies directly with quantity of money. The theory can also be stated in these words: The price level rises proportionately with a given increase in the quantity of money. Conversely, the price level falls proportionately with a given decrease in the quantity of money, other things remaining the same. There are several forces that determine the value of money and the general price level. The general price level in a community is influenced by the following factors:

1. The volume of trade or transactions. (T): The volume of trade or transactions depends upon the supply or amount of goods and services to be exchanged. The classical and neoclassical econo-mists who believed in the quantity theory of money assumed that full employment of all resources prevailed in the economy. Resources being fully employed, the total output or supply of goods cannot increase. Therefore, those who believed in the quantity theory of money assumed that the total volume of trade or transactions remained the same.

2. The quantity of money. (M): The second factor in the determination of general level of prices is the quantity of money. It should be noted that the quantity of money in the economy consists of not only the notes and cur-rency issued by the Government but also the amount of credit or deposits created by the banks.

3. Velocity of circulation of money (V): The third factor influencing the price level is the velocity of circulation. A unit of money is used for exchange and transactions purposes not once but several times in a year. During several exchanges of goods and services, a unit of money passes from one hand to another. Thus, if a single rupee is used five times in a year for exchange of goods and services, the velocity of circulation is 5.

Fisher's Equation of Exchange: An American economist, Irving Fisher, expressed the relationship between the quantity of money and the price level in the form of an equation, which is called 'the equation of exchange'.

PT = MV..... (1)
Or P = MV/T..... (2)
P = Price level
T = Transactions
M = quantity of money; and V = Velocity of money.

The equation (1) or (2) is an accounting identity and true by definition. This is, because MV which represents money spent on transactions must be equal to PT which represents money received from transactions.

However, the equation of exchange as given in equations (1) and (2) has been converted into a theory of determination of general level of prices by the classical economists by making some as-sumptions. First, it has been assumed that the physical volume of transactions is constant. Another crucial assumption is that transac-tions velocity of circulation (V) is also constant.

Now, with the assumptions that M and V remain constant, the price level P depends upon the quantity of money M; the greater the quantity of M, the higher the level of prices. Let us give a numerical example. Suppose the quantity of money is Rs. 5,000 in an economy, the velocity of circulation of money (V) is 5; and the total output to be transacted (T) is 2500 units, the price level (P) will be:

$$P = \frac{MV}{T}$$

$$= \frac{5{,}000 \times 5}{2{,}500}$$

$$P = \frac{25{,}000}{2{,}500} = 10$$

Rs 10 per Unit

If now, other things remaining the same, the quantity of money is doubled, i.e., increased to Rs.10,000 then:

$$P = \frac{10{,}000 \times 5}{2{,}500}$$

$$P = \frac{50{,}000}{2{,}500} = 20$$

Rs 20 per Unit

$M \uparrow \longrightarrow P \uparrow$

$M \downarrow \longrightarrow P \downarrow$

We thus see that according to the quantity theory of money, price level varies in direct proportion to the quantity of money. A doubling of the quantity of money (M) will lead to the doubling of the price level. Further, since changes in the quantity of money are assumed to be independent or autonomous of the price level, the changes in the quantity of money become the cause of the changes in the price level.

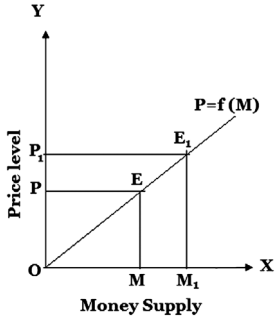


Figure 4.4

The Fisher's quantity theory money is illustrated in Figure 4.4. We took the quantity of money supply on the OX axis and the price level on the OY axis. As the quantity of money supply increases from OM to OM_1 the price level increased from OP to OP_1. As price level rises, value money decreases. Therefore, there is an inverse relationship between the quantity of money supply and the value of money.

The credit money M_1 created by commercial banks and its velocity V_1, were incorporate in the Fisher equation. Now we will write the equation as under:

$$P = \frac{MV + M_1V_1}{T}$$

The quantity theory of money reveals that there is a direct relationship between the price level and supply of money. It also reveals that, there is a negative relationship between the supply of money and the value of money. When prices are increasing, people can purchase fewer commodities with the money supply in the economy. So the value of the money decreases. The negative relationship between supply of money and the value of money is illustraed in diagram 4.5.

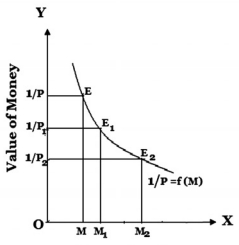


Figure 4.5

The graph shows the money supply on the OX axis and the money value on the OY axis. When the money supply is a less quantity of OM, the money value is the highest at 1/P. In the figure the money supply increased to M_1 and then to OM_2, the money value decreased to $1/P_1$ and then to I/P_2. The curve $1/P = f(M)$ describes the inverse relationship between the money supply and the value of money.

4.7 Quantity theory of money - Criticisms

1. **Unrealistic Assumptions:** The quantity theory of money as stated by Prof. Fisher is based on unreal assumptions like the existence of full employment of resources and stability of expenditure. The theory assumes that other things like V and T remain constant.
2. **It Fails to Explain Trade Cycle:** The transactions approach to the quantity theory of money does not help in explaining the trade cycle though it may be taken as a satisfactory- explanation of the long-term trends of prices.
3. **The Theory is Useful in the Long Period:** The quantity theory of money is also criticized on the ground that it explains only long-run phenomenon; it does not help to study the short-run phenomenon.
4. **It Does not Explain the Causal Relationship:** The theory fails to establish the causal relation-ship between Price and Money. it does not explain the causes which bring about changes in the price level.
5. **No Integration of Monetary Theory with Price Theory:** In the classical and neo-classical version of the theory, price formation is isolated from monetary phenomena. Money was considered a veil and played passive role, only as a translator of the values of commodities in terms of money. Thus, there could be no integration of monetary theory with the theory of relative prices.
6. **It Ignores Money as a Store of Value:** The cash transactions equation upholds money because it is a good medium of exchange. Its great fault is that it completely ignores the significant role of money which it plays as a store of value.
7. **Mutually Inconsistent:** The theory is criticized on the ground that some of the elements used in the equation are mutually inconsistent for example: P includes all sorts of prices, wholesale as well as retail, wages and profits. Some prices move fast, while others are rigid. Similarly, T includes goods as well as services. Further, whereas M refers to a point of time, V refers to the velocity of money over period; thus, the quantity theory of money is said to consist of mutually inconsistent elements.
8. **Undue Emphasis on Quantity of Money:** Quantity theorists wrongly stress the role of the quantity of money as the main determinant of price level. Keynes, however, points out that the change in economic activity or the price level is caused not a change in the quantity of money alone but also by other fundamental factors like income, expenditure, saving and investment.
9. **Static:** Quantity theory of money has been criticized on the ground that it is highly static. It applies under conditions where things remain constant but ours is a dynamic world, where things are fast changing.

4.8 Cambridge - Cash Balance Approach

The cash balance version of the quantity theory of money popularized by, Dr. Marshall, some Cambridge economists, like Pigou, Robertson, Keynes. According to cash-balance approach, the value of money depends upon the demand for money. But the demand for money arises not on account of transactions but on account of its being a store of value. Thus, according to the advocates of this theory the real demand for money comes from those who-wants to hold it on account of various motives and not from those who simply want to exchange it for goods and services. Hence, instead of interpreting the 'demand for money' with reference to its 'medium of exchange' function as is done in the transactions approach; it is interpreted with reference to the 'store of value' function of money in the cash balance.

The community's demand for real cash balances in this sense varies from time to time. Thus, given the state of trade (T) and the volume of planned transactions over a period of time, the community's total demand for real money balances can be represented as a certain fraction (K) of the annual real national income (Y). The following lines from Marshall explain clearly the substance of the cash-balance version of the quantity theory, "In every state of society there is some fraction of their income which people find it worthwhile to keep in the form of currency; it may be a fifth or a tenth or a twentieth."

According to cash balance approach, the value of money depends upon the demand for money to be kept as cash. As far as the Cambridge approach is concerned, the principal determinant of people's taste for money holding is the fact that it is a convenient asset to have, being universally acceptable in exchange for goods and services. The more transactions an individual has to undertake the more cash will be he wants to hold.

Let us illustrate it with an example:

1. Suppose money supply in cash and bank deposits (M) = Rs. 1,000.
2. The total annual national income (Y) = 10,000
3. The income (goods) which the community wants to hold in money (K), say $\frac{1}{5}$ X 10,000 = 2,000 units

Then, the value of money = 2,000/1000 = KY/M = 2 units of goods, or prices level P = M/KY = 1/2 = 0.50 paise per unit. It is, therefore, clear that the value of money is found by dividing the total amount of goods, which the community wants to hold out of the total income (KY), by the amount of the supply of the money held by the public (M), and the price level (P) is found out by dividing the money supply (M) by the amount of goods which the community wants to hold (KY), as the price level is the opposite of the value of money.

Pigou expresses it in the form of an equation:

P = KR/M or (M/KR) where P stands for the value of money or its inverse the price level (M/KR), M represents the supply of Money, R the total national income and K represents that fraction of R for which people wish to keep cash.

