

CHAPTER 4

The Classical Theory of Income and Employment

The postulates of classical theory are applicable to a special case only and not to the general case. Moreover, the characteristics of the special case assumed by the classical theory happen not be those of economic society in which we actually live, with the result that its teaching is misleading and disastrous if we attempt to apply it to the facts of experience.

J. M. Keynes

Before the publication of Keynes's first book on macroeconomics, viz. *The General Theory*, the doctrines which prevailed were known as the classical theory. It is worth studying the classical theory of income and employment for a simple reason. Certain aspects of the theory are relevant to the existing conditions in today's developing countries. The theory can be applied to identify those factors which determine income and employment in such countries. By contrast, the Keynesian theory does not have much relevance in explaining how income and employment are determined in developing countries like India.

Basically a Full Employment Model

As we shall see in the next and subsequent chapters, the Keynesian theory emphasises the role of aggregate effective demand in determining income and employment in advanced capitalist countries.

According to classical economists, a free market economy will always reach the state of full employment

By contrast, the classical economists postulated that a free enterprise economy would always tend toward full employment if two conditions were satisfied. First, the markets should operate freely by being guided by Adam Smith's invisible hand concept (doctrine). Secondly, the government should adopt a policy of *laissez faire*, i.e., non-intervention in economic matters.

In a free enterprise economy, where market forces were dominant, there will be no lack of demand or purchasing power, and thus no obstacle to full employment.

It may be noted that Keynes treated all his predecessors (such as Smith, Ricardo, Malthus, Mill, Marshall and Pigou) as classical economists. However, the modern view is that Marshall belonged to the neo-classical school.¹

1. The neo-classical school is also known as the marginalist school and includes Carl Menger, Leon Walras, and W. S. Jevons along with Alfred Marshall.

Some Preliminary Observations on the Classical Model

The classical theory of income (output) and employment determination is based on two basic notions.

I. The Say's Law of Markets

According to the classicists the level of income and employment is governed by fixed stock of capital and a fund from which wages are paid, called wage fund. They believed that due to the operation of a law, known as the Say's law of markets, presented by the French economist, J. B. Say in 1803, an economy would always reach the point of full employment or near-full employment. The Say's law states that 'supply creates its own demand'. This means that an increase in production achieved through

The Say's law of markets suggests that an act of supply is matched by an act of demand

an increase in society's stock of fixed capital will be sold in the market. The reason is that there will be no lack of demand for any extra output which is produced.

The reason is easy to find out. An increase in production has two sides. Firstly, it increases the supply of goods and services. Secondly, workers and capitalists, who take part in the production process, earn income by supplying labour and capital. They spend the money, which they earn, on various goods and services. So producers have no problem in selling their output. Anything which is produced automatically finds its way into the market. This means that an increase in production automatically increases money income and there is no overproduction (excess supply) or underconsumption (deficient demand) because supply creates its own demand at the same value.

Thus, when a new entrepreneur employs some workers, and buys a machine to produce a good such as bread, he pays workers and the supplier of the machine their rewards in terms of money. Therefore he not only increases the supply of bread, he also creates the demand for bread at the same time. So producers can safely accumulate capital and expand their productive capacity which will be fully utilised.

Economic Insight: Say's Law and Barter Economy

It may be noted that the Say's law holds not only in a money economy, but also in a barter economy. Let us take the case of a wheat farmer, who produces only wheat. If he is left with a surplus after meeting his consumption needs, he will exchange for certain other things, which he needs, but cannot himself produce such as cloth and shoes. Similarly, the supplier of cloth will try to dispose off his surplus output to get wheat and shoes. Thus, the basic point here is that the excess supply of any good is always matched by the excess demand for other goods. If this truly happens, there cannot exist any problem of overproduction or demand deficiency. (And demand is deficient only when supply is excess.) So the only thing producers are required to do is to produce as much as they can. This process will continue until the economy reaches the state of full employment.

Any portion of income, which is not spent on consumer goods will be saved and what is saved is invested. Thus, total expenditure has two parts — consumption and investment. And this will be equal to total output which is sum of consumer goods and capital (investment) goods. See Fig 4.1, which is self-explanatory.

If supply of consumer goods is equal to its demand, then supply of capital goods (saving) will be equal to its demand (investment)

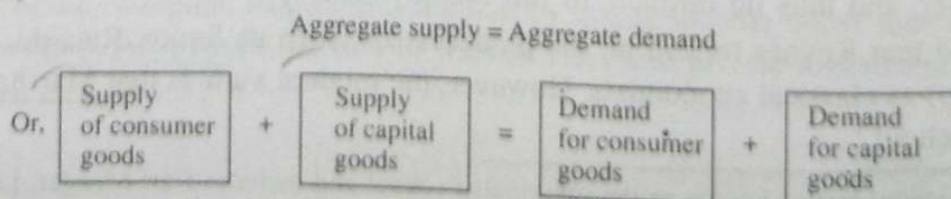


Fig. 4.1: The Balance between Aggregate Supply and Aggregate Demand

It may be noted that saving is the supply of financial capital, from which real capital such as machines are produced. Similarly, investment is the demand for capital. When a person spends money on capital goods, he creates demand for such goods. Thus, saving equals investment. In other words, the leakage from the circular flow of income in the form of saving is balanced by investment injection into the circular flow. Any discrepancy between saving (S) and investment (I) in the classical model gets corrected automatically through interest rate (r) changes. If $S > I$, r falls and if $I > S$, r rises. Therefore, ' r ' returns to the equilibrium level to balance S and I all the time. For these two reasons, i.e., balancing of the supply of consumer goods with its demand and balancing saving with investment, economy's productive capacity is fully utilised. Production does not fall due to lack of demand or purchasing power as Keynes pointed out later.

In short, classical economists believed in automatic full employment, mainly due to the operation of Say's law provided the markets function freely and the government adopts a policy of *laissez faire*. So the classical economists ruled out the possibility of unemployment. If there is any unemployment in the classical world, this will be of a purely temporary nature. This will disappear sooner or later due to the free functioning of the price (market) system in the absence of any type of government intervention in a free enterprise (capitalist) economy.

In other words, according to Say's law, aggregate demand will always be such as to ensure full employment of resources, mainly capital and labour. This means that there is always sufficient expenditure (aggregate demand) to purchase the full employment level of output of the economy.

2. Wage-price Flexibility and Full Employment

The classical theory is primarily based on the assumption that the Say's law of markets operates to balance aggregate supply with aggregate demand. The reason is that production is the only source of demand. But it also makes another assumption, viz., sufficient wage-price flexibility. To be more specific, the classicists believed that even when deficiency of demand or purchasing power arises, prices and wages would move up or down in such a way that production of goods and services, employment of labour (with a fixed stock of capital) and income would not fall.

