
INTRODUCTION

This unit deals with Classical and Keynesian approaches to solve macroeconomic problems. In this unit an attempt has been made to discuss about various approaches related to the determination of income, output, employment and rate of interest. This unit is divided into two parts. In the first part, we have made an attempt to discuss the Classical theory of employment, output, price and rate of interest. In the second part, we have attempted to discuss the Keynesian theory of employment, output, rate of interest and multiplier.

CLASSICAL MACROECONOMICS

The study of Classical theory of income and employment determination is important because some of the aspects of classical theory are relevant to the prevailing condition of the developing countries. Classical economics dominated the mainstream economics from 18th century to 1930s. The classical theory, propounded by Adam Smith, J.B. Say and David Ricardo, assumes that there is always full employment in the economy. They believed that when there is any unemployment in the economy, certain forces automatically operate in such a way that the full employment is restored. The classical analysis was based on Say's law of market that states "Supply creates its own demand" which implies that there is no possibility of general over production in the long run. The classical economists emphasised that the free-market economy has a tendency towards the establishment of full employment of labour and there is always sufficient demand in the market for the product produced.

While the Keynesian theory emphasizes on the role of effective demand in determining the income and employment, the classical economists believed that the free-market economy has a tendency towards the establishment of full employment of labour and there is always sufficient demand in the market for the product produced.

The main propositions of the classical theory of employment are mentioned below:

- a. Full employment is the normal feature of the capitalist economy. The full employment situation always prevails in a normal economy. The economy is said to be in an equilibrium only if it is operating at full employment.
- b. In the full employment, there may exist voluntary, frictional unemployment, seasonal unemployment and structural unemployment in the economy.
- c. Flexibility of wage, prices and interest rate along with the existence of perfectly competitive factor, product and capital market ensure the maintenance of full employment in the economy.
- d. In the long run, there is no possibility of over production or unemployment in the economy.
- e. There should not be government interference in the production process of the economy which will ensure a smooth functioning of the market and the full employment can be maintained.
- f. People spend their whole income either on consumption or investment.

The following are the main assumptions of Classical theory of Employment and output:

- a. All economic agents are rational and are motivated by self-interest.
- b. Perfect competition exists in product market, factor market and capital market.
- c. Economic agents do not suffer from money illusion.
- d. Laissez faire condition prevails in the economy which implies that the government does not interfere in the economic activities.
- e. There is a closed economy without international trade.

- f. Money is a medium of exchange.
- g. All the ideas are based on the long run
- h. There is no technological progress.

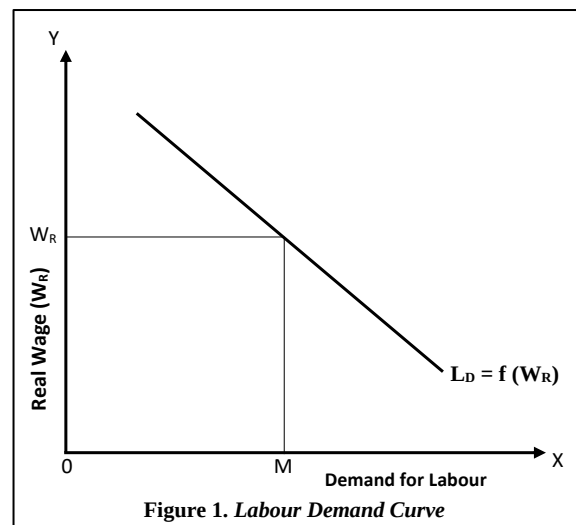
Classical Theory of Employment and Output:

According to the classical theory of employment, the level of full employment is determined by the equilibrium of the labour market. The level of full employment is determined at the level where the Labour demand is equal to the labour supply. Infact, the labour market equilibrium helps us to determine the equilibrium wage rate and the equilibrium employment. In the successive section, we will derive the labour demand curve, labour supply curve and the equilibrium of labour market.

Labour Demand curve: The classical theory assumes perfect competition in both factor market and product market. Also assumes that a firm which undertake production decision aims at maximisation of profit. Thus, profit maximising firm will employ labour until the Marginal product of labour (MP_L) becomes equal to the given real wage rate (W/P). The demand function of labour can be written as:

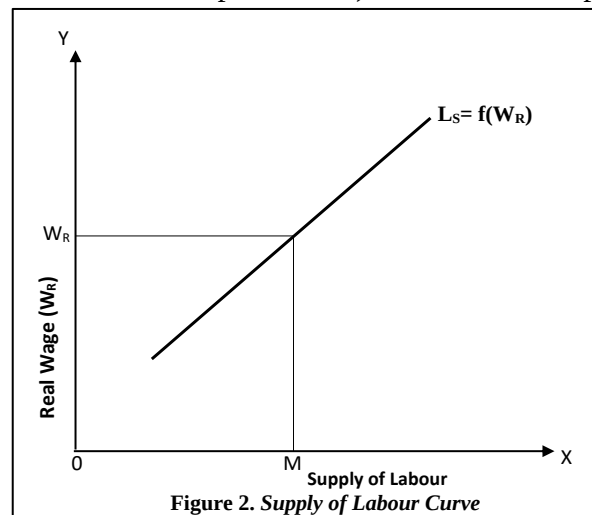
$$L_D = f\left(\frac{W}{P}\right) = f(W_R)$$

For our simplicity, let us assume that the relationship between the real wage (W_R) and the Labour demand (L_S) is negative and linear and the Labour demand curve is presented in Figure 1.



Labour Supply curve: The supply of labour is a function of real wages. Real wage (W_R) is defined as W/P (where W is nominal wage rate and P is the price level). The relationship between labour supply and real wage is given by the *law of labour supply* which states that **supply of labour increases with increase in the real wage rate**. As is widely known, this relationship holds only till the point of work-leisure trade-off. In general, the labour supply function and labour supply curve are based on the assumption of positive relationship between real wages and labour supply; thus, the labour supply curve slopes upward from the left to right and in functional form this relationship can be written as:

$$L_S = f\left(\frac{W}{P}\right) = f(W_R)$$

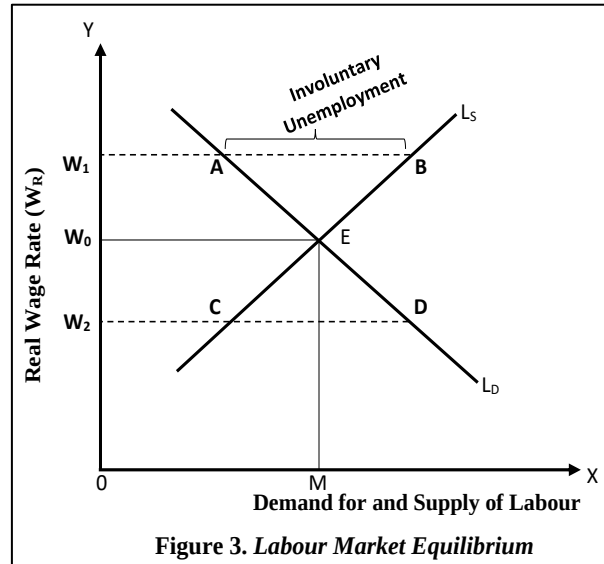


For our simplicity, let us assume that the relationship between the real wage (W_R) and the Labour supply (L_S) is positive and linear and the Labour supply curve is presented in Figure 2.

Labour Market Equilibrium: The determination of labour market equilibrium and the real wage is shown in the following figure. Labour Demand and Labour Supply curves are

represented by L_D and L_S respectively. The OX axis represents the Demand for and Supply of labour and the OY represents the Real wage. In the figure 3, it is seen that the equilibrium of labour market is achieved at point E where the labour demand and labour supply are equal. At the equilibrium level, the labour employed is OM which ensures the full employment level of employment. Also, the equilibrium level of real wage is determined at OW_0 .