Prof. D.H. Robertson's equation is similar to that of Prof. Pigou's with a little difference. Prof. Robertson's equation is:

M = PKT or P = M/KT

Where P is the price level, T is the total amount of goods and services (like R of Pigou), K represents the fraction of T for which people wish to keep cash. Prof. Robertson's equation is considered better than that of Pigou as it is more comparable with that of Fisher. It is the best of all the Cambridge equations, as it is the easiest.

Criticism - Cash Balances Version

1. Although this approach was evolved and popularized by Keynes, the theory does not to take into consideration various motives for holding money. Cambridge approach to the quantity theory ignored the speculative demand for money which turned out to be one of the most important determinants for holding money. Ignoring the speculative demand for money meant that the linkage between the theories of the rate of interest and the level of income through the demand for money was not complete.
2. Although Cambridge equation brought into the picture the level of income, yet it ignored other elements, like productivity, thrift, liquidity preference—all necessary in a comprehensive theory of the value of money.
3. Cambridge approach like Fisher's approach also assumes K and T as given, thus, it becomes subject to those criticisms, which were leveled against Fisher's approach.
4. The Cambridge approach does not furnish an adequate monetary theory which could be utilized to explain and analyse the dynamic behaviour of prices in the economy, as it does not tell us by how much price and output shall change as a result of a given change in money supply in short period.
5. The cash balances approach fails to assign an explicit role to the rate of interest thereby creating an impression that changes in the supply of money are directly related to the price level. A realistic theory of prices can hardly ignore the vital role of the rate of interest.
6. By assuming that an increased desire for holding cash balance leads, pari passu, to a fall in the price level to the same extent, the theory is assuming the elasticity of demand for money to be unity. Unitary elasticity of demand for money means that a 10 percent increase in the demand for cash balances (money) diminishes the price level by 10 per cent. This is true only when the stock of money and the volume of goods and services remain constant. The volume of goods and services which money buys is bound to change with variations in the money supply. Hence, the elasticity of demand for money cannot be assumed to its unity except in a stationary state.
7 The theory cannot explain the phenomenon of trade cycle, i.e., why prosperity follows depression and vice versa. Moreover, the theory deals with the purchasing power of money in terms of consumption goods only.

   The cash balance theory does not explain the real forces which account for the price level. It ignores such important variables as income, saving and investment. It explains that changes in the demand for money may bring about changes in the value of money, but it does not explain clearly the factors which cause change in the demand for money, which in turn, are very many and more so in a complex dynamic economy.

4.9 Superiority of Cash Balances Version

Cash balances version of the quantity theory of money is superior to Fisher's version of the quantity theory of money on the following grounds:

1. The cash balances version lays stress on the subjective valuations and human motives which are the basis of all economic activities in sharp contrast to the highly mechanical nature of the concept of velocity in Fisher's equation.

2. The Cambridge version of the theory brings to light a new element, namely, the level of income, changes therein and in its velocity. Instead of being concerned with the total transactions it is concerned with the level of income, which, in turn, determines the level of economic development, employment and price level. As a matter of fact, the problem of price level cannot be studied without a reference to changes in income and output. Moreover, it is not the velocity of money which matters but the velocity of circulation of money due to changes in income that matters.

3. The cash balances equation brings to light the demand for money to hold. This emphasis on the demand side is in sharp contrast with traditional emphasis on the supply side. Actually, the Cambridge equation was put forward to validate the classical quantity theory of money according to which the supply of money is the sole determinant of the price level.

4. The cash balances approach links itself with the general theory of value, since it explains the value to money in terms of the demand for and supply of money. The equation $P = M/KT$ is a more useful device than the transaction equation $P = MV/T$, because it is easier to know how large cash- balances individuals hold than to know how much they spent on various types of transactions.

5. The cash balances approach has given rise to the famous liquidity preference theory, which has become an integral part of the theory of income, output and employment.

Cash balances approach brings out the importance of K. An analysis of the factors responsible for fluctuations in K offered scope for the study of many important problems like uncertainty, expectations, rate of interest etc. which are not considered in the transactions approach. The symbol K reflects the desire for liquidity. A shift in K in the direction of an increased desire for liquidity shows a fall in demand for goods, i.e., a movement away from goods to money resulting in the revision of production plans, curtailment of output and fall of income.

4.10 Keynes's Quantity Theory of Money

Keynes does not agree with the old analysis which establishes a direct causal relationship between the quantity of money and the level of prices. He believes that changes in the quantity of money do not affect the price level directly but indirectly through other elements like the rate of interest, the level of investment, income, output and employment. The initial impact of the changes in the total quantity of money falls on the rate of interest rather than on prices.

As the quantity of money is increased, the rate of interest is lowered because the quantity of money available to satisfy speculative motive increases. A lowering of the rate of interest will raise investment, which in turn, will result in an increase of income, output, employment and prices. The prices rise on account of various factors like the rise in labour costs, bottlenecks in production, etc.

Keynes removed the classical dichotomy in the traditional money-price relationship by rejecting the direct relationship between quantity of money (M) and Price level (P). He asserted that the relationship between M and P is indirect and that the theories of money and prices can be integrated through the theory of aggregate demand or the theory of output. The missing link between the real and monetary theories, according to Keynes, is the rate of interest.

Fisher and Cambridge theories fail to explain money value in a systematic and integrated manner. They explained money value from the angle of quantity of money. But Keynesian income theory explained the changes in prices level from all angles. That is why it is considered a comprehensive theory. According to Keynes's theory, the main cause of changes in aggregate demand is due to change in income and not money supply. Hence money value or price level depends on aggregate income rather than money supply."

The income theory stated by Keynes can be explained as follows.

1. In Keynes theory, he stated income in two ways. 1. Money income.2. Real income. Money income is the value of goods and services produced in a year. Money income can be used in two ways. 1) Consumption, 2) Saving. This can be stated in the following equation.

Y = C + S (Y = Money income, C = consumption, S = Saving) Production of goods and services in a year, stated as Real Income.

2. The society spends income on two kinds of goods. 1. Consumer goods, 2. Capital goods.

Aggregate expenditure always equal to aggregate income. Aggregate Income = Aggregate expenditure = Y = C + I (Y = Income, C = Consumer Goods, I = Capital Goods).

3. The quantity of income depends on expenditure. When expenditure increases income also increases.

4. Aggregate expenditure is depends on money income. Aggregate expenditure determines real income. Therefore, the aggregate expenditure determines the output and employment.

5. $\mathbf{P = \frac{Y}{O}}$ Keynes Income theory defines the value of money and price level through aggregate demand, aggregate expenditure and aggregate income. This means, the price level in the economy depends on two factors. 1) Money income, 2) Real income. (P = price level, Y = Money income, O = Real income). Hence price level is the result of dividing money income by real income.

6. According to Keynes theory, to maintain equilibrium in the economy, savings and investments are must be equal. This is because the savings from aggregate income are provided to society as investment expenditure.

7. According to Keynes theory, equality of saving and investment is maintained in the economy.

$\mathbf{Y = C + I}$
$\mathbf{Y = C + S}$
$\mathbf{I = Y - C}$
$\mathbf{\therefore\ S = I}$

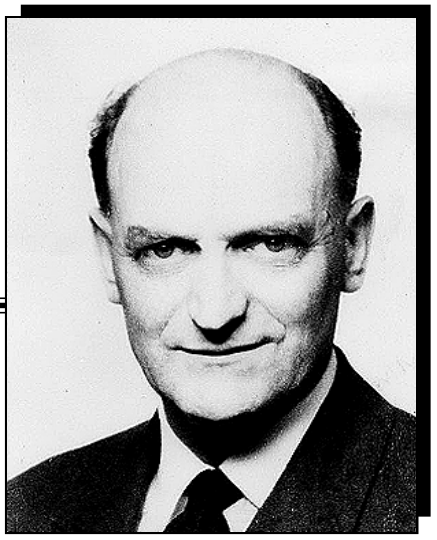
If the investment exceeds the savings (I> S), the level of employment, output and income will increases, as a consequence the savings also increases up to the investment level. If the savings exceeds investment (S> I), then the level of employment, output and income will decreases, as a consequence savings also decreases to the level of investment.