According to the classicists, the amount of output produced by business firms depends not only on aggregate demand (expenditure) but also on the prices of their products. Even if the rate of interest fails to ensure saving-investment equilibrium, and there is deficiency of aggregate demand, prices will adjust to clear the markets. If due to saving leakage and lack of balance between saving and investment, aggregate expenditure falls and is not enough to absorb the full employment level of output, prices will fall due to intense competition among producers in the markets. Producers will be eager to reduce their prices so as to clear their unsold stocks (inventories of finished goods). So demand for products will increase. Therefore, real output (GDP) will increase and employment will not fall if the fall in aggregate expenditure is offset by an exact proportionate fall in the prices of products. And to make profits, business firms will have to pay less to the factors of production such as labour. If they cut wages and temporarily unemployed workers accept low wages, they will also be absorbed. Those workers who do not want to work at lower wages will remain voluntarily unemployed. (However, voluntary unemployment is not unemployment in the true sense. Thus, according to classical economists, there is no possibility of involuntary unemployment in a capitalist economy. All those who were willing to work will get jobs at the market-determined wage rate.)

A Formal Presentation of the Classical Model

The classical theory can be divided into two parts, viz., (1) the classical theory of output and employment and (2) the classical theory of the price level. We initially discuss the classical theory of

output and employment and take a short-term view of the economy. When we discuss the classical theory of the price level, the focus is on the Quantity Theory of Money, developed by Irving Fisher. And Fisher took a long-term view of the economy. The reason is that the theory holds only in the long run.

The Classical Dichotomy and the Neutrality of Money

Another important point may be noted in this context. The classicists divided the economy into two parts, viz., the real sector and the monetary sector. Each sector was assumed to operate independently, without having any interaction with the other. The level of employment is determined in the real sector and in the classical model, aggregate output (which is a real variable) is determined in the labour market. By contrast, the rate of interest and the price level, which are nominal variables, are determined in the money market. This is known as the **classical dichotomy**, which means **theoretical separation of nominal and real variables**. And the classical dichotomy implies **neutrality of money**. This means that an increase in the money supply by the central bank will lead to a rise in the aggregate price level. But it will have no effect on real output (GDP) or employment. It is to be noted, however, that the neutrality of money holds only in the long run and not in the short run.

The Determination of Income and Employment without Saving and Investment

We have already noted that according to the classical economists like Adam Smith and David Ricardo, the level of employment and income in a capitalist economy is determined by two things: (1) the fixed capital stock, and (2) the wage fund, from which wages are paid.

Economic Insight: Wage Fund Theory

According to the classical wage fund theory, wages are paid in advance to workers by capitalists in anticipation of the sale of their output. Wages could not be increased unless there was capital accumulation and the stock of capital increased. The stock of capital, in turn, was determined by savings. In the short run, there was a given number of workers and a given amount of savings to pay their wages. These two together determined the average wage.

According to the classical theory in the short run the level of employment and income depends on the aggregate production function in the labour market, i.e., by the supply of and the demand for labour. To show this, we assume that our hypothetical economy produces only one good, such as wheat which is not only homogeneous but divisible also. The output of this good is denoted by Y . The production of wheat requires the use of two factors, viz., (1) fixed capital which is denoted by K , and (2) labour which is denoted by L . So, the aggregate production function is written as

$$Y = F(\bar{K}, L) \quad \dots (1)$$

We also assume that in the short run, along with capital stock (i.e., plant, equipment and machinery), the level of technology and the size of the labour force¹ remain constant. In the classical model, since aggregate output is determined in the labour market, when employment of labour (L) increases, output (Y) also increases. However, since the stock of capital remains constant, an increase in employment of labour leads to a less than proportionate increase in output due to the operation of the law of diminishing returns. As more and more workers are employed, keeping capital stock constant, every extra worker gradually makes less and less contribution to aggregate output². This means that the marginal product of labour falls.

1. We rule out the possibility of growth of population in the short run. In the long run, population grows. Moreover, technology improves over time. As a result, the aggregate production function shifts upward.
2. In fact, the classical economists first discovered the operation of the law from the experience of the farmers. The law refers to the diminishing marginal product of the labour which is a variable factor.

In the classical model, employment depends on or is a function of real wage rate, which is the ratio of nominal wage rate to the general price level. It is written as —

$$\frac{W}{P} \dots (2)$$

where W is nominal wage rate and P is the general price level.

The classical economists assumed that there is perfect competition in both goods market and labour market. So a firm is a price taker in each market. Moreover it is assumed that a firm seeks to maximise profit. The classicists assumed that a profit-seeking firm will reach the point of optimal purchase of labour by equating MP_L with the real wage rate. This condition is expressed as

$$\frac{W}{P} = MP_L \dots (3)$$

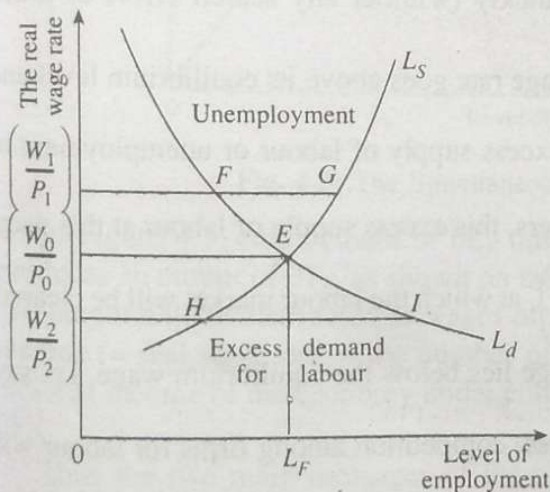
where MP_L is the marginal product of labour.

The Demand for Labour

Due to the operation of the law of diminishing returns, more workers will be employed (or more labour will be demanded) at a lower real wage rate. This is why the demand curve of labour, which is indeed the MP_L curve, slopes downward from left to right, as shown in Figure 4.2. The demand function for labour can be written as

$$L_d = f\left(\frac{W}{P}\right), \text{ with } \frac{dL_d}{d\left(\frac{W}{P}\right)} < 0 \dots (4)$$

This means that more labour will be demanded when $\left(\frac{W}{P}\right)$ is low than when it is high.