If the real wage say W_1 is more than the equilibrium wage (W_0) the excess supply of labour will emerge and as a result AB unit of labour will be unemployed. Given the competition among the workers, the excess supply of labour would cause the wage rate to fall to the equilibrium level OW_0 at which the labour market will be cleared. On the other hand, if the real wage rate say W_2 is below the equilibrium wage rate of W_0 , then the firm will demand more labour than is offered at the existing real wage rate (excess demand for labour of amount CD). As a result of the competition among the firms to hire labour desired by them, the wage rate would go up to the equilibrium level W_0 . At W_0 all those who offer their labour services are in fact demanded and employed. *It therefore follows that at the real wage rate W_0 , there is no involuntary unemployment or there prevails full employment (given wage flexibility).*



Classical Unemployment is such type of unemployment, which occurs when the real wages of the worker in an economy is sharply high. For this reason, classical unemployment is also known as real wage unemployment. The high real wage means the higher cost of employing an additional worker than the benefits from his employment. When the real wages are too high firm are not in a profitable state from the employment of the labour. So, firm in the classical economy are not willing to employ every person for the job.

Following are some causes of classical unemployment:

- The existence of trade unions and their bargaining policies: Strong trade unions always bargains for the higher price than the equilibrium price.
- Minimum wages: The minimum wage policy also creates the problem of unemployment by making labour costly according to classical viewpoint.
- Sticky wages during deflation period. Deflation is a period, when price starts falling, so necessary wage cut policy is adopted in order to maintain full equilibrium in the economy. But the workers always prefer to avoid the nominal wage cut and thus the problem of unemployment is caused.

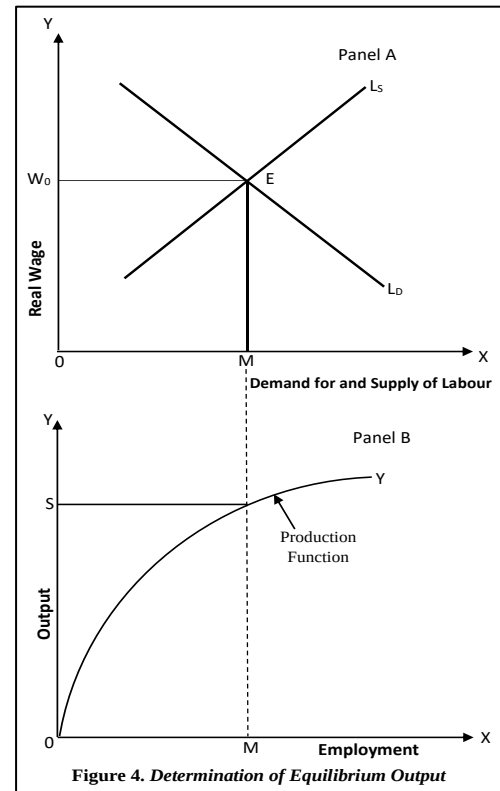
According to the classical economist the problem of unemployment could be solved by making wages more flexible.

Determination of Real Output or Income (Real GDP): Let us proceed to the determination of real GDP. Given the short run production function and full employment situation, we will be able to find the equilibrium level of output or income. In figure 4.B the production function is plotted. We will determine the Full employment level of output from the labour market

equilibrium situation, plotted in figure 4.A. For this purpose, we assume that the stock of capital and the technology is given or unchanged.

The production function in figure 4.B depicts that, given capital and technology, as more of the labour is employed the level of output increases at a diminishing rate and this phenomenon is known as *the diminishing returns to a factor*. In the above figure, 4.A, it is shown that, given the level of technology and capital, at the full employment level of labour (OM), the economy will produce an output equal to OS level of output which is the full employment level of output. This OS level of output will constitute the level of income of the society and will be distributed among the members of the society in the form of wage (to the labour) and profit (to the enterprises). Thus, under classical regime the total output or the income (OS) is the sum of wage and profit.

An important feature of the classical model is that factors operating on the supply side of the market determine the level of employment and output. As shown above, labour market equilibrium is determined by the demand for and supply of labour. The labour demand curve is, however, derived from the Marginal productivity of labour (MP_L) curve. Also, according to classical theory, it is the labour supply, which is a function of real wages, that plays a more important role in the determination of the labour market equilibrium and employment. And, employment determines the level of output. Thus, in the classical model, employment and output are determined solely by the factors operating on the supply side of the labour market.



PRODUCT MARKET EQUILIBRIUM

The product market equilibrium is attained at an overall price level where the Aggregate Demand and the Aggregate Supply are equal. Under classical economy, the aggregate supply (AS) is assumed to be fixed and has nothing to do with the price level. Given the full employment of labour (OM in figure 4.A), the production function determines the full employment level of output (OY in figure 4.B). The OY amount of full employment output in figure 4.B is potential GDP at full employment or the Aggregate supply of the economy. Since, the equilibrium level of labour is fixed at OM level which can produce OY output, the real output or the income will be fixed at OY level. Thus, the aggregate supply will be fixed at OY level and the Aggregate Supply Curve (AS) is vertical and parallel OY axis (perfectly inelastic).

The relationship between price level and the aggregate demand is inverse; in other words, keeping other things unchanged, an increase in the price level causes the quantity demanded to fall and vice versa. Thus, the aggregate demand curve (AD) is downward sloping from left to right.

In the Figure 5, it is seen that the aggregate demand (AD) and aggregate supply (AS) curves are intersecting each other at point E and thus, the equilibrium price level (P_0) and equilibrium full employment output (OY) are determined.

Aggregate demand is the sum of Consumption expenditure (C) and the private investment expenditure (I). Again, on the other hand, Aggregate supply (AS) is the GDP which can be used for either consumption (C) or Saving (S). Thus, in equilibrium we can write it as:

$$AD = AS$$

$$C + I = C + S$$

$$I = S$$

So, for the economy to be in the full employment level, it is essential that saving is equal to investment. Saving is the leakage out of the spending stream and private investment is injection to the spending stream. Thus, so long as the Injection is equal to the leakage, the economy will be in equilibrium.

Now, given the full employment (aggregate supply fixed) situation, any increase in the aggregate demand (AD) will lead to a proportional increase in the price level. In other words, an increase in the aggregate demand by K times will lead to an increase in the price level by K. In the above diagram (Figure 5), it is observed that, when the aggregate demand increases from AD to AD₁, the price has increased from P₀ to P₁. On the contrary, a fall in the aggregate demand by K times will lead to a fall in the price level by K times. As in the diagram above (Figure 5) it is seen that, when the aggregate demand falls from AD to AD₂, the price level has fallen from P₀ to P₂.

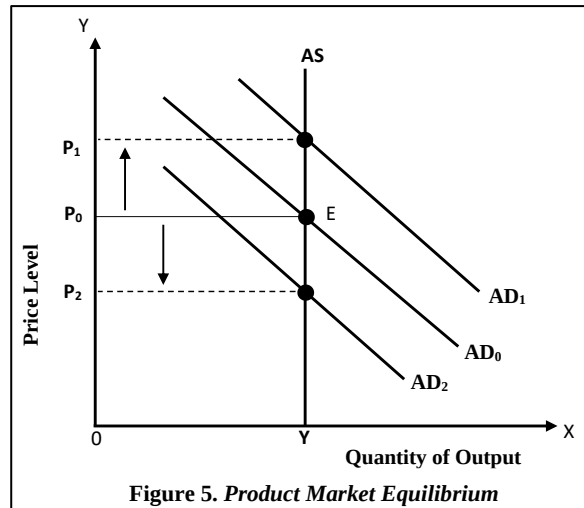


Figure 5. Product Market Equilibrium

CAPITAL MARKET EQUILIBRIUM

In the above section, showing the *Product Market Equilibrium*, for the maintenance of full employment level of output, it is necessary that the level of saving and investment are equal. According to the classical economists, rate of interest is the factor which brings an equality between the saving and investment. Further, they stated that the rate of interest is determined by demand for investment funds and supply of investible funds (saving) in the capital market.

The demand for investment fund is an inverse function of the rate of interest. In other words, at a low rate of interest, more funds will be borrowed for the investment purposes and at a higher rate of interest, less funds will be borrowed for the investment purposes. Thus, there is a negative relationship between the rate of interest and the demand for investible fund.