Important Points to Remember

- ★ The word money was derived from the Latin word 'Moneta'. Actually, the first mint was set up in the temple of Goddess Moneta in Rome.
- ★ Money is anything that is generally acceptable as a means of payment in the settlement of all transactions including debt. It is generally recognized and accepted as means of payment.
- ★ According to Walker, "Money is what money does."
- ★ Keynes, "Money itself is that by *delivery of which debt contracts and price contracts are discharged and in the shape of which a store of general purchasing power is held*."
- ★ Money is a matter of functions four, a medium, a measure, a standard, a store. Money in a modern economy performs important functions which have been classified by David Kinley as follows:
- ★ Primary functions include the most important functions of money, which it must perform in every country. These are also called fundamental and original functions like the medium of exchange and measure of value.
- ★ Secondary functions 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'. These functions like standard of deferred payments, store of value and transfer of value.
- ★ Contingent functions like distribution of income, basis of credit, maximisation of utility and Liquidity to wealth etc.
- ★ **Full body or Standard Money**: Standard Money is the money of ultimate redemption. The face value of a standard coin is equal to its intrinsic value.
- ★ **Token Money:** It is that unit of currency the face value for which is higher than its intrinsic value. Ex: India's rupee is a token money.
- ★ **Fiat money**: Fiat money is another type of inconvertible paper money. It is that money which circulates in the country, under extra-ordinary circumstances, on the command of the State. It is issued generally at a time of crisis. Fiat money is issued by the government without any backing of reserve.
- ★ **Credit money:** Credit money is also known as bank money refers to bank deposits kept by people with banks which are payable on demand and can transferred from one party to another via the use of cheque. The cheque is an in instrument used to transfer bank deposits and it offers the some conveniences as money.
- ★ **Actual money:** Actual money is that which actually circulates in the economy. It is used as a medium of exchange for goods and services in a country. For example, paper notes of different denominations and coins in actual circulation in India constitute the actual money.
- ★ **Money of Account:** Money of account is that form of money in terms of which the accounts of a country are maintained and transactions made. For example, rupee is the money of account in India.
- ★ **Near Money:** Legal tender money has absolute liquidity. With the size of the business growing in the modern economy, credit money has become essential one. The near money examples are, cheques, bonds, treasury bills, time deposits and hundis etc.
- ★ **Reserve Money (M_0):** It is also known as High-Powered Money, monetary base, base money etc. $M_0 = C + R + OD$

1. $M_1 = C + DD + OD$. (Narrow Money)
2. $M_2 = M_1$ + Post Office Saving Banks
3. $M_3 = M_1$ + Time-deposits of Banks (Broad Money)
4. $M_4 = M_3$ + Post Office saving.

5



A.W. PHILLIPS

18th Nov, 1914 - 4th Mar, 1975

Inflation and Trade Cycles

5.0 Introduction
5.1 Definitions of inflation
5.2 Types of inflation
5.3 Causes of Inflation
5.4 Effects of Inflation
5.5 Measures to Control Inflation
5.6 Measurement of inflation
5.7 Inflationary Gap
5.8 Concept of Phillips Curve
5.9 Deflation
5.10 Stagflation
5.11 Trade Cycles -Concept and definitions
5.12 Phases of Trade Cycles
5.13 Causes for Trade Cycles
5.14 Measures to Control Trade Cycles

5.0 Introduction

Inflation is also a key concept in macroeconomic analysis. Many countries in the world are facing the problem of inflation today. Inflation not only affects the economic life and welfare of the people but in some cases challenges the stability of the government. That is why global economists focus on inflation issues. Modern governments are taking policy measures to address inflation issue

Inflation refers to an economic situation in which there is sustained or considerable rise in the general price level of goods and services over a period of time. It is not high prices but rising price level that con-stitute inflation. It constitutes, thus, an over-all increase in price level. It can, thus, be viewed as the devaluing of the worth of money. In other words, inflation reduces the purchasing power of money. A unit of money now buys less. Inflation can also be seen as a recurring phenomenon. Inflation exists when money supply exceeds available goods and services.

Inflation is a quantitative measure of the rate at which the average price level of a basket of selected goods and services in an economy increases over a period of time. It is the constant rise in the general price level where a unit of currency buys less than it did in prior periods. Often expressed as a percentage, inflation indicates a decrease in the purchasing power of a nation's currency.

An economy with a moderate rate of inflation is desirable. The desirable rate is determined on the basis of price rise that contributes in production and employment and keep the economic outlook optimistic. It helps to Promotes the mobilization of resources, both savings, and investments. This desirable rate of inflation varies from country to country and from time to time. Now the question arises that what is the desirable rate? There is no specific answer to this question, but, however, on the basis of past experiences, it is often suggested that 1-2% of inflation in developed countries and 4-6% in the developing countries is considered to be a desirable limit of moderate inflation. In certain conditions, the price rise exceeding the prescribed limits of moderate inflation is not considered to be inflationary. These are:

1. When the price rises due to the change in the composition of GDP (Gross Domestic Product). Such as, during the period of economic growth the proportion of low price agricultural goods decreases while the proportion of high-priced goods cars, TV sets, computers, etc. increases. As a result, the price index number rises. This rise in price is not considered to be inflationary.
2. Any rise in price due to the qualitative change in the product is not inflation. For example, the qualitative improvement in the car, in the form of power steering, power brake, airbags, automatic gear change, etc., involves an increase in the cost of production due to which the price rises. Such rise in the price is not inflation.
3. A short-run rise in the price due to a sudden rise in demand or a sudden fall in the supply of goods and services is not inflation. Sometimes, the price rises due to a sudden surge in demand or sudden decrease in the supply due to crop failure, lockouts, strikes, war, etc. A price rise in such condition is not considered to be a sustainable increase in the general price level.

The rise in the price after depression or recession is not considered to be inflationary. Usually, the prices rise during the recovery stage to reach to their normal level. Thus, such a price rise is not inflation even if it is persistent or appreciable. Thus, every time increase in the prices of goods and services is not considered to be inflationary and hence must be handled carefully while determining the position of the economy.

5.1 Definitions of inflation

Almost everyone is sure that we know what inflation exactly is, but it remains a source of great deal of confu-sion because it is difficult to define it unam-biguously. Inflation may be defined as 'a sustained upward trend in the general level of prices' and not the price of only one or two goods. The rise in prices and the phenomenon of inflation are interrelated. Price rise is a situation, when prices of commodities and services increase and purchasing power of money also declines. But when price rise is a result of increased expenditure without a corresponding increase in output, the phenomenon is known as inflation. If the price rise is caused by an increase in the volume of currency, it is known as currency inflation. The main cause of rise in general price level, according to some of economists, is too much currency circulation. The concept of Inflation defined by economists as below:

G. Ackley defined inflation as 'a persistent and appreciable rise in the general level or aver-age of prices'. In other words, inflation is a state of rising prices, but not high prices.

- According to Coulborn inflation can be defined as "there is no change in supply of output when the supply of money increases".
- Professor C.Crowther defined "inflation is a state in which the value of money is falling, i.e. prices are rising.
- According to Dalton, "too much money chasing too few goods".
- Hawtrey defined "Inflation is the issue of too much currency."
- According to Milton Friedman "Inflation is always and everywhere a monetary phenomenon and can be produced only by a more rapid in the quantity of money than output."
- According to Prof. Kemmerer "inflation is too much currency in relation to the physical volume of business being done.
- J.M Keynes defines "Inflation is the rise in price level after the point of full employment is true inflation" According to him, inflation or price increases do not occur before under conditions of full employment. Keynes believes that inflation should only be regarded as inflation, which increases after a full employment. Prices can go up if currency supply increases, but as long as there are unemployed resources; the increase in prices cannot be considered inflation.

There is no universally accepted definition of inflation; it kept changing with the change in the perceptions of the economists. Some believed that inflation exists when the proportion of money income increases more than the increase in the earning activity. While others believe it is characterized by increased income chasing few goods due to the appreciable rise in their general price level.

5.2 Types of Inflation

Inflation is usually categorized on the basis of its rate and causes.

I. Types of Inflation on the basis of rate: Based on the intensity of inflation, R.P Kent has classified inflation into four types as Creeping, Walking, Running and Galloping Inflation:

1. **Creeping Inflation:** When the rise in prices is very slow (less than 3% per annum) like that of a snail or creeper, it is called creeping inflation. Such an increase in prices is regarded safe and essential for economic growth. This is because the moderate price increases make the economy feel natural. As a result, their demand for goods increases as consumers decides to buy goods at current prices instead of buying at increased prices in the future. Therefore, creeping inflation leads to economic expansion.

2. Walking or Trotting Inflation: When prices rise moderately and the annual inflation rate is a single digit (3% - 5%), it is called walking or trotting inflation. Inflation at this rate is a warning signal for the government to control it before it turns into running inflation. When there is a running inflation situation, the demand for goods increases as people buy more than they need to avoid higher prices in the future. Accordingly, the suppliers are unable to keep up with the goods and services are not available too many so prices go up.

3. Running Inflation: When prices rise rapidly like the running of a horse at a rate of speed of 5% - 10% per annum, it is called running inflation. This is not good for the economy. If the government does not take appropriate action at this stage, it will lead to hyperinflation.

4. Galloping or Hyperinflation: When prices rise above 10% per annum, it is called galloping or hyperinflation. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money. If the government does not announce adequate monetary and fiscal measures to reduce its severity, there is a risk of a extreme fluctuations caused the financial crisis in economy.

II. Types of Inflation on the basis of causes :

1. Demand-Pull Inflation: Demand pull inflation can be defined as a type of inflation that occurs when price level increases due to a greater demand for goods or services than there is supply available. In other words, Demand-pull inflation occurs when aggregate demand for goods or services outstrips aggregate supply. These constituents of the economy demand more goods than can be produced by the economy. When supply cannot rise to meet demand, sellers will increase prices, thereby causing inflation. Increases in the money supply will results lower interest rates and increase investment. Increased investments will increase incomes of the people and demand for consumer and manufactured goods. Increasing demand in the economy can lead to demand-pull inflation. Imports also increase due to shortages of goods. Increases in wages, profits, government expenditure, unproductive cost deficit budgets, etc., can be attributed to demand-pull inflation.