Labour Market Equilibrium
 When the labour market is in equilibrium, the level of employment and the real wage rate are determined simultaneously

Fig. 4.2: The Equilibrium in the Labour Market

The Supply of Labour

Now, we look out in the supply side of the labour market. The supply of labour in the short run depends on household choice between income and leisure (the size of the population remaining constant). Although the supply curve of labour of an individual worker may be backward bending, the aggregate supply curve of labour is upward sloping. This means that more labour will be supplied by workers when the wage rate is high than when it is low. The reason is that an increase in the wage rate generates two effects, viz., an *income effect* and a *substitution effect*. An increase in the wage rate

is equivalent to a rise in the income of the worker. The reason is that by working the same number of hours, a worker can earn more. Therefore, if real wage rises and a worker becomes rich, he will try to consume more of all normal goods and leisure is one of them. Thus, an increase in real wage rate generates more leisure preference and less work preference. And, if considered in isolation the number of hours worked by an individual will fall due to income effect of a rise in the wage rate. At the same time, a rise in the hourly real wage rate implies an increase in the opportunity cost of leisure. For every hour of leisure that a worker enjoys, he loses more in terms of opportunity loss.

According to the classical economists, the substitution effect of a rise in $\frac{W}{P}$ is stronger than the income effect. This means that the supply of labour increases when the wage rate rises. So, the supply function of labour may be expressed as

$$L_s = g\left(\frac{W}{P}\right), \quad \text{with} \quad \frac{dL_s}{d\left(\frac{W}{P}\right)} > 0 \quad \dots (5)$$

Labour Market Equilibrium

In Figure 4.2 (p. 85), the labour market reaches equilibrium at point E where the demand curve of labour intersects the supply curve. At equilibrium, the level of employment is OL_F and the equilibrium

real wage rate is $\left(\frac{W_0}{P_0}\right)$. Thus, in the classical theory, the level of employment is determined by the

equilibrium in the labour market. Here OL_F implies full employment of labour. Thus, in the classical theory, there is no involuntary unemployment. In other words, those who are willing to work get jobs and workers have substantial choice of jobs. This means that if some workers lose their jobs temporarily,

In the classical model, at the equilibrium real wage rate, all those who are willing to work are, in fact, employed

they will get alternative jobs quickly (without any search effort or much waiting).

If, however, the actual real wage rate goes above its equilibrium level and is, say $\left(\frac{W_1}{P_1}\right)$, there will be an excess supply of labour or unemployment of

FG in Figure 4.2. However, due to competition among workers, this excess supply of labour at this wage

will cause the real wage rate to fall to the original level $\left(\frac{W_0}{P_0}\right)$, at which the labour market will be cleared.

The converse is also true. If, for some reason, the actual wage lies below the equilibrium wage, i.e. say,

$\left(\frac{W_2}{P_2}\right)$ there will be a shortage of labour (of HI). In this case, competition among firms for labour will

push the real wage rate up to the equilibrium level and the labour market will be cleared once again.

Thus two main points about the functioning of the classical labour market are:

1. Full employment prevails at the equilibrium real wage rate.¹
2. Wage flexibility brings about labour market equilibrium and ensures full employment. Thus, in the classical model, there is automatic full employment (even in the absence of any government intervention in the labour market).

1. In the classical model, labour market equilibrium and full employment are the same thing. However, as we will see in the later chapter, in the Keynesian model, equilibrium may occur even at less-than-full employment. In fact, Keynes developed the concept of underemployment equilibrium.

Output Determination

Since labour is the only variable factor in the classical model, aggregate output (GDP) is determined in the labour market. In other words, from the aggregate production function $Y = F(\bar{K}, L)$ or $Y = F(L)$, ignoring K since it remains constant in the short run, we can determine how much output will be produced in the full employment situation. This is shown in Figure 4.3. Here we add the aggregate production function in the bottom half of Figure 4.2 to get a clear picture of the economy, as described by the classicists. The curvature of the production function indicates the operation of the law of diminishing returns.

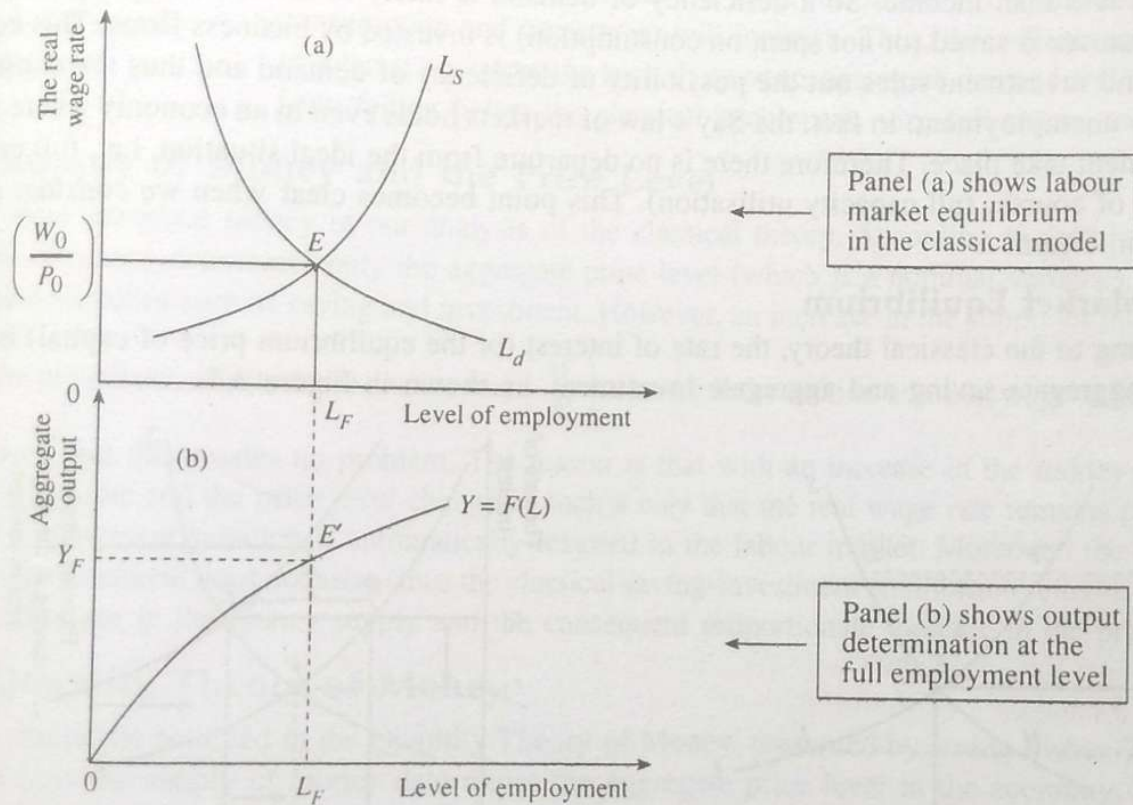


Fig. 4.3: The Simultaneous Determination of Employment and Output

In Figure 4.3, employment of OL_F units of labour (shown on the horizontal axis of both panels) produces an output of OY_F , as shown on the vertical axis of panel (b). The revenue generated by selling this output will be distributed as wages of workers and profits of the capitalists. The sum of total wage income (= real wage rate \times the number of workers employed) and total profit income will constitute national income of the economy under consideration. Thus, national income is equal to national output OY_F .