The supply of investible fund comes from the saving of the individual which is a positive function of the rate of interest. In other words, at a higher rate of interest, more investible funds will be supplied (or more saving will take

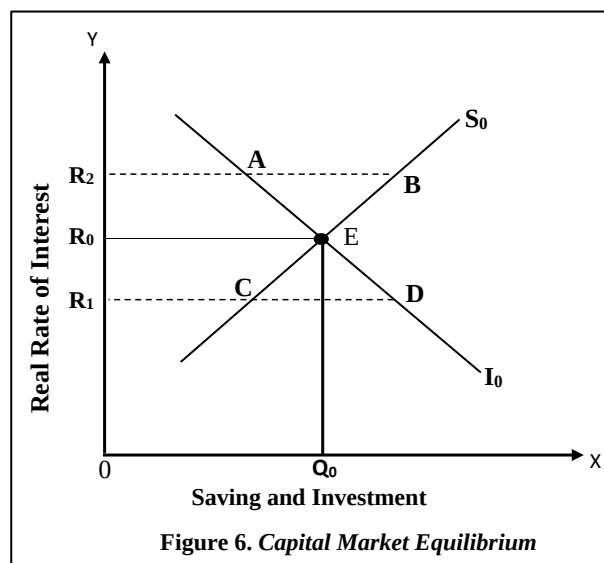


Figure 6. Capital Market Equilibrium

place) and at a lower rate of interest, less funds will be supplied (or less saving will take place). Thus, there is a positive relationship between the rate of interest and the saving.

In Figure 6, the OX axis measures demand for and supply of investible fund, and OY axis measures the rate of interest. It is seen that the demand for investment demand curve I_0 is negatively sloped because there is a negative relationship between rate of interest and the demand for investible funds. On the other hand, the supply of investible funds curve or the saving curve (S_0) is positively sloped because of the fact that there is a positive relationship between rate of interest and saving.

The demand for investment curve (I_0) and saving curve (S_0) intersects each other at point E where the equilibrium is achieved. Corresponding to this equilibrium point, the equilibrium rate of interest is determined at OR_0 level and the equilibrium amount of investment and saving is determined to be OQ_0 .

At a higher rate of interest, say R_2 , the investment demand is less than the supply of investible funds. Due to the excess supply (AB amount) of saving the rate of interest will fall to OR_0 level. On the other hand, at a lower rate of interest, say R_1 , the demand for investment exceeds the supply of savings (by CD amount). Now, due to the excess demand for investment in the capital market, rate of interest would go up. Thus, it is the rate of interest R_0 which keeps the capital market in equilibrium, i.e., saving is equal to investment ($S=I$).

Say's Law

The Say's law of market, propounded by the French Economist J. B. Say, states that 'supply creates its own demand'. It implies that every production of goods also creates incomes equal to the value of the goods produced and these incomes are spent on purchasing these goods. Thus, greater production automatically leads to a greater money income which creates the market for the greater goods produced. This means that there will be no general overproduction (or glut) in the market. And consequently, there will be no problem of deficiency of aggregate demand. This law can be explained in the context of both *barter system* and *monetised system*.

In a *barter economy*, people tend to specialise in the production of goods which they can produce relatively more efficiently, though they consume many other goods. They acquire other goods and services they consume in exchange for their own produce. When they offer their produce in barter for other goods, they create demand for other goods. In this kind of an economy, there cannot be overproduction or overproduction. The reason is that in the barter economy, people produce goods for own consumption. They produce what they consume and they produce as much as they consume.

This law applies equally well to the *monetized economy*. According to this theory the income which is save and not used to purchase consumer goods will become investment expenditure. And therefore, the investment will be equal to saving. Further, the leakage in the income flow caused by the saving will be made up by the investment. Given the productive capacity is utilised at full capacity, there will be no problem of demand deficiency or market glut.

Say's law is based upon the following assumptions:

- The amount of labour and capital can be raised in a free-market system based on price mechanism.
- In an expanding economy new firms and labourers can have easy entry by offering their products in exchange without dislocating the position of existing firms and labourers.
- The size of market is capable of expansion.
- All savings are automatically invested, i.e., savings always equals investment.

- e. The Government does not interfere in the functioning of the economy.

Implications of Say's Law:

- a. Since there is automatic adjustment between production and consumption, there is no need for the government to interfere in the functioning of economic system. Any interference by the government in the automatic functioning of the economic system will simply create imbalances and disequilibria.
- b. When the unemployed resources are employed, they lead to more production which covers their own costs. Hence, the economy will operate at the level of full employment.
- c. The mechanism of interest flexibility brings about an equality between savings and investment.
- d. The mechanism of wage- flexibility brings about full employment.

KEYNESIAN CRITIC OF CLASSICAL THEORY

The classical economics prevailed until the Great Depression of 1930s, and it had prevailed because it was never tested by any big changes in economic conditions over time. However, the Great Depression has proved that the classical theory was fundamentally not correct to the prevailing economic situation.

Keynes in his book *General Theory of Employment, Interest and Money* criticized the classical theory of employment and output. The broad criticisms made by Keynes against the classical theory are discussed in the below sub-sections.

- a. **Keynes challenged Say's Law:** Keynes criticized and proved the Say's law invalid in real practice. According to Say's law, the production creates its own demand and thus, whatever is produced is sold ultimately. Thus, there is no problem of general overproduction in the economy. It is because supply creates demand for goods because the productive factors, which are involved in the production activity, earn income from production equal to the value of goods they produce. But, in reality this is not the case because the entire income earned by the factors may not be spent on the purchase of these goods and services. A part of income may be saved and thus, this part will not create demand for goods and services. If the firm do not invest equal to the desired saving, then the aggregate demand without government intervention will not be enough to purchase the available supply of output. Hence, if aggregate demand is not sufficient to purchase the available supply, the producers would be unable to sell their whole output due to which their profits would decline and as a result they would reduce their level of production giving rise to involuntary unemployment in the economy. Keynes also explained that equality between saving and investment cannot be brought about a change in the rate of interest but by the level of income. But classical economists ignored the change in the level of income because of their assumption of full employment. Keynes emphasised on the fact that there is no guarantee that sum of consumption expenditure and investment expenditure are necessarily equal to the value of output produced in the economy. Hence, it is not necessary that the economy will be in equilibrium at the level of full employment. This invalidates Say's law, since according to it over-production and unemployment cannot occur in the economy and full employment is always maintained.
- b. **Keynes proved Pigou's view that a cut in wage will restore the full employment in as fallacious.** The classical economists held the view that during depression, fall in wage and prices in the market will eventually restore the equilibrium and remove the

unemployment if the market is allowed to operate freely without any government intervention. Keynes put forward his view that the wage is not only a cost of production but also the income to the labour. So, a fall in the wages will ultimately leads to a fall in income of the workers and in turn the aggregate demand will fall. As a result of decline in aggregate demand, the employment decline and the unemployment will increase.

One fundamental difference between Pigou and Keynes is that Pigou considered the level of employment as a function of money wage, therefore, a reduction in money wage rate triggers the level of employment. On the other hand, Keynes considered the level of employment as a function of aggregate demand, and the aggregate demand falls with a cut in the money wage.

- c. **Sticky wage and Unemployment:** The basic argument of the classical theory is that the prevalence of full employment is a normal situation in a free market economy. Any deviation from the full employment level of output is only possible in short run and is corrected by the wage and price flexibility mechanism. On the other hand, Keynes explained that the unemployment existed during the depression is due to the fall in aggregate demand. Also argued that the prices and wages are not flexible, thus, sticky. As a result of this, the involuntary unemployment problem emerges.

KEYNESIAN THEORY OF EMPLOYMENT AND INCOME

During the period of 1930s, the great depression occurred in the capitalist countries and as a result, the national income fell down. Due to this, many factories either fully closed down or were not working at their full capacity. This problem of depression did not seem to disappear automatically and in turn, the classical theory of full employment proved to be empirically wrong. In this background, Keynes published his book titled ***General Theory of Employment, Interest and Money*** in the year 1936, in which he attacked the classical views for not dealing with the economic problems of the real world properly.

The Keynesian economics differs drastically from the Classical Economics in terms of assumptions, presentation of tools of analysis and policy measures. Keynesian analysis has significantly influenced policy matters in the capitalist economies of the world.