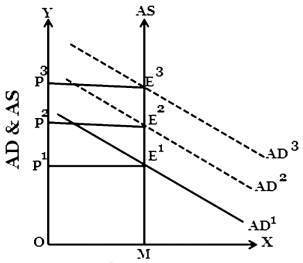


Figure 5.1

Demand-Pull inflation is illustrated in Figure 5.1. In the beginning the aggregate supplies curve (AS) and the aggregate demand curves (AD^1) are intersecting each at point E^1 and the price determined at P^1. As a result of changes in the economy, the aggregate demand increases from AD^1 to AD^2 and than AD^3. In the absence of changes in the aggregate supply curve (AS), it is parallel to the OY axis. The price of the commodity increases from P^1 to P^2 and than P^3.This increase in price is called demand-pull inflation.

2. Cost-push inflation: Cost-push inflation is a type of inflation that occurs when higher production costs push up the prices of goods and services. The increased price of the factors of production leads to a decreased supply of these goods. While the demand remains constant, the prices of commodities increase causing a rise in the overall price level. This inflation is known as supply-induced inflation. The following are the reasons for cost-push inflation.

i. Increase of workers 'wages: Cost-push inflation is caused by wage increases enforced by trade unions. Therefore this inflation is called wage-induced inflation.

ii. Profit Increase: All businessmen join together to increase prices of goods with the intent of increasing profits. Therefore this inflation is called profit-induced inflation.

iii. Increasing taxes on goods by the government: The government is spending huge amounts on welfare programs. To meet this type of expenditure government is imposing and increasing taxes on goods and services to get revenue is another cause for cost-push inflation.

Cost-Push inflation is illustrated in Figure 5.2. AS^1 is the aggregate supply line in the initial stage. The AS^1 line has a positive slope when the economy does not reach full employment. After reaching full employment (YF), the AS^1 supply line is perfectly inelastic (AS) and vertical to OY axis. The equilibrium point is E^1 at this point both AD^1 and AS^1 were intersect each other and the price is determined at OP^1. When costs were increased, the supply line moved to the left (AS^2). But there no change in aggregate demand, now the equilibrium point is E^2 and the price level increased and determined at OP^2. At this stage the production decreased to OY^2 level. As a result a decrease in production in the economy leads to unemployment. If costs increases further, the supply curve will shifts to AS^3, resulting higher price is determined at OP^3. Now the total production comes down to OY^3. Therefore, the cost-push inflation drives the economy from a state of full employment to unemployment.

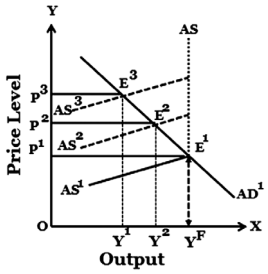


Figure 5.2

III. Inflation on the basis of the government's response:

1. Open Inflation: Inflation is said to be open when the government takes no steps to control the rise in the price level. Thus open inflation is the result of the uninterrupted operation of the market mechanism.

2. Suppressed inflation: On the other hand, inflation is said to be suppressed when the government actively intervenes to check the rise in the price level.

Besides the above types of inflation, there are several other types of inflation which are classified on the basis of time or the causes of inflation. On the basis of time there are peacetime, wartime and postwar inflation. On the basis of factors causing inflation there are credit inflation, deficit-induced inflation, scarcity-induced inflation etc.

5.3 Causes of Inflation

Broadly speaking inflation arises when the aggregate demand exceeds the aggregate supply of goods and services. We analyse the factors which lead to increase in demand and the shortage of supply.

I. Factors Causing Increase in Demand: Both Keynesians and monetarists believe that inflation is caused by increase in the aggregate demand. Following are the factors which cause an increase in the size of demand.

1. Increase in Money Supply: Inflation is caused by an increase in the supply of money which leads to increase in aggregate demand. The higher the growth rate of nominal money supply, the higher is the rate of inflation.

Increase in Disposable Income: When the disposable income of the people increases, it raises their demand for goods and services. Disposable income may increase with the rise in national income or reduction in taxes or reduction in the saving of the people.

1. **Increase in Public Expenditure**: In modern world government activities have been expanding which resulted in increase government expenditure. This raised the aggregate demand for goods and services, thereby causing inflation.
2. **Increase in Consumer Spending**: The demand for goods and services also increases when consumer spending increases due to conspicuous consumption or demonstration effect.
3. **Cheap Monetary Policy**: Cheap monetary policy or the policy of credit expansion also leads to increase in the money supply which raises the demand for goods and services in the economy thereby leading to inflation. This is also known as credit-induced inflation.
4. **Deficit Financing:** In order to meet its mounting expenses, the government resorts to deficit financing by borrowing from **internal and external sources** and even by printing more notes. This raises aggregate demand in relation to aggregate supply, thereby leading to inflationary rise in prices.
5. **Population Growth**: population growth leads to Increase in aggregate demand for goods and services but shortage in aggregate supply will increase prices and inflation.
6. **Increase in Exports:** When the demand for domestically produced goods increases in foreign countries, this raises the earnings of industries producing export commodities. These, in turn, create more demand for goods and services within the economy.

   Apart from the above factors, expansion of the private sector, existence of black money and the repayment of public debt by the government also increase the aggregate demand for goods and services in the economy.

II. Factors Causing Shortage of Supply: Following are the factors which result in a reduction in the supply of goods and services:

1. **Shortage of factors of production:** When there is shortage of factors of production like labour, capital, raw materials, etc. there is bound to be reduction in the production of goods and services.
2. **Industrial Disputes:** In countries where trade unions are powerful, they resort to strikes and lock-outs which resulted in a fall in industrial production thereby reducing the supply of goods.
3. **Natural Calamities:** Natural calamities like droughts, floods, etc. adversely affect the supplies of agricultural products. This creates shortage of food products and raw materials, thereby helping inflationary pressures.
4. **Artificial Scarcities**: Artificial scarcities are created by hoarders and speculators who indulge in black marketing. Thus, they are instrumental in reducing supplies of goods and raising their prices.
5. **Increase in Exports:** When the country produces more goods for exports than for domestic consumption, this creates shortages of goods in the domestic market. This leads to inflation in the economy.
6. **Lop-sided production:** If the stress is on the production of comforts, luxuries, or basic products to the neglect of essential consumer goods in the country this creates shortages of consumer goods. This again causes inflation.
7. **Law of Diminishing Returns:** If industries in the country are using old machine and outmoded methods of production, the law of diminishing returns operates. This raises cost per unit of production, thereby raising the prices of products.
8. **International Factors:** In modern times, inflation is a worldwide phenomenon. When prices rise in major industrial countries, their effects spread to almost all countries with which they have trade relations. Often the rise in price of a basic raw material like petrol in the international market leads to rise in the price of all related commodities in a country.

III. Increase in cost of production of goods and services: An increase in the cost of goods production leads to inflation. The reasons for this:

1. Increase prices of raw materials
2. Increase prices of factors production.
3. Increase rates of indirect tax.
4. Increase prices of capital goods.
5. Increase prices of imports machinery and technology.
6. Depreciation of currency value.
7. Lack of resources.
8. Increase of capital machinery depreciation expense.
9. Increasing production costs.
10. Increasing resource wastage in production process.

5.4 Effects of Inflation

The following points highlight the six major effects of inflation. The effects are: 1. Effects on Distribution of Income and Wealth 2. Effects on Production 3. Effects on Income and Employment 4. Effects on Business and Trade 5. Effects on the Government Finance 6. Effects on Growth.

1. Effects on Distribution of Income and Wealth: The impact of inflation is felt unevenly by the different groups of individuals within the national economy—some groups of people gain by making big fortune and some others lose.

1a) Creditors and debtors: During inflation creditors lose because they receive in effect less in goods and services than if they had received the repayments during a period of low prices. Debtors, on other hand, as a group gain during inflation, since they repay their debts in currency that has lost its value (i.e., the same currency unit will now buy less goods and services).

1b) Producers and workers: Producers gain because they get higher prices and thus more profits from the sale of their products. As the rise in prices is usually higher than the increase in costs, producers can earn more during inflation. But, workers lose as they find a fall in their real wages as their money wages do not usually rise proportionately with the increase in prices. However, the working class, gain because they get more employment during inflation.

1 c) Fixed income-earners: Fixed income-earners like the salaried people, rent-earners, landlords, pensioners, etc., suffer greatly because inflation reduces the value of their earnings.

1d) Investors: The investors in equity shares gain as they get dividends at higher rates because of larger corporate profits and as they find the value of their shareholdings appreciated. But the bondholders lose as they get a fixed interest the real value of which has already fallen.

1e) Traders, speculators, businesspeople and black-marketers: They gain because they make more profits from the persistent rise in prices.

1f) Farmers: Farmers also gain because the rise in the prices of agricultural products is usually higher than the increase in the prices of other goods.

Thus, inflation brings a shift in the pattern of distribution of income and wealth in the country, usually making the rich richer and the poor poorer. Thus during inflation there is more and more inequality in the distribution of income.