Thus the two main messages of the classical model are the following:

1. Sufficient wage flexibility ensures that demand for labour is equal to its supply and labour market equilibrium occurs at full employment of labour.
2. With fixed capital stock and unchanged technology, total output at full employment is equal to equilibrium value of national income.

The Operation of Say's Law Once Again

It may also be noted that wages earned by OL_F units of labour and profits earned by entrepreneurs will be spent on aggregate output OY_F . Thus, once again, aggregate demand is equal to aggregate supply. This means that the Say's law (which states that supply creates its own demand) holds and full employment of labour is automatically ensured.

So long we have ignored saving and investment from the classical system. This means that there is no leakage from the circular flow of income, i.e., whatever is earned by factor owners — workers and capitalists — is fully spent on what is produced in the economy. This is another reason why full employment of labour is ensured in the classical theory. However, the main prediction of the classical theory (that the economy will always reach full employment) will still hold if we consider saving and investment. It is to this issue that we turn now.

Income (Output) Determination with Saving and Investment

In reality, a part of income earned in economy per period is saved. As a result consumption spending is less than income. So a deficiency of demand is likely to arise. But classicists pointed out that whatever is saved (or not spent on consumption) is invested by business firms. This equality of saving and investment rules out the possibility of deficiency of demand and thus the consequent involuntary unemployment. In fact, the Say's law of markets holds even in an economy where saving and investment take place. Therefore there is no departure from the ideal situation, i.e., full employment (and, of course, full capacity utilisation). This point becomes clear when we consider capital market equilibrium.

Capital Market Equilibrium

According to the classical theory, the rate of interest (or the equilibrium price of capital) is determined by aggregate saving and aggregate investment, as shown in Figure 4.4.

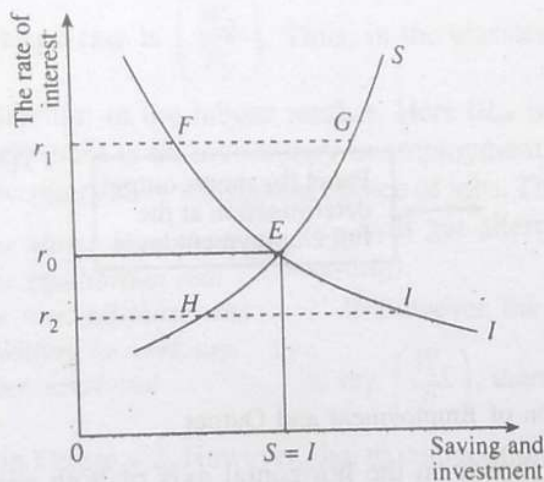


Fig. 4.4: Interest Rate Determination

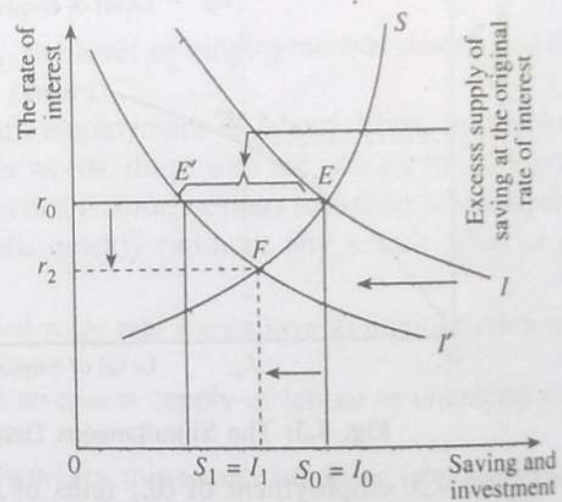


Fig. 4.5: Disequilibrium in the Capital Market and the Adjustment Process

It may be noted that here capital refers to financial capital and the capital market refers to the market for loanable funds. So the rate of interest is the price of loanable funds. Here we take saving as the supply of financial capital or loanable funds and the investment as the demand for the same. People save more at higher rates of interest since saving requires sacrifice of current consumption. This is why the saving schedule S is upward sloping. But business firms invest more when the rate of interest is low than when it is high since it is cost of borrowing loanable funds. This is why the investment schedule I is downward sloping.

The two curves meet at point E and the equilibrium rate of interest r_0 is determined. And saving is equal to investment at this rate of interest.

Now, if for some reason such as expectation of a recession and the consequent fall in the expected rate of return on new investment, the investment demand schedule shifts to the left, as shown in Figure 4.5, there will be movement along the same saving schedule. So the capital market reaches equilibrium

at point F and a new equilibrium rate of interest r_2 is established. Even, at this rate of interest, saving is equal to investment.

In fact, due to the leftward shift of the investment schedule, there is excess supply of saving of

In the classical model changes in the rate of interest bring about saving-investment equality and ensures that aggregate demand is equal to aggregate supply at full employment of labour

$E'E$ at the original rate of interest r_0 . This will depress the rate of interest and cause it to fall to r_2 , at which the capital market is cleared once again.

Thus, it is clear that even if investment demand falls due to deteriorating profit prospects in the context of an impending economic downturn (recession), there is no threat to full employment in the classical model due to deficiency of demand. The reason is that at a lower rate of interest (r_2 instead of r_0), both consumption and investment will increase. Thus, the adjustment of the rate of interest now does the trick. It prevents aggregate demand and employment from falling below the classical benchmark, viz., full employment.

The Supply of Money and the Price Level

We now introduce money in our analysis of the classical theory. According to the classicists, the quantity of money determines only the aggregate price level (which is a nominal variable). It does not affect real variables such as saving and investment. However, an increase in the supply of money, which

raises the price level, affects the real wage rate $\left(\frac{W}{P}\right)$, since it is the ratio of nominal wage to the aggregate

price level. But this creates no problem. The reason is that with an increase in the money supply, the money wage rate and the price level change in such a way that the real wage rate remains constant. So the full employment situation is automatically restored in the labour market. Moreover, the problem of deficiency of demand does not arise since the classical saving-investment equilibrium remains unchanged with an increase in the money supply and the consequent proportionate increase in the price level.

The Quantity Theory of Money

The classicists believed in the Quantity Theory of Money, presented by Irving Fisher. This theory explains how the supply of money determines the aggregate price level in the economy. The Fisher version of the quantity theory of money is written as:

$$MV = PY$$

$$\text{or, } P = \frac{MV}{Y},$$

where M = the quantity of money,

V = the velocity of circulation of money,

Y = the aggregate output (or real GDP or national income) and

P = the aggregate price level which is a weighted average of all prices.