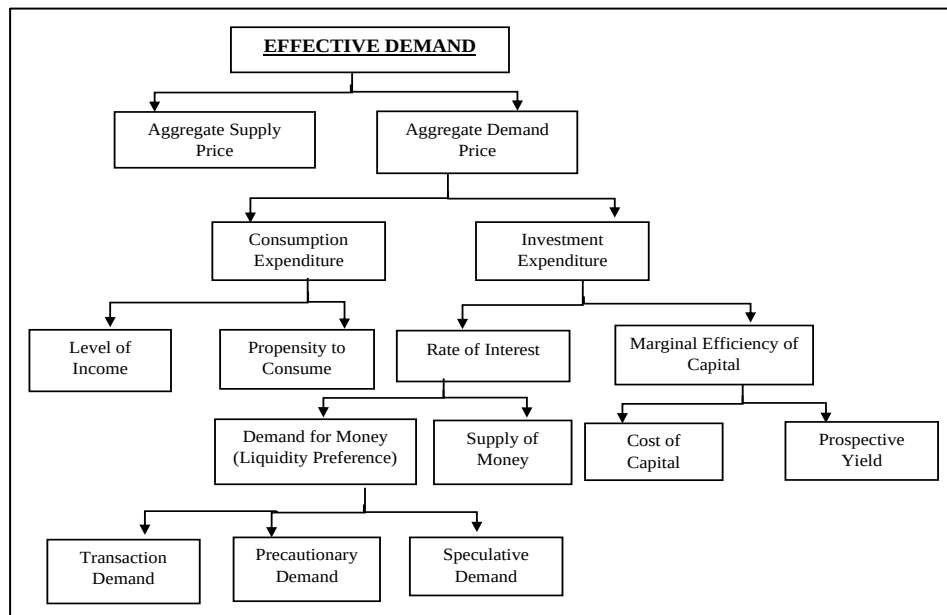
The Keynesian theory employment and income determination occupies a very important role in the present economic structure. According to Keynes, in an advanced capitalist economy, the level of employment is a function of effective demand. *Effective Demand* is the obtained at a point where the *Aggregate Supply Function* is equal to the *Aggregate Demand Function*. According to this theory, unemployment arises due to the deficiency in the effective demand. The following are the **main propositions** of Keynes theory of employment:

- a. The Keynes theory is based on the proposition that Total Employment (L) = Total Output (Q) = Total Income (Y). It means that, increase in employment raises the total output which leads to an increase in the level of income in same proportion.
- b. The employment is a function of effective demand which means, the employment will increase with the increase in effective demand.
- c. Investment expenditure is a function of rate of interest and the Marginal Efficiency of Capital (MEC).
- d. Marginal Efficiency of Capital (MEC) is determined by the supply price of capital assets and its perspective yield.
- e. Rate of interest is a monetary phenomenon and is determined by the equality between the demand for and supply of money.

The following are the main assumptions of Keynes theory of employment:

- Keynes analysis is based in the phenomenon of short run.
- There is a perfect competition in the market.
- The analysis deals with the closed economy without foreign trade.
- The analysis is based on the law of diminishing returns to factor.
- It assumes that the economic agents have money illusion. It means that, ignoring the change in real wage, when the nominal wage increases the workers feel better irrespective of the fact that price has also increased by same proportion. Thus, workers feel better if the money wage increases along with the price (real wage remain constant).

Keynes theory of employment can be summarized using the following chart:



DETERMINATION OF EQUILIBRIUM LEVEL OF EMPLOYMENT:

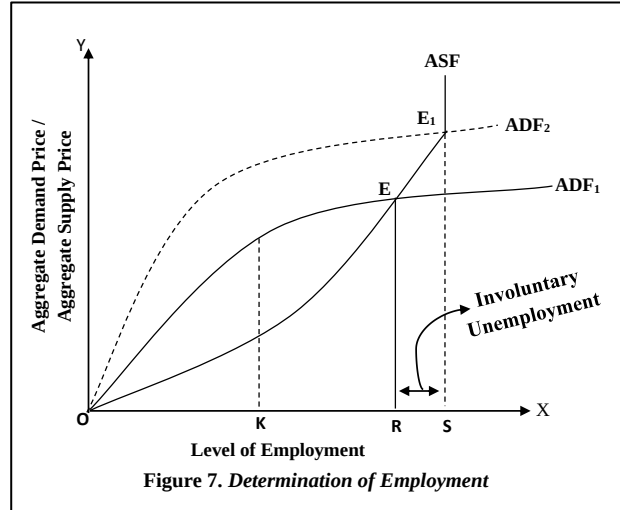
Before dive into the analysis of determination of employment using effective demand analysis, let us first know the meaning of *Aggregate Demand Price* and *Aggregate Supply Price*.

Aggregate Supply Price: Aggregate supply price, at any given level of employment, is the total amount of money which all producers taken together must expect to receive from the sale of output produced. Aggregate supply function shows the relationship between the number of labours employed and the receipt which all firms must get, keeping price constant, from the sale of the output produced using that amount of output.

Aggregate Demand Price: According to Keynes, it is the Aggregate Demand function which plays the most crucial role in the determination of the employment level. It shows, at a given level of employment, some of money a firm expects to get from the sale of the output produced using that level of output. Aggregate demand broadly has four components: (a) Consumption Expenditure, (b) Investment Expenditure, (c) Government spending, and (d) Net export. But for now, we will not incorporate the net export component since the economy we are considering is a closed economy.

The analysis of effective demand is the logical starting point of Keynes theory of employment. This theory determines the level of employment in an economy. The theory can be explained with the help of the following diagram.

In Figure 7, the level of employment is measure on the horizontal (OX) axis and Aggregate Supply price and Aggregate Demand price. The ASF and ADF represent the aggregate supply function and the aggregate demand function respectively. The equilibrium level of employment is determined at point E where the ADF_1 is equal to the ASF and is also known as the point of **effective demand**. The equilibrium level of employment is OR. At this level of employment, the Aggregate demand price and aggregate supply price are equal, and at this level, the producers will maximise their profits and have no tendency to increase or decrease the level of employment. If the economy deviates from the equilibrium level, the economy will automatically move towards the equilibrium level. Suppose, at OK level of employment, the $ADF > ASF$, thus, the expected receipt is greater than the expected cost. Thus, will induce the producers to increase employment. On the other hand, at OS level of employment, the expected cost is greater than the expected receipt ($ADF < ASF$). In such situation the employment will be cut and the equilibrium level of employment OR will be restored.



Underemployment Equilibrium: It is not necessary that the equilibrium level of employment is always at full employment. Keynes stated that an economy can achieve equilibrium even at a less than full employment level. In the Figure 7, it is seen that the equilibrium is achieved at point E where the level of employment determined is OR. But even at this level of employment, RS amount of labour will remain unemployed.

Thus, equilibrium at point E is underemployment equilibrium. This RS level of unemployment is involuntary unemployment, that is these people are willing and able to work at the given wage rate but they are not getting any work. This is the notable point of Keynes analysis that existence of this involuntary unemployment is due to the deficiency of aggregate demand. This unemployment can be removed and full employment level of employment OS can be achieved by increasing the aggregate demand through expansionary fiscal policy (increasing government expenditure). Any increase in Aggregate demand will shift the ADF curve upward. So, when the Aggregate demand is raised the ADF curve will shift from ADF_1 to ADF_2 and will intersect the ASF curve at point E_1 . At this equilibrium level, the level of full employment is determined to be OS.

According to Keynes, when the investment demand falls short of the gap between full employment level of income and consumption expenditure, recession arises and in turn, this will lead to an increase in the level of involuntary unemployment.