2. Effects on Production: The rising prices stimulate the production of all goods—both of consumption and of capital goods. As producers get more and more profit, they try to produce more and more by utilising all the available resources at their disposal. But, after the stage of full employ-ment the production cannot increase as all the resources are fully employed. Moreover, the producers and the farmers would increase their stock in the expectation of a further rise in prices. As a result hoarding and cornering of commodities will increase.

But such favourable effects of inflation upon production are not always found. Sometimes, production may come to a standstill position despite rising prices, as was found in recent years in developing countries like India, Thailand and Bangladesh. This situation is described as stagflation.

3. Effects on Income and Employment: Inflation tends to increase the aggregate money income (i.e., National Income) of the community as a whole on account of larger spending and greater production. Similarly, the volume of employment increases under the impact of increased production. But the real income of the people fails to increase proportionately due to a fall in the purchasing power of money.

4. Effects on Business and Trade: The aggregate volume of internal trade tends to increase during inflation due to higher incomes, greater production and larger spending. But the export trade is likely to suffer on account of a rise in the prices of domestic goods. However, the business firms expand their businesses to make larger profits. During the period inflation since costs do not rise as fast as prices profits soar. But wages do not increase proportionate with prices, causing hardships to workers and making more and more inequality. As the old saying goes, during inflation prices move in escalator and wages in stairs.

5. Effects on the Government Finance: During inflation, the govern-ment revenue increases as it gets more revenue from income tax, sales tax, excise duties, etc. Similarly, public expenditure increases as the government is required to spend more and more for administrative and other purposes. But the rising prices reduce the real burden of public debt because a fix sum has to be paid in instalment per period.

6. Effects on Growth: A mild inflation promotes economic growth, but a runaway inflation obstructs economic growth as it raises cost of develop-ment projects. Although a mild dose of inflation is inevitable and desirable in a developing economy, a high rate of inflation tends to lower the growth rate by slowing down the rate of capital formation and creating uncertainty.

But inflation, especially a runaway inflation, is an unstable situation. It makes the business world uneasy and uncertain. Society gets disturbed as there grows discontentment among the salaried people and they demand an increase in their wages and salaries.

5.5 Measures to Control Inflation

Mon-etarists and classicists blame on an increase in money supply that result in an increase in aggregate demand. Keynesians, on the other hand, do not attach any importance to the monetary factors. To them, inflation is caused, of course, by an increase in aggregate demand. Basically, these two arguments for infla-tion lead to demand management policies. Demand management policies may be broadly grouped into (i) monetary policy, and (ii) fiscal policy. However, inflation is also caused by cost-push factors. Often prices and incomes policy are suggested to control this type of inflation. In fact, inflation in an economy is a mixture of demand-pull and cost-push factors. Thus, for controlling infla-tion, policymakers employ three methods: (I) Monetary measures; (II) Fiscal measures; and (III) Non-monetary measures.

I. Monetary Measures: Monetary policy is the policy employed by the central bank to alter the cost of credit, de-mand for credit and the availability of credit. It is also known as the credit control policy. A central bank has the following instruments of credit control at its disposal to influence the demand, cost and availability of credit or the country's money supply:

1. Bank rate.
2. Open market operations.
3. Cash re-serve ratio (CRR).
4. Selective methods of credit control.

The stabilisation policy of the central bank requires a 'dear money policy' with the inten-tion of reducing aggregate demand. In order to fight inflation, the central bank increases bank rate, conducts open market sale of bonds and securities, increases the minimum cash reserve ratio. All these measures make bank credit more costly. Higher cost of credit makes less availability of credit and, hence, less money supply. These have the potentiality of contracting aggregate demand. Since all these measures reduce the credit-creating potenti-ality of commercial banks, aggregate private spending gets reduced and inflation is thereby controlled.

Finally, central bank employs se-lective credit control when any particular sector(s) rather than the entire economy ex-perience inflationary price rise. However, this instrument is effective mainly in controlling consumption spending. However, there are some limitations of the monetary policy that restrict its effectiveness. First, monetary policy affects aggregate de-mand only indirectly, i.e., by raising interest rate and reducing money supply. Thus, its ef-ficacy can only be felt after a time lag. Secondly, not all types of aggregate spending are influ-enced by monetary control weapons.

II. Fiscal Measures: Fiscal policy measures comprise the policy of the government relating to taxation, ex-penditure and borrowing. These three elements of fiscal policy influence aggregate spending. We know that the bulk of aggregate spending is derived from government spending. During inflation, government spending may be reduced.

How-ever, due to some political reasons or economic compulsion, cut in public spending may be difficult. However, unproductive public ex-penditure must be controlled. Often, modern governments have the tendency to spend more to please the voters without bothering about the impact of inflation that may fall upon the society badly. In fact, control of ex-penditure is one of the important solutions to inflation.

When a country is exposed to inflation, the government may raise both direct and indi-rect taxes to wipe out excess aggregate spend-ing. Once a tax on income and wealth is imposed, disposable income gets reduced. This will greatly reduce private aggregate spending. However, in reality, a government may be reluctant in raising the rates of taxes since taxpayers may vote out a government from power. In order to mop up excess purchasing power at the time of inflation, the government may resort to borrowing from the public by selling government bonds.

Fiscal policy, like monetary policy, is not faultless. It is exposed to certain limitations. First, the fiscal policy and politics go hand in hand in the sense that fiscal policy is never taken in a political vacuum. Political compul-sions greatly reduce its effectiveness. Secondly, injudicious use of tax-expenditure programme may not yield desired results.

III. Other (Direct) Measures: Increase the production of essential commodities, price control, rationing, rational wages and compulsory savings can curb inflation.

1. **Increase production and essential goods production**: All possible help in the form of latest technology, raw materials, financial help, subsidies, etc. should be provided to different consumer goods sectors to increase production. The government should encourage the production of essential consumer goods like food, clothing, kerosene oil, sugar, vegetable oils, etc.
2. **Rational Wage Policy:** Another important measure is to adopt a rational wage policy. The best course for this is to link increase in wages to increase in productivity. This will have a dual effect. It will control wage and at the same time increase production of goods in the economy.
3. **Price Control:** Price control and rationing is another measure of direct control to check inflation. Price control means fixing an upper limit for the prices of essential consumer goods.
4. **Rationing**: Rationing aims at distributing consumption of scarce goods so as to make them available to a large number of consumers. It is applied to essential consumer goods such as wheat, rice, sugar, kerosene oil, etc. It is meant to stabilize the prices of necessaries and assure distributive justice.
5. **Compulsory saving:** to introduce Compulsory saving Scheme to employees that helps reduce their earnings and prevent prices from rising.

   From the various monetary, fiscal and other measures, discussed above, it becomes clear that to control inflation, the government should adopt all measures simultaneously.

5.6 Measurement of Inflation

There are several ways to measure inflation depending upon the types of goods and services. While measuring inflation, we take into ac-count a large number of goods and services used by the people of a country and then cal-culate average increase in the prices of those goods and services over a period of time. A small rise in prices or a sudden rise in prices is not inflation since they may reflect the short term workings of the market.

Inflation Rate: The rate of change in a price index in a specified time called the inflation rate. When building a price index, determine the base year and consider the index 100. If the current index value is equal to 100, it is called “zero inflation, less than 100 negative rate inflation, higher than 100 positive rate inflation.

$$\text{Inflation rate} = \frac{\text{Current month price index} - \text{Price Index for the same month last year}}{\text{Price index for the same month last year}} \times 100$$

In India Consumer Price Index (CPI) and Wholesale Price Index (WPI) are two major indices for measuring of inflation. The Wholesale Price Index (WPI) was main index for measurement of inflation in India till April 2014, when RBI adopted new consumer price index (CPI) as the key measure of the inflation. The Wholesale Price Index (WPI) is computed by the Economic Adviser in Ministry of Commerce & Industry Government of India. It was earlier released on weekly basis for Primary Articles and Fuel Groups. However, since 2012, this practice has been discontinued. Currently WPI is released monthly.

Base year: Current WPI base year is 2011-12=100.

Items: There are total 697 items in WPI and inflation is computed taking 8331 price quotations. The items are divided into three broad categories. 1. Primary Articles 117 items, weight age is 22.62%. 2. Fuel and Power, 16 items weight age is 13.15%. 3. Manufactured products, 564, items, weight age is 64.23%.

1. Wholesale Price Index (WPI): Inflation is measured by calculating the changes occurred in WPI over a passage of time. The rate of inflation can be calculated by taking the percentage rate of change in the WPI for a given period of time.

$$\text{Inflation Rate} = \frac{WPI_t - WPI_{t-1}}{WPI_{t-1}} \times 100$$

The formula used for calculating inflation through WPI is as follows

Where, WPI_t = preceding year Wholesale Price Index

WPI_{t-1} = Wholesale Price Index for the preceding year (t-1), (previous year)

2. Consumer Price Index (CPI): Consumer price index (CPI) released at national level are.

i) CPI for Industrial workers (IW).

ii) CPI for agricultural Labourers (AL)/Rural Labourers (RL).

iii) CPI Rural/Urban/Combined.

While the first two are compiled and released by the Labour Bureau in the Ministry of Labour and Employment, the third by Central Statistical Office in the Ministry of Statistics and programme Implementation. In India, RBI uses CPI (Combined) released by CSO for inflation purpose.