The velocity of circulation refers to the rate of money turnover, i.e., the number of times a unit of money (such as a ten rupee note) is used for purchasing final goods and services per period, say one year.¹ It depends on people's spending behaviour. And, in the short run, we do not expect any sudden changes in such behaviour in a normal year. This is why the classicists quite reasonably assumed that velocity remains constant in the short run.

Moreover, the classicists assumed that the aggregate output (Y) remains constant in the short run due to the assumption of full employment of labour, constant stock of capital, and unchanged

1. Another concept is, income velocity of money which shows the number of times a unit of money is received as income. Since, in a money-based economy, one person's expenditure is another person's income, the same unit of money may be received by a number of persons during a year.

technology. Full employment is automatically ensured due to the operation of Say's law and wage-price flexibility. This is why the classical aggregate supply curve is vertical, as shown in Figure 4.6.

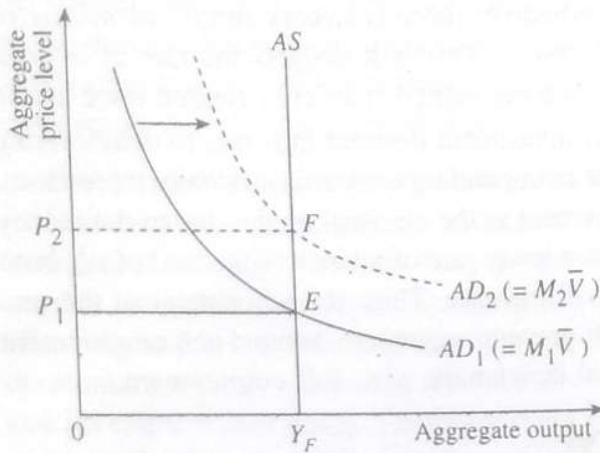


Fig. 4.6: The Effect of an Increase in the Money Supply on the Aggregate Price Level

In this figure, we measure the aggregate output on the horizontal axis and the aggregate price level on the vertical axis. Here, the economy is initially in the equilibrium at point E , where the original aggregate demand curve AD_1 intersects the vertical aggregate supply curve AS at point E . Aggregate demand is equal to the original supply of money (M_1) times constant velocity (\bar{V}). Now, if the money supply increases from M_1 to M_2 (V remaining constant at \bar{V}), aggregate demand increases from AD_1 to AD_2 . This is shown by an upward shift of the aggregate demand curve. As a result, aggregate output remains constant at Y_F , but the price level goes up proportionately from P_1 to P_2 . A simple example will make the point clear.

Suppose, $M_1 = \text{Rs. } 1,000$ crores, $\bar{V} = 5$. Then $M_1 \bar{V} = \text{Rs. } 5,000$ crores. Suppose, $Y_F = \text{Rs. } 2,500$. So,

$$P_1 = \frac{M_1 \bar{V}}{Y_F} = \frac{\text{Rs. } 5,000}{\text{Rs. } 2,500} = 2. \text{ Now, if } M_2 = \text{Rs. } 2,000, \text{ then } P_2 \text{ will be } \text{Rs. } 10,000 / \text{Rs. } 2,500 = 4. \text{ Thus,}$$

a doubling of M exactly doubles P . In fact, the main message of the classical quantity theory of money is that, if Y and V remain constant in the short run (for reasons already explained), an increase in the supply of money by a certain percentage will lead to an exact proportionate increase in the aggregate price level. From this discussion, emerge two important points:

1. Inflation: According to the quantity theory of money, inflation is a purely monetary phenomenon. *Inflation is a purely monetary phenomenon* And as Milton Friedman, who restated the quantity theory of money in 1958, commented: "Inflation is always and everywhere a purely monetary phenomenon." The rate of inflation accelerates when the rate of growth of money supply increases and it slows down when the central bank reduces the supply of money or holds its growth rate in check.

Money has a neutral effect on real variables

2. Neutrality of money: Money affects only the aggregate price level, which is a nominal variable. It does not affect real variables such as aggregate employment or output (income). This is known as the neutrality of money which follows from the classical dichotomy, mentioned earlier.

The Effect of Changes in Money Supply on Saving-Investment Equilibrium

It may also be noted that in the classical model, money is demanded only for transaction purposes, i.e., for buying goods and services. Money does not play any role in interest rate determination. So any increase in the money supply will have no effect on the equilibrium rate of interest because it leaves saving-investment equilibrium unchanged. If the money supply increases, the price level will rise proportionately. So the money value of output will also increase proportionately, leading to a proportional increase in consumption, saving and investment. This means that the new higher level of saving (in terms of money) will again be equal to the new highest level of investment. Since both the saving and investment schedules will shift to the right by the same proportion, the equilibrium rate of interest will remain unchanged and saving-investment equilibrium will occur at the same amount of real saving and investment, even if their nominal value is now high due to rise in the price level, as shown in Figure 4.7.

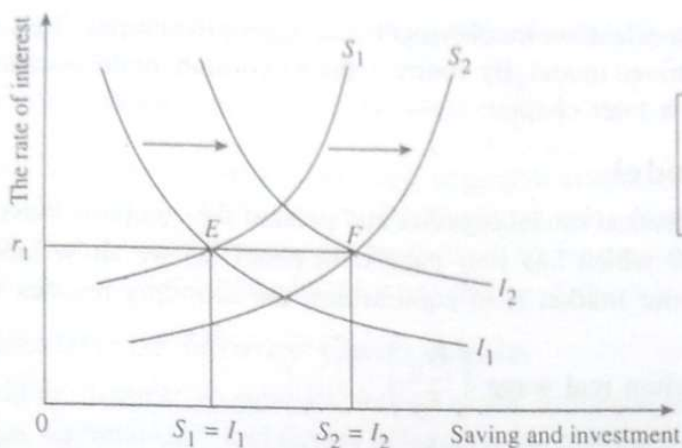


Fig. 4.7: Constancy of the Rate of Interest

The Aggregate Supply Curve

In the classical theory, aggregate output is determined from the supply-side. Aggregate demand plays no role in the process. The supply-side forces include the fixed capital stock, the supply of labour and constant technology. The level of employment and the real wage rate are determined simultaneously by the supply of labour and the demand for labour. Since equilibrium in the labour market implies full employment, aggregate output remains constant in the short run since it is determined in the labour market on the basis of the aggregate production function $Y = F(L)$, capital stock remaining constant at \bar{K} and the state of technology remaining unchanged. Full employment of labour ensures that the economy's actual output is equal to its full employment output.