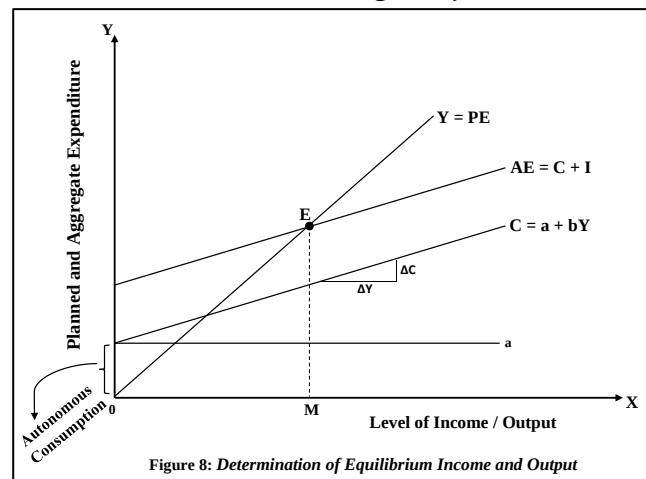
DETERMINATION OF EQUILIBRIUM INCOME AND OUTPUT:

We already have discussed the process of determination of equilibrium level of employment under Keynesian regime using effective demand analysis. Keynes theory is based on the short run and thus, the change (increase or decrease) in the level of income takes place only as a

result of change (increase or decrease) in the level of employment. The effective demand determined the level of employment, output and income of an economy. At the point of effective demand, the aggregate Demand (Aggregate Expenditure) and aggregate supply (Planned Expenditure) are equal. At this equilibrium level, the economy as a whole produces that level of output, generates that level of income using that level of employment which is the most profitable. The most profitable level of employment and income is determined by the aggregate demand function, also, the aggregate supply adjusts to the change in the aggregate demand. Thus, the main implication of Keynesian theory is that the demand creates its own supply which is completely opposite to the Say's law.

In this part, we will see the process of income determination through *Keynes's income-expenditure analysis*. In this part, to analyze the process of income determination we will consider a simple two sector economy having only household sector and business firm keeping the price level fixed. Using Figure 8, let us understand the Keynesian theory of income determination.

In Figure 8, the OX axis indicates the level of income and the OY axis measures the Aggregate expenditure and Planned expenditure (Aggregate supply and aggregate demand). The curve C represent the Consumption Expenditure which is an increasing function of level of income i.e., $C = f(Y)$. AE line represent the Aggregate expenditure which is a sum of Consumption expenditure (C) and investment expenditure (I), (i.e., $AE = C + I$). Keynes emphasized on the autonomous investment which is independent of the level of income. Therefore, AE line is parallel to the curve C. The PE curve indicates the planned expenditure or aggregate supply schedule (a 45° line).



The equilibrium is achieved at point E where the $PE=AE$ and it is also the point of effective demand. At this point, Total income is exactly equal to the total expenditure ($Y=C+I$), also, total saving is equal to the total investment ($S=I$). At this equilibrium point E, the OY of output will be produced.

At any output less than OM level, the economy will not be in equilibrium since the aggregate expenditure (Aggregate demand) is greater than the planned expenditure (Aggregate supply). This will lead the firms to sell the goods from their inventories, and the size of the size will decline. This unintended decline in the size of inventories will trigger to firms to expand their operations to meet the excess demand for goods and services and to keep the size of the inventories at the desired level. Thus, to increase the level of output the employment of labour will also rise. This process of expansion will continue till the national income reaches its equilibrium level of OM.

On the other hand, if the national income goes beyond the OM level, the aggregate supply (planned expenditure) will be higher than that of the aggregate expenditure. It represents that the size of inventories will increase which is unintended for the producers. Therefore, they will cut down the production by cutting down the level of employment. This, in turn, lead to a fall in the national income to the equilibrium level of OM.

Summary of Keynesian Theory of Income and Employment: It is, thus, clear that national income and employment in the short run are determined by effective demand (or, in other words, effective aggregate expenditure). The higher the level of effective demand, the greater the levels of national income and employment and vice versa. According to Keynes, unemployment is due to deficiency of effective demand and the basic remedy to remove this unemployment is to raise the level of effective demand. Keynes proved why the problem of involuntary unemployment was common in the free-market capitalist economies.

Policy Implication of Keynes Theory of Income and Employment:

Keynes's theory has important implications in raising the national income and the level of employment in the economy. When the economy is at less than full employment equilibrium, there will be a problem of depression or recession. According to Keynes, the recession or depression occurs only because of the lack of the aggregate effective demand. There are two policy approaches namely, fiscal and monetary policy, which help in overcoming such deficiency in aggregate effective demand.

Under monetary policy, during recessionary situation, the central bank of the nation (Reserve Bank of India in India) increases money supply using various tools which in turn reduces the rate of interest. This falling rate of interest increases the private investment which raises the aggregate demand and thereby, the aggregate effective demand will increase. This will raise the level of equilibrium employment and the economy will attain full employment level of employment. But Keynes had serious doubt about the effectiveness of monetary policy. He held the view that during recessionary situation, the rate of interest become very low. Therefore, expansionary monetary policy fails to reduce the rate of interest further. This situation is known as the liquidity trap, where people start keeping the asset in form of cash. Since the rate of interest do not fall, the investment does not increase and as a result the Aggregate demand does not increase.

In view of ineffectiveness of monetary policy, Keynes put emphasis on the role of fiscal policy in curing recession/depression and removing involuntary unemployment. a major fiscal policy measure is the increase in expenditure by the Government in times of depression. The increase in Government expenditure will cause an increase in the aggregate demand curve. This increase in aggregate demand will bring about increase in employment and output. If the increase in Government expenditure and as a result rise in aggregate demand is sufficient, it will help in achieving equilibrium at full-employment level. As a result, depression and involuntary unemployment will be eliminated.

Another fiscal policy measure is to cut tax rates which will raise the level of employment and output by raising the level of aggregate demand. When the tax rate is cut, the disposable income of the people increases which increases the consumption expenditure. This in turn again raises the level of aggregate demand and thereby the aggregate effective demand.

Thus, the expansionary fiscal policy raises effective aggregate demand which shifts the aggregate demand price curve upward which will eliminate the involuntary unemployment in the economy and the full employment equilibrium is restored.

KEYNESIAN THEORY OF CONSUMPTION

J. M. Keynes was the first to develop a systematic theory of consumption of the household. However, after the Second World War, they theory was challenged on the ground that the consumption expenditure depends not only on the current income, but also on the multiple other factors like rate of interest, wealth etc. This led to prolong debate on the issue as to what

determines the level of consumption which resulted in the significance contributions to the theory of consumption. The Keynesian theory of consumption is known as *Absolute Income Hypothesis*. Keynes assumed that the consumption expenditure of an individual or a household depended solely on the absolute level of his current income. While Keynes recognized that many other factors like rate of interest, wealth etc. influences the level of consumption, he emphasized that it is current level of income on which the consumption expenditure of the society and individuals mainly depends.

About consumption behaviour, Keynes makes three points. *Firstly*, consumption expenditure depends mainly on the absolute current income. The consumption expenditure is a positive function of the level of income; with the increase in the level of income in period one, the level of consumption expenditure increases in the same period. *Secondly*, he propounded the psychological law of consumption. It states that when the level of income increases, the consumption also increases but not by as much as increase in income. It reflects that the Marginal propensity to consume is less than one and greater than zero (i.e., $0 < MPC < 1$). The psychological law of consumption indicates that the increase in income results in the increase in both saving and consumption. *Thirdly*, the consumption expenditure does not have a proportional relationship with the increase in the level of income. As income increases, the proportion of total income that is spent on the consumption declines. Also, as income falls consumption does not fall proportionately. This is because people protect their consumption standards by not reducing their consumption proportionately to the reduction in their income. Thus, the third proposition of Keynes theory states that with the increase in income level, the *Average Propensity to Consume* (APC) declines.

The Keynesian consumption function can be expressed as follows:

$$C = a + bY$$

Here, C is consumption expenditure, a is autonomous consumption, b is MPC and Y is level of disposable income.