Base Year: CPI (Combined) 2012-100

Items: The number of items in CPI basket include 448 in rural and 460 in urban. Thus it makes clear that CPI basket is broader than WPI basket. The items in CPI are categorised 5 main groups 1. Food and beverages, weight age is 54.18%, 2. Pan, tobacco and intoxicants, weight age is 3.26%, 3. Clothing and footwear, weight age is 7.36%, 4. Fuel and light, weight age is 7.94%, 5. Miscellaneous, weight age is 27.26%.

3. GNP Deflator: Apart from WPI, CPI, GNP deflator is also used for the measuring the rate of inflation. GNP deflator is the measure of price levels of all the final goods and services produced in an economy in a specific period of time. The most comprehensive measure is GDP deflator, which is measured as a ratio of GNP at Current prices to GNP at constant prices. Since it encompasses the entire spectrum of economic activities including services, the scope and coverage of national income deflator is wide than any other measure. The data is released by the CSO but it is not used as it comes quarterly and with a two months lag.

The formula used for the calculation of GNP deflator is as follows:

$$\text{GNP Deflator} = \frac{\text{Nominal GNP}}{\text{Real GNP}} \times 100$$

Where Nominal GNP = GNP at current prices

Real GNP = GNP at constant prices

The percentage change in GNP deflator of two consecutive years provides the rate of inflation.

5.7 Inflationary Gap

It is useful and important to understand the concept of inflationary gap because with it we are able to know the main cause of the rise in general level of prices. The equilibrium of an economy is established at the level of full-employment when aggregate demand or total expenditure is equal to the level of income corresponding to full-employment. This happens when the amount of investment is equal to the saving gap corresponding to full-employment level of income.

As long as there is unemployment, there will be no inflationary conditions in the economy. However, once the economy reaches full employment, the aggregate demand (money supply) rises, causing prices to rise and inflationary conditions. This is what Keynes calls real inflation. The price rise is explained by the inflation interval.

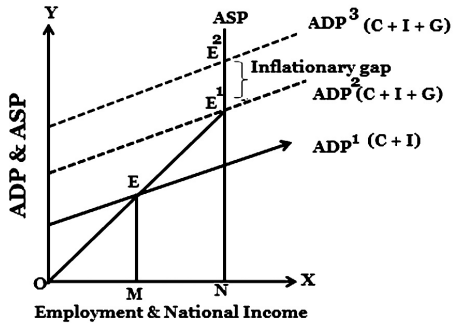


Figure 5.3

The inflationary gap is illustrated in Figure 5.3. ON is full-employment level of national income in the map. The national income is ON when the aggregate demand is equal to ADP^2(C+I+G) NE^1. The real national income does not increase beyond ON because the economy is full-fledged. If the aggregate demand is greater than NE^1, that is, if the aggregate demand increases to NE^2 (ADP^3), then the difference in income level and actual aggregate demand is greater than the E^1E^2 component. This is called the inflationary gap.

J.M. Keynes in his revolution-ary book "General Theory of Employment, Interest and Money" did not discuss the concept of infla-tionary gap because he was then preoccupied with the analysis of the state of depression and defla-tion. During the Second World War when the problem of inflation cropped up, then Keynes applied his macroeconomic analysis to explain inflation as well and in this connection he put forward the concept of inflationary gap in his book How to pay for the war 1940.

5.8 Concept of Phillips Curve

The Phillips curve originated out of analysis comparing money wage growth with unemployment. The findings of A.W. Phillips in the Relationship between Unemployment and the Rate of Change of Money Wages in the United Kingdom 1861–1957 suggested there exist an inverse relationship between the rate of unemployment and the rate of increase in nominal wages. He published his theory in 1958. A lower rate of unemployment is associated with higher wage rate or inflation, and vice versa. In other words, there is a tradeoff between wage inflation and unemployment.

This analysis was later extended to look at the relationship between inflation and unemployment. Again the 1950s and 1960s showed there was evidence of this inverse trade-off between unemployment and inflation.

The Phillips curve gained important role in explaining inflationary conditions in the economy. According to Phillips curve analysis an economy must have a high percentage of unemployment, if it is to achieve price stability without inflation.

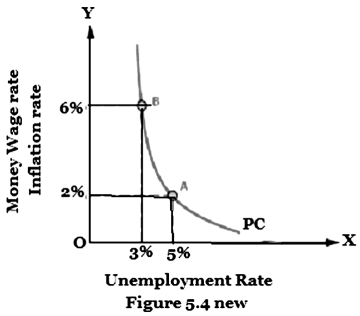


Figure 5.4 new

In figure 5.4 we showed the unemployment rate on the OX axis and the money wage rate on OY axis. The Philips curve (PC) is downward slope, from left to right (negative). This means there is an inverse relationship between the rate of change in money wages and the rate of unemployment. Phillips stated some of his observations as follows.

1. The relationship between unemployment to the rate of money wages is negative.
2. When the unemployment level is 5%, the change in the money wage level is 2%.
3. When the unemployment level is 3%, the change in the money wage level is 6%.
4. An increase in the money wage level will leads to rise in prices and inflation.
5. According to Phillips curve analysis an economy must have a high percentage of unemployment, if it is to achieve price stability without inflation.

The Phillips curve constructed based on data collected by Philips in England, does not suited to the U.S economy. In the real world, every increase in money wage will not lead to inflation. Moreover increase in money wages will Increases labor productivity and output. Despite high unemployment rate in many economies in the world, are facing inflationary problems. Therefore, we can see, both unemployment and inflation rates are remain high in many countries.

5.9 Deflation

Deflation is the opposite of inflation. Deflation refers to situation, where there is decline in general price levels. Thus, deflation occurs when the inflation rate falls below 0% (or it is negative inflation rate). Deflation increases the real value of money and allows one to buy more goods with the same amount of money over time. Deflation can occur owing to reduction in the supply of money or credit. Deflation can also occur due to direct contractions in spending, either in the form of a reduction in government spending, personal spending or investment spending. Deflation has often had the side effect of increasing unemployment in an economy, since the process often leads to a lower level of demand in the economy.

Deflation causes the nominal costs of capital, labour, goods, and services to fall, though their relative prices may be unchanged. Deflation has been a popular concern among economists for decades. On its face, deflation benefits consumers because they can purchase more goods and services with the same nominal income over time.

However, not everyone wins from lower prices and economists are often concerned about the consequences of falling prices on various sectors of the economy, especially in financial matters. In particular, deflation can harm borrowers, who can be bound to pay their debts in money that is worth more than the money they borrowed, as well as any financial market participants who invest or speculate on the prospect of rising prices.

A decline in aggregate demand typically results in subsequent lower prices. Causes of this shift include reduced government spending, stock market failure, consumer desire to increase savings, and tightening monetary policies.

Falling prices can also happen naturally when the output of the economy grows faster than the supply of circulating money and credit. This occurs especially when technology advances the productivity of an economy, and is often concentrated in goods and industries which benefit from technological improvements. Companies operate more efficiently as technology advances. These operational improvements lead to lower production costs and cost savings transferred to consumers in the form of lower prices.

5.10 Stagflation

Stagflation is a condition of slow economic growth and relatively high unemployment, or economic stagnation, accompanied by rising prices, or inflation. It can also be defined as inflation and a decline in gross domestic product. Stagflation refers to economic condition where economic growth is very slow or stagnant and prices are rising.

The term stagflation was coined by British politician Iain Macleod, who used the phrase in his speech to parliament in 1965, when he said: "We now have the worst of both worlds - not just inflation on the one side or stagnation on the other. We have a sort of 'stagflation' situation." The side effects of stagflation are increase in unemployment- accompanied by a rise in prices, or inflation. It was later used again to describe the recessionary period during the 1970s following the oil crisis, when the U.S. underwent a recession that saw five quarters of negative GDP growth. Inflation doubled in 1973 and hit double digits in 1974; unemployment hit 9 percent by May 1975.

Stagflation led to the emergence of the Misery index. This index, which is the simple sum of inflation rate and unemployment rate, served as a tool to show just how badly people were feeling when stagflation hit the economy.

5.11 Trade Cycles –Concept and definitions

Trade cycles are part of free market or capital economies. These refer to phenomenon of fluctuations over a period of time in an economy. Many free market economies have registered rapid economic growth during the last two centuries. But economic growth free market economies has not followed steady and smooth upward trend. There has been a long-run upward trend in Gross National Product (GNP), but periodically there have been large short-run fluctuations in economic activity i.e., changes in output, income, employment and prices around this long- term trend. Thus, the gradual fluctuations in the economic activity of a country are called trade cycles. These systematic fluctuations occur with each other and create uncertainty in the economy. Similarly, they struck global economies by move from one economy to another.

The period of high income, output and employment has been called the period of expansion, upswing or prosperity, and the period of low income, output and employment has been described as contraction, recession, downswing or depression. The economic history of the free market capitalist countries has shown that the period of economic prosperity or expansion alternates with the period of contraction or recession. These alternating periods of expansion and contraction in economic activity has been called Trade Cycles. They are also known as Business cycles.