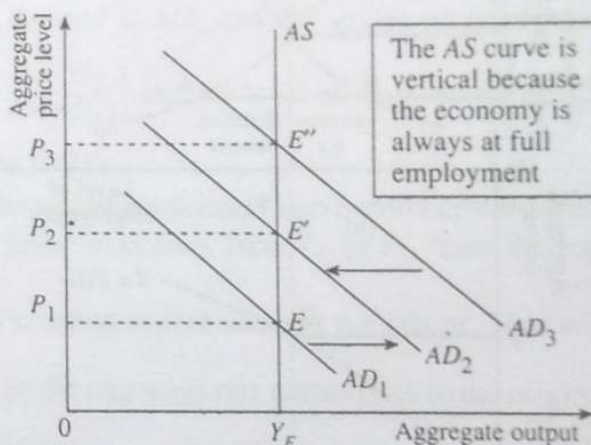


Fig. 4.8: The Vertical Classical AS Curve

In Figure 4.8, we see that the aggregate supply curve is vertical. The reason is that full employment of labour fixes the level of output in the classical model. Now, if aggregate demand increases and the aggregate demand curve shifts upward or downward, only the aggregate price level rises or falls, with aggregate output remaining constant at OY_F . This full employment output is also called the potential output of the economy.¹

The aggregate supply curve is vertical in the classical model because any change in aggregate demand only affects P, not Y.

unchanged, but the real wage

A proportional increase in the price level and in nominal wage rate will leave the real wage rate unchanged and will have no effect on aggregate output and employment

In the classical model a rise in the price level brought about by an increase in the money supply, has no effect on employment and output for a very simple reason. If the price level rises, the nominal wage will remain unchanged, but the real wage will fall. As a result the demand for labour will exceed supply. And due to competition among firms the nominal wage will rise. It will continue to rise until and unless the original real wage is restored, the labour market reach full employment equilibrium once again and the economy's actual output comes back to its potential (full employment) level. Thus a doubling of the price level and nominal wage at the same time will leave the real wage

constant: $\frac{2W_1}{2P_1} = \frac{W_1}{P_1}$. This means that a proportional increase in the price

1. Modern economists like Milton Friedman and E. Phelps call it 'the natural rate of output'.

level and nominal wage will have no effect on employment and aggregate output. This is why the classical model is called supply-determined model. By contrast, the Keynesian model is called demand-determined model, as we will see in a later chapter.

The Complete Classical Model

We now put all the pieces of the classical model together and present the complete classical model. The model is presented in Figure 4.9 which has four panels. In panel (a) we show labour market equilibrium at point E . When the labour market is in equilibrium, the economy reaches the state of

full employment (OL_F) at the equilibrium real wage $\left(\frac{W_0}{P_0}\right)$.

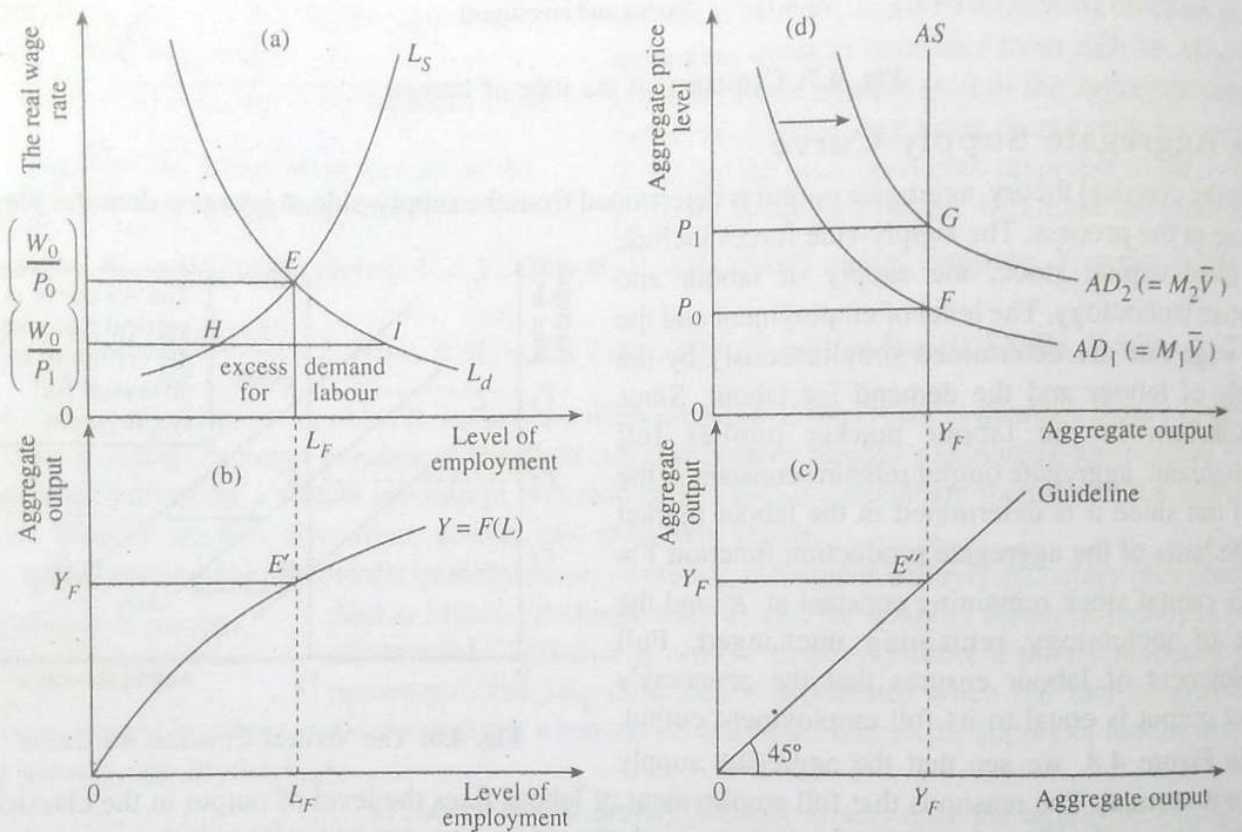


Fig. 4.9: The Determination of Income and Employment in the Complete Classical Model

Aggregate output corresponding to this level of employment is shown in panel (b). Here OY_F is full employment output measured in the vertical axis. In panel (c), we have drawn a 45° guideline just to transfer aggregate real output from the vertical to the horizontal axis. Thus, this panel does not convey any message to us in the true sense. It only shows that OY_F on the vertical axis is the same as OY_F on the horizontal axis. In panel (d), we have reproduced Figure 4.6 which is a graphical representation of the Quantity Theory of Money and shows how the aggregate price level is determined by the supply of money (Y and V remaining constant for reasons already explained). With the aggregate price level

P_0 , and the nominal wage W_0 , the real wage rate $\left(\frac{W_0}{P_0}\right)$ is determined in the labour market, as shown in panel (a) by the demand for labour (which is determined by marginal product of labour) and the supply of labour (which is determined by leisure-labour choice).