The main features of the Keynes theory of consumption are mentioned below:

- a. Absolute level of current income is the important factor that determines consumption of the community. Increase in national income causes an increase in consumption. According to Keynes, though rate of interest is one of the factors that determine consumption of the community, he did not consider it a very important determinant of it.
- b. The second important feature of Keynes' consumption function is that marginal propensity to consume is less than one but greater than zero ($0 < MPC < 1$). As has been explained above and is known as Keynes's psychological law of consumption.
- c. In Keynes's consumption function, namely $C = a + bY$, as income increases, average propensity to consume (APC) falls, Keynes was of the view that rich people relatively save a higher proportion of their income so that at higher levels of income average propensity to consume (APC), that is, proportion of total consumption to national income falls as national income rises.
- d. Another important feature of consumption function as put forward by Keynes is that it remains stable in the short run. Consumption function, according to Keynes, depends on various institutional factors such as distribution of income and wealth and psychological factors such as willingness to save. Since there cannot be much changes in these institutional and psychological factors, consumption function remains stable in the short run, that is, it does not shift upward or downward. Therefore, Keynes in his

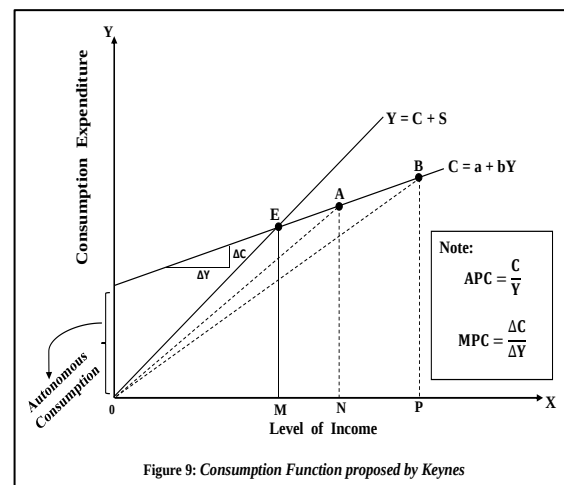
theory explains the determination of income and employment in the short run by considering that the consumption function is stable.

After acquiring these ideas about the functional relationship between level of income and consumption, let us now explain the short run consumption function with the help of the diagram.

In Figure 9, we have shown a linear consumption function with an intercept term. In this form of linear consumption function, though marginal propensity to consume ($\Delta C/\Delta Y$) is constant, average propensity to consume is declining with the increase in income ($EM/OM > AN/ON > BP/OP$) as indicated by the slopes of the lines OA and OB at levels of income N and P respectively.

The straight-line OB drawn from the origin indicating average propensity to consume at higher income level P has a relatively less slope than the straight-line OA drawn from the origin to point A at lower income level N.

The decline in average propensity to consume as the income increases implies that the proportion of income that is saved increases with the increase in national income of the country. This result also follows from the studies of family budgets of various families at different income levels. The fraction of income spent on consumption by the rich families is lower than that of the poor families.



Limitation of the Absolute Income Hypothesis: The Absolute Income Hypothesis is based more on "introspection" than on empirical evidence. Empirical investigations show that consumption expenditure exhibits proportionality with income in time series data over a longer period, but it displays non-proportionality for short periods as well as in cross section data. The Keynesian hypothesis, which states a non-proportional link between income and consumption, is contradicted by this. Because the Absolute Income Hypothesis failed to explain the empirical data, a slew of other theories (such as Relative Income Hypothesis, Permanent Income Hypothesis, and Life Cycle Hypothesis) arose to reconcile the proportional and non-proportional relationships between aggregate consumption and aggregate disposable income.

KEYNESIAN THEORY OF INTEREST

In Keynesian theory, the rate of interest is determined by equalizing the aggregate demand for money and total supply of money. The equilibrium rate of interest is determined at the point where the money market is also in equilibrium. According to Keynes, the supply of money is determined exogenously by the central bank of the country. So, the supply of money is assumed to be fixed and independent of the rate of interest.

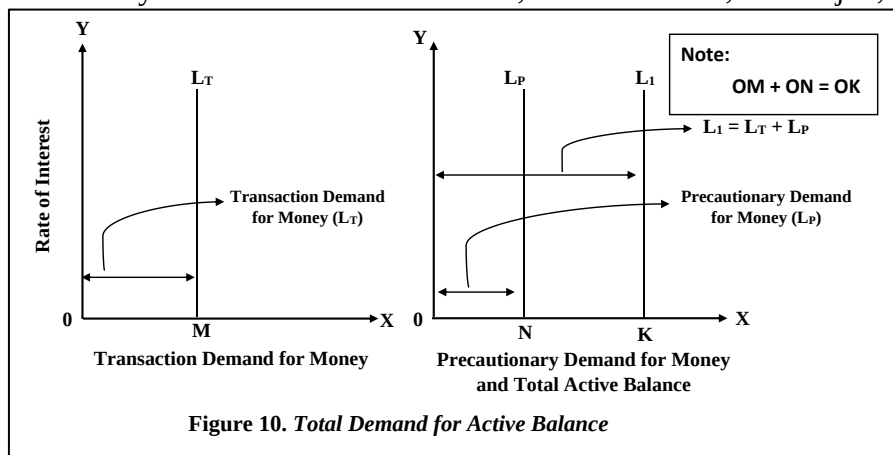
On the other hand, the demand for money, according to Keynes, comes from individual and business firms for different motives. He classified these motives into three broad categories as (a) Transaction Motive (L_T), (b) Precautionary Motive (L_P), and (c) Speculative motive (L_2). Before discussing about the money market equilibrium and determination of rate of interest, let us first understand the three motives of demand of money in brief.

Transaction Demand for Money (L_T): Transaction demand for money means the demand for money for day-to-day transaction purposes. The need of holding cash balance arises because income is received at a point of time or in a certain interval (say, weekly or monthly) but is spent continuously as and when necessary. Thus, transaction demand for money comes from individuals or business firms to meet their regular expenditures. So, when people demand to keep cash balances in hand for making transactions on regular basis (day to day transactions), it is known as the transaction demand of money.

The *transaction demand for money* is positively related with the level of income. In other words, with the increase in the level of income (Y), people start spending more and thus, the transaction demand for money goes up. More simply, When the level of income increases people tend to buy more goods and services for which the need more cash in hand which, in turn, reflects the transaction demand for money. The transaction demand for money is an increasing function of the level of income (keeping the price level constant); also, a worth noting point is that the transaction demand for money is independent of the rate of interest. It can be denoted as:

$$L_T = f(Y)$$

Precautionary Demand for Money (L_P): Keynes argued that both individuals and business firms keep some amount of cash in hand in excess of their transaction demand to meet any expenditure due to any unforeseen events like theft, loss due to fire, loss of job, accident, etc.



besides, unforeseen opportunities such as sudden fall in prices of goods and services, sudden fall in the price of bonds etc. For these purposes, according to Keynes, people hold ideal cash balances in hand which is also independent of the interest rate. The *precautionary demand for money* is also an increasing function of the level of income (Y). With the increase in the level of income, people and business firms tend to hold more cash in hand as precautionary purpose. Thus, it can be denoted as:

$$L_P = f(Y)$$

As both transaction demand for money and precautionary demand for money are the increasing function of level of income (Y) and independent of the rate of interest (R), we can club these two functions together and will denote it as L_1 . L_1 known as demand for active balances. Symbolically, it can be written as,

$$L_1 = L_T + L_P = f(Y)$$

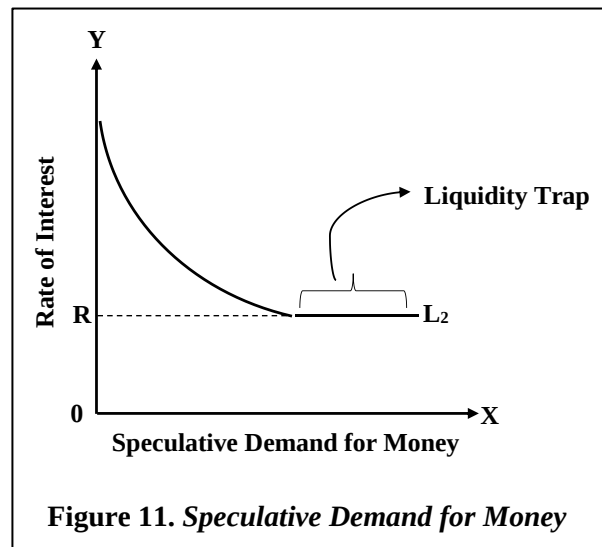
Figure 10 shows the Transaction demand for money and Precautionary demand for money curves. Here, L_1 curve represents the lateral summation of L_T and L_P curves which is showing the total demand for active balance.

Speculative Demand for Money (L_2): According to Keynes, apart from keeping cash balance for transaction and precautionary purposes, people want to keep cash to make speculative gain from future opportunities. He termed this as ideal balances or speculative demand for money. Speculative demand for money is interest elastic and is inversely related with the rate of interest. It is the amount of cash which people desire to hold to make speculative gains from the purchase and sale of securities through future changes in the rate of interest. Demand for speculative demand for money is linked with the rate of interest and the price of bonds (securities). If the rate of interest rises, the market price of bonds declines.