Features (Nature) of Trade Cycles: The characteristics or features of trade cycles are as follows:-

1. **Movement in Economic Activity:** A trade cycle is a wave-like movement in economic activity showing an upward trend and a downward trend in the economy.
2. **Periodical:** Trade cycles occur periodically but they do not show the same regularity.
3. **Different Phases**: Trade cycles have different phases such as Prosperity, Recession, Depression and Recovery.
4. **Different Types:** There are minor and major trade cycles. Minor trade cycles operate for 3-4 years, while major trade cycles operate for 4-8 years or more. Though trade cycles differ in timing, they have a common pattern of sequential phases.
5. **Duration:** The duration of trade cycles may vary from a minimum of 2 years to a maximum of 12 years.
6. **Dynamic:** Business cycles cause changes in all sectors of the economy. Fluctuations occur not only in production and income but also in other variables like employment, investment, consumption, rate of interest, price level, etc.
7. **Phases are Cumulative**: Expansion and contraction in a trade cycle are cumulative, in effect, i.e. increasing or decreasing progressively.
8. **Uncertainty to businessmen**: There is uncertainty in the economy, especially for the businessmen as profits fluctuate more than any other type of income.
9. **International Nature:** Trade Cycles are international in character. For e.g. Great Depression of 1930s.

Definitions: A trade cycle refers to fluctuations in economic activities especially in employment, output and income, prices, profits etc. It has been defined differently by different economists. They are;

J.M. Keynes: "A trade cycle is composed of periods of good trade charac-terised by rising prices and low unemployment percentages with periods of bad trade charac-terised by falling prices and high unemployment percentages."

Gordan: "Business cycles consist of recurring alternation expansion and contraction in aggregate economic activity, the alternating movements in each direction being self-reinforcing and pervading virtually, all parts of the economy".

Prof. Haberler: "The business cycle in the general sense may be defined as alternation of periods of prosperity and depression of good and bad trade".

5.12 Phases of Trade Cycles

The different phases that an economy goes through over time, such as periods of booms (expansions) and economic recessions (contractions), is known as the business cycle or the trade cycle. One entire business cycle is the completion of an expansion and a contraction sequentially. The line through the business cycle is known as the trend line. The trend line shows that the economy is always moving upwards or growing in the long run. A full trade cycle has got four phases:

1) Recovery (2) Prosperity (3) Recession (4) Depression.

The phases of trade cycle are explained in figure 5.5. The business cycle starts from a trough (lower point) and passes through a recovery phase followed by a period of expansion (upper turning point) and prosperity. After the peak point is reached there is a declining phase of recession followed by a depression. Again the business cycle continues similarly with ups and downs.

1. Recovery: The turning point from depression to expansion is termed as Recovery or Revival Phase. During the period of revival or recovery, there are expansions and rise in economic activities. When demand starts rising, production increases and this causes an increase in investment. There is a steady rise in output, income, employment, prices and profits. The businessmen gain confidence and become optimistic. This increases investments. The stimulation of investment brings about the revival or recovery of the economy. Employment increases purchasing power and this leads to an increase in demand for consumer goods. As a result, demand for goods will press upon their supply and it shall, thereby, lead to a rise in prices. The demand for consumer's goods shall encourage the demand for producer's goods. Revival slowly emerges into prosperity.

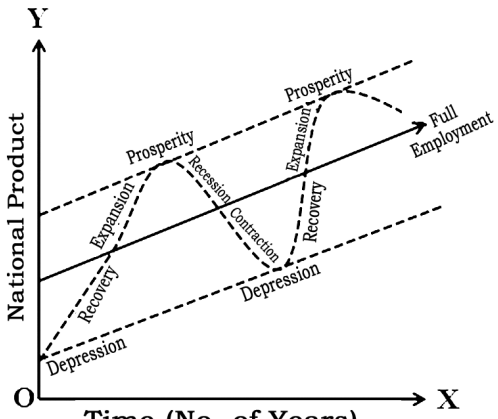


Figure 5.5

2. Prosperity: When there is an expansion of output, income, employment, prices and profits, there is also a rise in the standard of living. This period is termed as Prosperity phase. Due to full employment of resources, the level of production is Maximum and there is a rise in GNP. Due to a high level of economic activity, it causes a rise in prices and profits. There is an upswing in the economic activity and economy reaches its Peak. This is also called as a Boom Period.

3. Recession Phase: The turning point from prosperity to depression is termed as Recession Phase. During a recession period, the economic activities slow down. When demand starts falling, the overproduction and future investment plans are also given up. There is a steady decline in the output, income, employment, prices and profits. The businessmen lose confidence and become pessimistic (Negative). It reduces investment. The increase in unemployment causes a sharp decline in income and aggregate demand.

4. Depression: When there is a continuous decrease of output, income, employment, prices and profits, there is a fall in the standard of living and depression sets in. In depression, there is under-utilization of resources and fall in GNP. The aggregate economic activity is at the lowest, causing a decline in prices and profits until the economy reaches its Trough.

5.13 Causes for Trade Cycles

A Trade cycle is a complex phenomenon which embraces the entire economic system. It can scarcely be traced to any single cause. Normally, a business cycle is caused and conditioned by a number of factors, both exogenous and endogenous.

1. **External Factors:** The external factors emphasise the causes of business cycles in the fluctuations of something outside the economic system. Such external factors are sunspots, wars, revolutions, political events, growth rate of population, migrations, discoveries and innovations. These outside factors change the level of national income by affecting either the investment or consumption component of aggregate demand.

2. **Internal Factors:** The internal factors relate to "mechanisms within the economic system itself which will give rise to self-generating business cycles, so that every expansion will breed recession and contraction, and every contraction will in turn breed revival and expansion, in a quasi-regular, repeating and never-ending chain."

1. **Bank Credit:** Hawtrey, Friedman and other monetarists regard business cycles as "a purely monetary phenomenon". According to Hawtrey, "cyclical fluctuations are caused by expansion and contraction of bank credit.

2. **Over-Saving or Under Consumption**: According to economists like Hobson, Foster and Douglas, business cycles are caused by over saving or under-consumption. They argue that wide disparities of income and wealth lead to depression in the country.

3. **Over-Investment:** Hayek, Spiethoff, Cassel and Robertson find the root cause of business cycles in over-investment.

4. **Competition**: According to Chapman, the main cause of business cycles is the existence of competition in an economy which leads to over-production and ultimately to a crisis.

5. **Psychological Causes:** According to Pigou, the alternating waves of "over optimism" and "over pessimism" are the sole causes of the industrial fluctuations.

6. **Innovations:** According to Schumpeter, innovations in the structure of the economy are the source of economic fluctuations. According to him, "the cause of depression is prosperity". Innovations in the industrial and business sectors create prosperity.

7. **Marginal Efficiency of Capital (MEC):** According to Keynes, the cycle consists primarily of fluctuations in the rate of investment. And fluctuations in the rate of investment are caused mainly by fluctuations in the MEC.

5.14 Measures to Control Trade Cycles

Various measures have been suggested and put into practice from time to time to control fluctuations in an economy. They aim at stabilising economic activity so as to avoid the ill-effects of a boom and a depression. The following three measures are adopted for this purpose.

1. Monetary Policy: Monetary policy as a method to control business fluctuations is operated by the central bank of a country. The central bank adopts a number of methods to control the quantity and quality of credit. To control the expansion of money supply during a boom, it raises its bank rate, sells securities in the open market, raises the reserve ratio, and adopts a number of selective credit control measures such as raising margin requirements and regulating consumer credit to control excess money supply in the economy. To control a recession or depression, the central bank follows an easy or cheap monetary policy by increasing the reserves of commercial banks. It reduces the bank rate and interest rates of banks. It buys securities in the open market. It lowers margin requirements on loans and encourages banks to lend more to consumers, businessmen, traders, etc.

2. Fiscal Policy: Monetary policy alone is not capable of controlling business cycles. It should, therefore, be supplemented by compensatory fiscal policy. Fiscal measures are highly effective for controlling excessive government expenditure, personal consumption expenditure, and private and public investment during a boom. On the other hand, they help in increasing government expenditure, personal consumption expenditure and private and public investment during a depression.

3. Direct Controls: The aim of direct controls is to ensure proper allocation of resources for the purpose of price stability. They are meant to affect strategic points of the economy. They affect particular consumers and producers. They are in the form of rationing licensing, price and wage controls, export duties, exchange controls, quotas, monopoly control, etc. They are more effective in overcoming bottlenecks and shortages arising from inflationary pressures. Their success depends on the existence of an efficient and honest administration. Otherwise, they lead to black marketing, corruption, long queues, speculation, etc. Therefore, they should be resorted to only in emergencies like war, crop failures and hyper-inflation.

Of the various instruments of stabilizations policy, no single method is sufficient to control cyclical fluctuations. Therefore, all methods should be used simultaneously. This is because monetary policy is easy to apply but less effective while fiscal measures and direct controls are difficult to operate but are more effective. Since cyclical fluctuations are inherent in the capitalist system, they cannot be eliminated completely. Some fluctuations may be beneficial for economic growth and others may be undesirable. Stabilisation policy should, therefore, control undesirable fluctuations.