If the money supply increases, the price level rises from P_0 to P_1 in panel (d). This causes the real wage rate to fall from $\left(\frac{W_0}{P_0}\right)$ to $\left(\frac{W_0}{P_1}\right)$ in panel (a). As a result, there is excess demand for labour.

This will cause the nominal wage rate to rise proportionately from W_0 to W_1 so that the real wage rate rises to $\left(\frac{W_1}{P_1}\right)$ and is equal to the original wage $\left(\frac{W_0}{P_0}\right)$. Since the real wage rate quickly comes back to the original level, employment (OL_F) and aggregate output (OY_F) remain unaffected. Thus, we see that a rise in the money supply causes the aggregate price level to rise proportionately. As a result the real wage rate remains unchanged. So there is no reason why employment and aggregate output will be affected. The same thing happens in reverse if there is a decrease in the money supply.

The Neutrality of Money Once Again

According to classical economists, money exerts influence only on the nominal variables such as nominal wage, nominal GNP and money balances (cash holding by individuals and firms for transaction purposes). Money has no influence on real variables such as real wage, real GNP and real balances (nominal balances divided by the aggregate price level). The real variables are determined by real factors such as the stock of capital, the state of technology, the productivity of labour and households' preference for work and leisure.

We can illustrate the neutrality of money by referring to Figure 4.9 once again. When the initial stock of money in the economy is M_0 , the aggregate demand is AD_0 and the aggregate price level is P_0 in panel (d). At this price level, the real wage rate is $\left(\frac{W_0}{P_0}\right)$ and the level of employment is OL_F in panel (a). And the corresponding output in panel (b) is OY_F .

Now if the money supply increases from M_0 to M_1 , the aggregate demand curve shifts upward from AD_0 to AD_1 in panel (c). Consequently, the aggregate price level rises from P_0 to P_1 . Now the real wage rate will fall from $\left(\frac{W_0}{P_0}\right)$ to $\left(\frac{W_0}{P_1}\right)$ in panel (a) creating excess demand for labour. This will cause the money wage rate to rise proportionately to W_1 . So the real wage rate comes back to the original level. Here $\frac{W_0}{P_0} = \frac{W_1}{P_1}$. So the labour market equilibrium remains unaffected. Full employment of the labour force (OL_F) is maintained and full employment output (OY_F) is produced. Thus an increase in the money supply does not affect the level of employment and aggregate output (real GNP). This shows that money has a neutral effect on the economy for a very simple reason. When the money supply increases, the nominal wage rate and the aggregate price level rise proportionately, leaving the real wage rate, the level of employment and aggregate real output unchanged at the original level.

Keynes's Criticisms of the Classical Theory

In his *General Theory*, Keynes severely criticised the classical theory of income and employment. His main criticisms against the classicists are the following:

1. Challenge of Say's Law: The Say's law of market states that 'supply creates its own demand.' So the classical model is supply side model. But Keynes argued that during depression, Say's law does not work. The root cause of depression and unemployment, according to Keynes, is low demand or purchasing power. And the solution to the problem lies in creating demand and thus increasing aggregate expenditure. Thus, according to Keynes in times of depression demand creates its own supply.

In times of depression and unemployment, demand creates its own supply

Therefore the Keynesian model, to be discussed separately in two later chapters, is a demand-determined model. During depression, due to low expectations of profits, entrepreneurs do not want to make new investment. So investment is not equal to saving. Rather saving is greater than investment.

This means that aggregate private demand, which is the sum of household consumption expenditure and business investment, is not sufficient to buy aggregate output. So producers will be left with unsold stock(s). Their profits will fall and they will reduce production and employ less workers than they do in normal times. This will give rise to the problem of involuntary unemployment.

There is the possibility of involuntary employment in times of depression

2. Saving-investment equality:

Income changes, rather than changes in the rate of interest, ensures saving-investment equality

Keynes's second criticism of the classical theory is that saving-investment equilibrium cannot be ensured by interest rate changes. The reason is that saving mainly depends on income. So saving-investment equality is brought about by income changes. But the classical economists ruled out the possibility of income change due to their assumption of automatic full employment brought about market forces.

According to Keynes there can be divergence between aggregate saving and aggregate investment for three reasons. Firstly, savers (households) and investors (business firms) are separate economic entities. Secondly, the motives for saving and investment are diverse. Thirdly, the determinants of saving and investment are different. The capacity to save depends on income, but the desire to save depends on the rate of interest. By comparison, investment mainly depends on the expected rate of return on new investment or, what Keynes calls, the marginal efficiency of capital. Since marginal efficiency of capital fluctuates in different phases of the business cycles, we find volatility of investment, which, in its turn, leads to income changes. And changes in income lead to changes in saving. So any divergence between saving and investment gets corrected through income changes.

However, if investment falls due to a fall in business firms' profit expectations, aggregate demand will not be equal to aggregate supply. So there is always the possibility of involuntary unemployment in a capitalist economy, since the self-adjusting market mechanism does not work all the time. The economy can reach equilibrium at less than full employment and Keynes first introduced the concept of *underemployment equilibrium*.

According to Keynes, equilibrium income and full employment income are not the same thing

3. Wage cut and full employment:

Keynes also criticised the view of A.C. Pigou regarding wage cut. In Pigou's view, a cut in wage in an industry (such as automobiles) will increase employment and income. The reason is that a policy of wage cut will lead to a fall in cost of production and thus a fall in price of the product of the industry. So more demand will be generated for the product not just from the workers of the same industry but also from workers in various other industries (such as food and textiles). But an economywide wage cut will lead to a sharp fall in aggregate demand. The reason is that workers constitute the majority of the population and wage income is the main component of a country's national income. Thus even if the wage rate is completely flexible, involuntary unemployment will arise if there is deficiency of demand due to fall in the income of the workers.