One important question is that, how does an investor decide whether to hold his assets in the form of cash or bond? For this, they compare the market rate of interest with their expected rate of interest. If the market rate of interest is higher than the expected rate of interest then the investor expects the market rate of interest to fall and also expects the bond price to rise. In such situation, the investor will hold the wealth in the form of bonds for future capital gain. Thus, the demand for speculative demand for money will decline at a high rate of interest. Similarly, If the market rate of interest is lesser than the expected rate of interest then the investor expects the market rate of interest to rise and also expects the bond price to fall. In such situation, the investor will not hold the bonds to avoid capital loss. Thus, the demand for speculative demand for money will increase at a low rate of interest. Thus, the speculative demand for money is a decreasing function of rate of interest which can symbolically be written as:

$$L_2 = f(R)$$

In Figure 11, L_2 is the speculative demand for money curve which slopes downward from left to right. It reflects that with the increase in the rate of interest the speculative demand for money falls and vice versa. However, at a very low rate of interest, say R , the speculative demand for money becomes infinitely elastic. Because, at a very low rate of interest (critical minimum level of market rate of interest), holding bonds become very risky and thus, people become ready to keep cash in hand instead of bonds. This situation is known as '**Liquidity Trap**'. In this situation, Keynes stated that, the Monetary policy becomes ineffective. In other words, the increase in money supply will not be effective in reducing the market rate of interest.



Total Demand for Money (M_D): Total demand for money is the sum of transaction demand for money, precautionary demand for money and speculative demand for money. It can be expressed as:

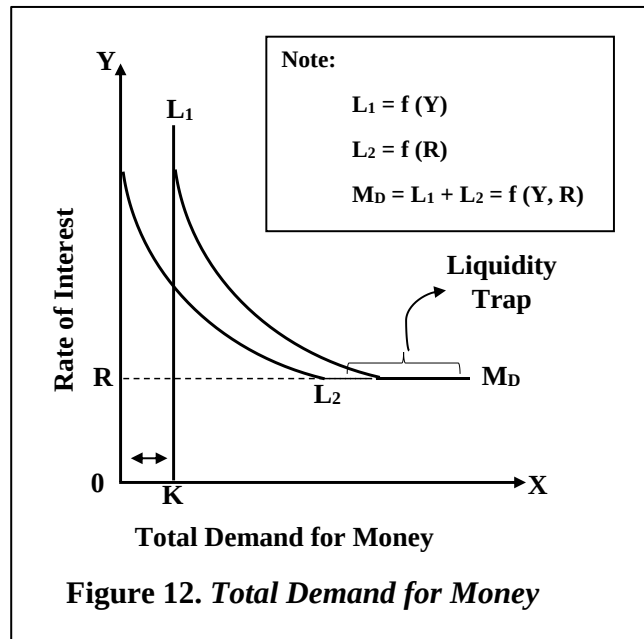
$$M_D = (L_T + L_P) + L_2$$

$$M_D = L_1 + L_2$$

$$M_D = f(Y) + f(R)$$

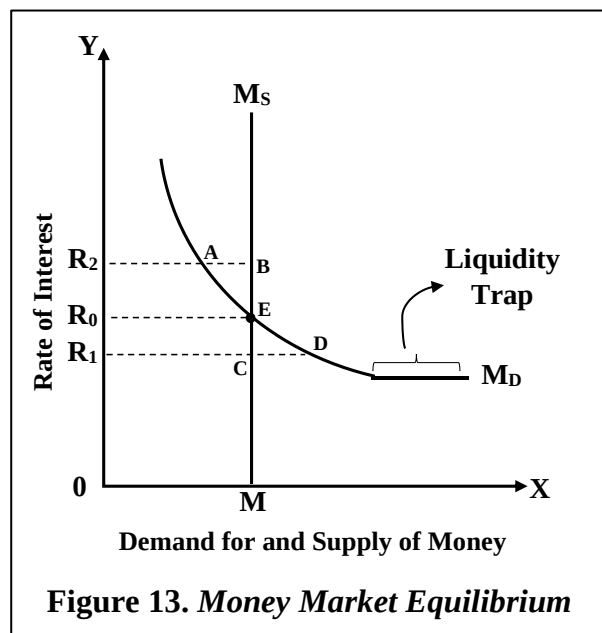
$$M_D = f(Y, R)$$

Thus, the total demand for money (M_D) depends on the rate of interest (R) and the level of income (Y). The demand for money is a positive function of the level of income and a negative function of the rate of interest. The demand for money curve (M_D) is derived by superimposing the L_1 and L_2 curves. It is presented in the Figure 12.



Determination of Equilibrium Rate of Interest:

In the Figure 13, the process of determination of equilibrium rate of interest is depicted. On Vertical axis, the rate of interest is measured and on horizontal axis, the demand for and supply of money is measured. The equilibrium rate of interest is determined at a level where the demand for money is equal to the supply of money. As stated already, the supply of money curve is independent of rate of interest and exogenously determined by the monetary authority of the nation. Thus, it is inelastic (constant at OM level) and parallel to OY axis. In the diagram, it is seen that the equilibrium is reached at point E where the demand for money curve (M_D) intersects the supply of money curve (M_S) ($M_D = M_S$). At the equilibrium point E, the rate of interest determined is R_0 . Any other rate of interest is unstable. Suppose, the rate of interest increases from R_0 to R_2 , which will cause the demand for money (M_D) to fall short of the supply of money (M_S) by AB amount. It means that the amount of money people demands to hold is less than what is supplied by the monetary authority. Thus, people prefer to buy bonds, this buying of bonds will raise the price of bonds and thus, the rate of interest will fall (since, there is a negative relationship between bond price and rate of interest). This process will continue till the rate of interest reaches its equilibrium level of R_0 .



Similarly, when the rate of interest falls to R_1 , below the equilibrium level R_0 , the speculative demand for money will increase because at a lower rate of interest the preference for cash

holding increases. As a result, the Supply of Money (M_s) falls short of the Demand for Money (M_d) by CD amount. Since, there is shortage of money in the money market, people begin to expect a rise in the interest rate and, therefore, demand for money begins to decrease and continues to decrease until the equilibrium rate of interest R_0 is restored. Thus, it can be said that this equilibrium rate of interest of R_0 is supposed to be stable.

Criticism of the Keynesian Theory of Demand for Money:

The Keynesian theory of demand for money was undoubtedly a radical improvement over the classical and neoclassical theories of money. His theory has however been criticized on the following grounds.

- a. Keynes' division of demand for money between transaction, precautionary and speculative motives is unrealistic. For, the people do not maintain a separate purse for each motive. They have one purse for all purposes. Besides, empirical evidence shows that, contrary to Keynes' postulate, even the transaction demand for money is interest-elastic.
- b. Critics reject the Keynesian postulate that there exists a 'normal' rate of interest and the current rate of interest may not necessarily be the same as the normal rate: there may always be a difference between the two. According to Keynes, the speculative demand for money is governed by the difference between the 'normal' and the current rates of interest. But the critics argue that if the current rate of interest remains stable over a long period of time, people tend to take it to be the normal rate. Consequently, the difference between the current rate and the normal rate disappears. With it, disappears the basis for speculation and the speculative demand for money.
- c. Keynes assumed unrealistically that the people hold their financial assets in the form of either idle cash balance or bonds. In fact, people hold their assets in a combination of both the assets.

THEORY OF MULTIPLIER

The concept of multiplier was first developed by F. A. Kahn in early 1930s. Later Keynes modified this concept. Kahn developed the concept of multiplier with reference to increase in employment as a result of increase in the level of investment. On the other hand, Keynes modified the concept by introducing increase in the level of income as an increase in the level of investment. Thus, Kahn's theory is known as *Employment Multiplier* and Keynes theory of multiplier is known as *income or output multiplier*. In this part we will be discussing the Keynesian theory of income multiplier.