Important Points to Remember

- ★ Inflation refers to an economic situation in which there is sustained or considerable rise in the general price level of goods and services over a period of time.
- ★ An economy with a moderate rate of inflation is desirable. The desirable rate is determined on the basis of price rise that contributes in production and employment and keep the economic outlook optimistic.
- ★ G. Ackley defined inflation as 'a persistent and appreciable rise in the general level or aver-age of prices'. In other words, inflation is a state of rising prices, but not high prices.
- ★ According to Dalton, "too much money chasing too few goods".
- ★ J.M Keynes defines "Inflation is the rise in price level after the point of full employment is true inflation" According to him, inflation or price increases do not occur before under conditions of full employment. Keynes believes that inflation should only be regarded as inflation, which increases after a full employment. Prices can go up if currency supply increases, but as long as there are unemployed resources; the increase in prices cannot be considered inflation.
- ★ **Creeping Inflation:** When the rise in prices is very slow (less than 3% per annum) like that of a snail or creeper, it is called creeping inflation. Such an increase in prices is regarded safe and essential for economic growth.
- ★ **Walking or Trotting Inflation:** When prices rise moderately and the annual inflation rate is a single digit (3% - 5%), it is called walking or trotting inflation. Inflation at this rate is a warning signal for the government to control it before it turns into running inflation.
- ★ **Running Inflation:** When prices rise rapidly like the running of a horse at a rate of speed of 5% - 10% per annum, it is called running inflation. This is not good for the economy.
- ★ **Galloping or Hyperinflation:** When prices rise above 10% per annum, it is called galloping or hyperinflation. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money.
- ★ **Demand-Pull Inflation**: Demand-pull inflation takes place when aggregate demand is rising while the available supply of goods is less.
- ★ **Cost-push inflation:** Cost-push inflation is caused by wage increases enforced by trade unions and profit increases by employers. This inflation is known as supply-induced inflation. The following are the reasons for cost-push inflation.
- ★ **Open Inflation**: Inflation is said to be open when the government takes no steps to control the rise in the price level. Thus open inflation is the result of the uninterrupted operation of the market mechanism.
- ★ **Suppressed inflation:** On the other hand, inflation is said to be suppressed when the government actively intervenes to check the rise in the price level.
- ★ **Increase in Money Supply**: Inflation is caused by an increase in the supply of money which leads to increase in aggregate demand. The higher the growth rate of nominal money supply, the higher is the rate of inflation.
- ★ Inflation is welcomed by entrepreneurs and businessmen because they stand to profit by rising prices.

- ★ Inflation hits wage-earners and salaried people very hard.
- ★ Farmers usually gain during inflation, because they can get better prices for their harvest during inflation. Borrowers benefit from inflation in general, as farmers usually borrow.
- ★ Farmers usually gain during inflation, because they can get better prices for their harvest during inflation.
- ★ Borrowers benefit from inflation in general, as farmers usually borrow.
- ★ Those who invest in debentures and fixed-interest bearing securities, bonds, etc, lose during inflation.
- ★ Investors in equities benefit because more dividend is yielded on account of high profit made by joint-stock companies during inflation.
- ★ The stabilisation policy of the central bank requires a 'dear money policy' with the inten-tion of reducing aggregate demand. In order to fight inflation, the central bank increases bank rate, conducts open market sale of bonds and securities, increases the minimum cash reserve ratio.
- ★ **Fiscal Measures:** Fiscal policy measures comprise the policy of the government relating to taxation, ex-penditure and borrowing.
- ★ **Inflation rate:** The rate of change in a price index in a specified time called the inflation rate.
- ★ In India Consumer Price Index (CPI) and Wholesale Price Index (WPI) are two major indices for measuring of inflation. The Wholesale Price Index (WPI) was main index for measurement of inflation in India till April 2014, when RBI adopted new consumer price index (CPI) as the key measure of the inflation.
- ★ The findings of A.W. Phillips in the Relationship between Unemployment and the Rate of Change of Money Wages in the United Kingdom 1861–1957 suggested there exist an inverse relationship between the rate of unemployment and the rate of increase in nominal wages. He published his theory in 1958.
- ★ Deflation refers to situation, where there is decline in general price levels. Thus, deflation occurs when the inflation rate falls below 0% (or it is negative inflation rate). Deflation increases the real value of money and allows one to buy more goods with the same amount of money over time.
- ★ Stagflation is a condition of slow economic growth and relatively high unemployment, or economic stagnation, accompanied by rising prices, or inflation.
- ★ The term stagflation was coined by British politician Iain Macleod, who used the phrase in his speech to parliament in 1965.
- ★ Trade cycles are part of free market or capital economies. These refer to phenomenon of fluctuations over a period of time in an economy.
- ★ The period of high income, output and employment has been called the period of expansion, upswing or prosperity, and the period of low income, output and employment has been described as contraction, recession, downswing or depression.
- ★ **M. Keynes**: "A trade cycle is composed of periods of good trade charac-terised by rising prices and low unemployment percentages with periods of bad trade charac-terised by falling prices and high unemployment percentages."
- ★ A full trade cycle has got four phases:
  1) Recovery 2) Prosperity 3) Recession 4) Depression

Model Questions :

UNIT - I

Short type Questions.

1. Limitations of Macro Economics.
2. The circular flow of income.
3. Personal income.
4. Gross domestic Product.
5. Net National product at factor cost

Essay type Questions

1. Define macro economics and discuss the nature and scope of macro economics.
2. Explain the importance of the study of the macro economics.
3. Explain the circular flow of income in a two sector economy.
4. Analyze the concepts of national income.
5. Briefly review about the different methods of estimating national income.
6. Examine the importance of the national income estimations.
7. Examine the problems involved in the estimation of national income.

UNIT - II

Short type Questions.

1. Principle of acceleration.
2. Saving Function.
3. Psychological law of consumption.
4. Employment Multiplier.
5. Effective Demand.
6. Investment Multiplier.

Essay type Questions.

1. Explain Keynes' theory of employment. How does it differ from classical theory?
2. Define effective demand. How does it determine level of employment in an economy?
3. Keynesian theory of employment is said to be irrelevant for India and other developing economies. Do you agree? Explain in detail.
4. What is consumption function? What are the factors that determine the consumption function?
5. Define APC and MPC. Examine the relationship between APC and MPC.
6. Describe the significance of MPC.
7. What is a saving function? Explain the concepts of APS and MPS.
8. What is investment/income multiplier? How is it related to MPC?

UNIT - III

Short type Questions :

1. Autonomous Investment.
2. Induced Investment.
3. Ex-Ante and Ex-Post Investments.
4. Discount Rate.
5. Liquidity Preference Curve.
6. Transaction Motive.
7. Precautionary Motive.
8. Speculative Demand for Money.

Essay type Questions :

1. Define investment and state the different types of investment.
2. What is investment function? Explain the factors that influence the level of investment in the economy.
3. Define marginal efficiency of capital. How is it calculated?
4. Examine the relationship between MEC and rate of interest.
5. Define MEC. How does it determine the level of investment?
6. Critically examine the classical theory of interest.
7. Explain the neo classical theory of interest or loanable funds theory.
8. Discuss the Keynes' theory of liquidity preference.

UNIT - IV

Short type Questions.

1. Medium of Exchange.
2. Actual Money – Money of Account.
3. Velocity of Money.
4. Exchange Equation.
5. Evolution of Money.

Essay type Questions.

1. Examine the draw backs of the barter system of exchange.
2. Define money. Describe the functions of money.
3. Describe the classification of money.
4. Give a brief account of RBI classification of money supply.
5. Explain Fisher's quantity theory of money or transactions approach.
6. Critically examine the Cambridge cash-balance approach.
7. Examine the different equations given by Cambridge economists.
8. Explain Keynes' theory of money and prices.

UNIT - V

Short type Questions.

1. Deflation.
2. Stagflation
3. Phillips Curve.
4. Demand Pull Inflation.
5. Monetary Measures to control inflation.
6. Fiscal Measures to control inflation.
7. Inflationary Gap.

Essay type Questions :

1. Define inflation and explain how is it measured?
2. Discuss various types of inflation.
3. Distinguish between demand pull inflation and cost push inflation.
4. What are the causes for inflation in India? Suggest measures to control inflation.
5. Explain the effects of inflation in the economy.
6. Define trade cycles and describe the features of trade cycles.
7. Define trade cycles and explain the causes of the trade cycles.
8. Explain briefly the different phases of trade cycles.

Reference Books :

1. Macro Economics: A.V.Raghavanada Chary
2. Macro Economic Theory: M.L.Jhingan - 1985 Vani Educational books - New Delhi.
3. Macro Economic Theory: T.N Hajeela - 1998 - Konark Publishers Pvt Ltd - Delhi.
4. Macro Economic Theory: Ackley.
5. The Indian Economy: Sanjeeva Varma - Unique Economic Publishers (1) Pvt Ltd 2019- New Delhi.
6. Economic Survey 2018-19: Vol - 2 Oxford University press- new Delhi.
7. Monetary Theory: M.C Vaish-2005 Vikas Publishing House Pvt Ltd
8. Macro Economic Theory: M.C Vaish - 2019 Vikas Publishing House Pvt. Ltd
9. Macro Economic Analysis: K.C. Rana & K.N.Verma -2012 Vishal Publishing Co: Jalandhar - Delhi
10. www.economicsdiscussin.net
11. www.economics-ejournel.org