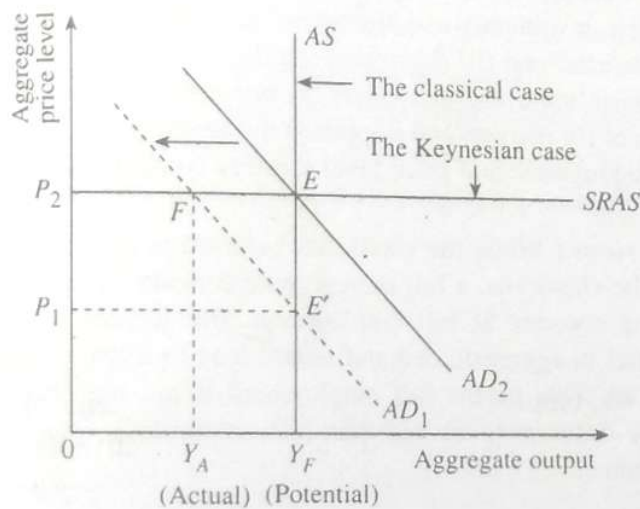
4. Partial vs general equilibrium approach: One major flaw of the classical theory is that it wrongly assumes that what is true of an industry is equally true of the whole economy. This is known as the fallacy of composition, as noted in Ch. 1. The truth is that the classicists analysed the reaction of only one industry to a wage cut, ignoring the reactions of all other industries. This is known as the partial equilibrium approach. Partial equilibrium means equilibrium of one sector at a time, while ignoring all other sectors for the time being. But this approach is not valid for determining income and employment for the whole economy. The determination of aggregate output and employment can be explained by a much broader approach, called the general equilibrium approach. And this is the approach which Keynes adopted in his *General Theory*. General equilibrium means equilibrium of all the sectors at the same time. In the first, there is only price adjustment, and in the second, there is only output adjustment.

The determination of aggregate output and the level of employment calls for a general equilibrium approach

Price Flexibility and Unemployment: A Comparison of the Two Views

We now make a comparison between two types of adjustment process — the classical and the Keynesian: In 1933, Pigou published his book: *The Theory of Unemployment*. In his book he argued that wage-price flexibility ensures automatic full employment. Any unemployment, which exists at any time, is basically frictional in nature. Such unemployment prevents the appropriate wage and price adjustments to be made instantaneously (i.e., without any delay).

By contrast, according to Keynes, who challenged Pigou's view in 1936 (just three years later), there are two obstacles to full employment in times of depression, viz., (1) a fall in aggregate demand, and (2) downward rigidity (inflexibility) of prices and wages. These two factors together lead to decline in real output and employment. Therefore, the possibility of the emergence of involuntary unemployment arises. Now, the two views—classical and Keynesian — may be compared in a single diagram. In Figure 4.10, we use the aggregate supply-aggregate demand framework to make this comparison.



In the classical theory a fall in aggregate demand leads to a fall in aggregate price level, since output cannot adjust from its full employment level. By contrast, in Keynes's view, a fall in aggregate demand will lead to a fall in aggregate output, leaving the aggregate price level unchanged

Fig. 4.10: The Classical and Keynesian Views on Unemployment

Here AS is classical aggregate supply curve, which is vertical at the full employment (potential) level of output (real GNP). By comparison, the Keynesian short-run aggregate supply ($SRAS$) curve is the horizontal line due to wage-price stickiness. The economy is initially in equilibrium at point E , where the aggregate demand curve AD_2 intersects the $SRAS$ curve. So the aggregate price level is OP_2 at the full employment level of output. Now suppose the economy is hit by a fall in investment demand or a contraction of the money supply by the central bank. This leads to a leftward shift of the aggregate demand curve from AD_2 to AD_1 . Now in the classical framework, only one outcome is possible. The economy will reach a new equilibrium at point E' , where the new price level OP_1 is less than the original price level OP_2 . By contrast, according to Keynes, the price level cannot adjust due to downward inflexibility of wages and prices. So if aggregate demand falls, aggregate output will fall from OY_F to OY_A , as shown by point F in Figure 4.10. This means that downward rigidity of wages and prices can cause involuntary unemployment in case of a fall in aggregate demand.

Thus, according to Keynes, there are two obstacles to full employment:

1. Fall in aggregate demand and
2. Downward rigidity of wages and prices

Need for a Separate Theory

Due to the above shortcomings of the classical theory, there was need for the development of a new theory of income and employment. Keynes presented such a theory, called the general theory of income, employment and prices, in 1936. And Keynes's ideas brought about some sort of revolution in economic thinking, known as the Keynesian revolution. Keynes developed several new concepts

such as marginal propensity to consume, marginal efficiency of capital and liquidity preference which affect the level of aggregate income and employment in a capitalist economy. It is to this new and path-breaking approach to the study of macroeconomics that we turn in the next chapter.

KEY POINTS

1. **Say's law** : The Say's law of markets states that supply creates its own demand. So there is no possibility of overproduction or underconsumption.

2. **Full employment** : According to the classical economists, a free market based (capitalist) economy has always a tendency to reach full employment in the absence of government intervention. There are two reasons for this: (a) the operation of the Say's law of markets, and (b) sufficient wage-price flexibility.

3. **Keynes's criticisms of classicists** : Keynes criticised the classical doctrines on several grounds. According to Keynes, during depression, demand creates its own supply. So the Say's law of markets does not work. So the Say's law of markets does not work. In Keynes's view, involuntary unemployment is a real threat to a capitalist economy for two main reasons: (i) fall in aggregate demand and (ii) downward rigidity of wages and prices. A policy of wage cut will worsen the depression and create more unemployment by reducing aggregate demand. Keynes did not believe in the self-adjusting mechanism of the markets and suggested the adoption of expansionary fiscal policy to promote economic stability, i.e., full employment and price level stability (since monetary policy does not work at such times).

4. **A comparison of the classical and Keynesian views** : While the classicists believed in price adjustment, Keynes believed in output adjustment. According to the classicists, a fall in aggregate demand leads to a fall in the aggregate price level, aggregate output remaining constant at full employment. But Keynes believed in downward rigidity of wages and prices. Therefore a fall in aggregate demand would lead to a fall in aggregate output, the aggregate price level remaining unchanged. This means full employment is not the only logical possibility in a capitalist economy. Equilibrium may occur even at less-than-full employment. And Keynes developed the concept of underemployment equilibrium.

KEY TERMS

Say's law of markets

Laissez faire

Neutrality of money

Full employment

Aggregate demand

Velocity of circulation of money

Aggregate price level

Price-wage flexibility

Invisible hand

Classical dichotomy

Downward rigidity of wages and prices

Saving and investment

Real GDP

Underemployment equilibrium

ASSIGNMENTS

1. What is Say's law of markets? Can the operation of the law prevent the emergence of involuntary unemployment in the classical model?
2. How does the Say's law operate (a) in a barter economy and (b) in a money economy?
3. How did Keynes challenge the validity of the Say's law?
4. Briefly discuss the classical theory of income and employment. How does the theory justify the proposition that a free enterprise economy will always reach the point of full employment?
5. What do you mean by price-wage flexibility? Do you think that sufficient price-wage flexibility will ensure automatic full employment in a free market capitalist economy?
6. How does Keynes differ from Pigou's view that a cut in wages will restore full employment?
7. What is aggregate demand? Will aggregate demand be sufficient to purchase the aggregate output of society even if households do not spend their entire income (and save a certain portion of it)?