The multiplier is the ratio of change in income to the change in the level of investment. In other words, the increase in output (or income) in the economy is a multiple of the increase in private investment (or government expenditure). If the size of the multiplier is greater than 1, then a \$ 1 increase in spending will increase the total output by a value greater than \$1. We can express it as $K = \frac{\Delta Y}{\Delta I}$, where, ΔY is the change in income (or output), ΔI is change in investment spending and K is the size of multiplier. Using this notation, we can obtain the value of multiplier only after known the change in income as a result of change in investment. But what if we are concerned about knowing by what amount the income level will increase as a result of increase in the investment by a certain amount. In such case, we can find the value of Multiplier (K) using the value of Marginal Propensity to Consume (MPC) (ratio of change in the level of consumption to a change in the level of income) as $K = \frac{1}{1-MPC}$.

Diagrammatic Representation of the Multiplier process:

We already have discussed that an economy attains its equilibrium at a where the planned expenditure (Y) and aggregate expenditure (C+I) are equal. The process of multiplier is depicted in Figure 14.

In Figure 14, the OX axis measures the National Income or output and OY measures the Aggregate expenditure and Planned Expenditure. The 'C' curve indicates the consumption function, and we are assuming the MPC is 0.5. The equilibrium will be determined at a point where the AE=PE.

In the diagram, the initial equilibrium is reached at E where the $AE_1 (=C+I_1)$ is equal to PE. At this point, the equilibrium level of output is determined to be OM. Now suppose, the investment is increased from I_1 to I_2 . This, will lead to a shift in the aggregate expenditure curve from AE_1 to AE_2 which in turn cause the equilibrium point to shift from E to E_1 . As a result of this increase in the level of investment, the equilibrium level of income will increase from M to N. We can trace the amount of change in the level of investment which is equal to RE_1 .

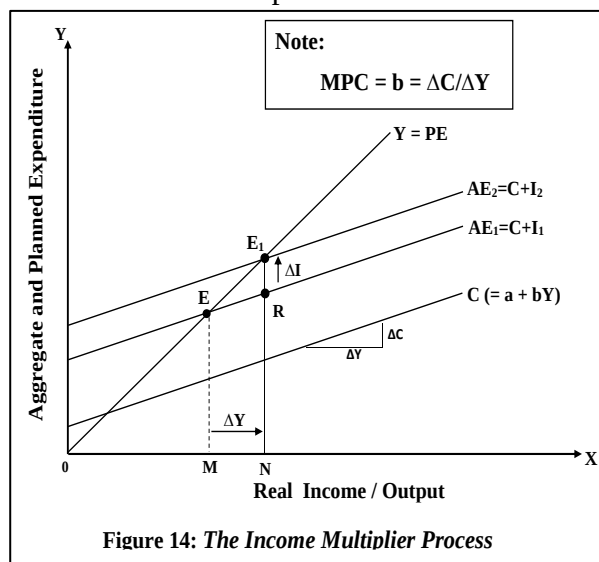


Figure 14: The Income Multiplier Process

Given the value of $MPC=0.5$, the value of the multiplier (K) will be equal to 2. Thus, it is expected that the increase in income will be twice that of the increase in the level of investment. In other words, we can say that, the increase in the level of income ($\Delta Y=MN$) is twice that of the increase in the level of investment ($\Delta I=RE_1$).

Algebraic Derivation of the Multiplier:

Let the initial equilibrium situation be:

$$Y_1 = C + I_1$$

$$Y_1 = a + bY_1 + I_1 \quad \dots\dots\dots (1)$$

Now, suppose the level of investment has increased from I_1 to I_2 , which will increase the level of income from Y_1 to Y_2 . So, the new equilibrium situation will be:

$$Y_2 = C + I_2$$

$$Y_2 = a + bY_2 + I_2 \quad \dots\dots\dots (2)$$

Now, subtracting equation 1 from equation 2 we will get:

$$Y_2 - Y_1 = (a + bY_2 + I_2) - (a + bY_1 + I_1)$$

$$\Delta Y = a + bY_2 + I_2 - a - bY_1 - I_1$$

$$\Delta Y = bY_2 + I_2 - bY_1 - I_1$$

$$\Delta Y = b(Y_2 - Y_1) + (I_2 - I_1)$$

$$\Delta Y = b \Delta Y + \Delta I$$

$$\Delta Y - b \Delta Y = \Delta I$$

$$(1 - b) \Delta Y = \Delta I$$

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - b} (= K)$$

So, the size of the Multiplier (K) is equal to $\frac{\Delta Y}{\Delta I}$ or $\frac{1}{1-b}$ where $b = \text{MPC}$.

Thus, when investment expenditure increases (ΔI), the real income (Y) of the economy increases but the increase in real income (ΔY) of the economy is much higher than that of the increase in the investment expenditure (given that $\text{MPC} > 0$). So, as a result of change in investment expenditure, the final change in income can be represented as:

$$\Delta Y = \frac{1}{1 - b} \times \Delta I = K \times \Delta I$$

[NOTE: Greater the value of MPC (=b), larger will be the size of multiplier (K)]

Leakages of Multiplier:

Leakages are the potential diversions from the income stream which tend to weaken the multiplier effect of new investment. Given the marginal propensity to consume, the increase in income in each round declines due to leakages in the income stream and ultimately the process of income propagation "peters out". The following are the important leakages:

- a. **Saving:** Saving is the most important leakage of the multiplier process. Since the marginal propensity to consume is less than one the whole increment in income is not spent on consumption: A part of it is saved which comes out of the income stream. Thus, the higher the marginal propensity to save (or lower marginal propensity to consumer), the smaller the size of the multiplier and the greater the amount of leakage out of the income stream, and vice versa.
- b. **Purchase of Old Stocks and Securities:** If a part of the increased income is used in buying old stocks and securities instead of consumer goods, the consumption expenditure will fall and its cumulative effect on income will be less than before. In other words, the size of the multiplier will fall with a fall in consumption expenditure when people buy old stocks and shares.
- c. **Price Inflation:** When increased investment leads to price inflation, the multiplier effect of increased income may be dissipated on higher prices. A rise in the prices of consumption goods implies increased expenditure on them. As a result, increased income is absorbed by higher prices and the real consumption and income fall. Thus, price inflation is an important leakage which tends to dissipate increase in income and consumption on higher prices rather than in increasing output and employment.
- d. **Net Imports:** If increased income is spent on the purchase of imported goods it acts as a leakage out of the domestic income stream. Such expenditure fails to affect the consumption of domestic goods. This argument can be extended to net imports when there is an excess of imports over exports thereby causing a net outflow of funds to other countries.
- e. **Undistributed Profits:** If profits accruing to joint stock companies are not distributed to the shareholders in the form of dividend but are kept in the reserve fund, it is a

leakage from the income stream. Undistributed profits with the companies tend to reduce the income and hence further expenditure on consumption goods thereby weakening the multiplier process.

- f. **Taxation:** Taxation policy is also an important factor in weakening the multiplier process. Progressive taxes have the effect of lowering the disposable income of the taxpayers and reducing their consumption expenditure. Similarly, commodity taxation tends to raise the prices of goods, and a part of increased income may be dissipated on higher prices. Thus, increased taxation reduces the income stream and lowers the size of the multiplier.

LET US SUM UP

At the beginning we have critically discussed about the classical theory of employment and output. After this, we have moved to the discussion of Keynesian theory of employment output and income. Further we have discussed the consumption function, theory of multiplier.

KEYWORDS

Classical School

Keynesian Macroeconomics

Consumption function

Theory of Multiplier

SUGGESTED READINGS

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Mankew, N. G., Macroeconomics. 9th Edition, Worth Publishers, New York.

Rana & Verma, Macroeconomic Theory and Practice, V.P.C.

SHORT ANSWER TYPE QUESTIONS:

1. Write a short note on the Say's law of market.
2. Mention the assumptions of Classical Theory of employment.
3. Mention the propositions of Classical Theory of employment.
4. Write a short note on theory of multiplier.
5. Write a short note on the policy implication of Keynes theory of Income and employment.

LONG ANSWER TYPE QUESTIONS:

1. Explain the process of determination of real wage rate under classical system.
2. Discuss how Keynes criticized the classical theory of employment.

3. Explain the process of determination of equilibrium income and output under Keynesian system.
4. Explain the Keynes theory of consumption.
5. Critically discuss the Keynes theory of interest.