Manonmaniam Sundaranar University

Directorate of Distance and Continuing Education

Tirunelveli – 627 012. Tamil Nadu.

M.A. Economics

(First Year)

MACRO - ECONOMIC THEORY AND ANALYSIS - II

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MACRO-ECONOMIC THEORY AND ANALYSIS - II

Course Objectives:

1. To develop the knowledge on theories, models and policies governing the function of the different domains of macroeconomic system.
2. To provide the knowledge on the macroeconomic techniques.
3. To identify the different views on interest.

Unit -1: Neo- Classical and Keynesian Synthesis:

Neo-Classical and Keynesian views on interest; the IS-LM model; Extension of IS-LM model with government sector-The Classical Vs Keynesian model of Income and Employment-Savings and Investment equality-Keynesian theory of Income, Output and Employment.

Unit - II: Post-Keynesian Demand for Money:

Post-Keynesian approaches to demand for money - Approaches of Baumol and Tobin - Keynes's Reformulated Quantity theory of money - Crisis in Keynesian Economics and the revival of monetarism.

Unit - III: Modern Keynesian Macro Economics:

Central Proposition of Keynesian macroeconomics - Mundell - Fleming model-The Great Recession and the Revival of Keynesian Macro Economics.

Unit - IV: New Keynesian Economics:

Core proposition of new Keynesian Macro Economics - Wage and price rigidities - Policy Implications of New Keynesian Economics.

Unit - V: Macro Economic Policies:

Goal of Macro Economic Polices - Monetary and Fiscal Policy - Effectiveness of Monetary and Fiscal Policy - IS-LM model with labour market and flexible prices - IS-LM model in the Keynesian Analysis.

Course Outcome:

1. To evaluate a critical insight on classical and Keynesian macroeconomic models.
2. To know the contribution of Baumol and Tobin Approaches.
3. To construct a sound knowledge on macroeconomic policies.
4. Have a good understanding of IS-LM model with labour market.

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UNIT - I

NEO- CLASSICAL AND KEYNESIAN SYNTHESIS

1.1. NEO CLASSICAL SYNTHESIS

1.1.1. Introduction

The term 'neoclassical synthesis' appears to have been coined by Paul Samuelson to denote the consensus view of macroeconomics which emerged in the mid-1950s in the United States. This synthesis remained the dominant paradigm for another 20 years, in which most of the important contributions, by Hicks, Modigliani, Solow, Tobin and others, fit quite naturally. The synthesis had, however, suffered from the start from schizophrenia in its relation to microeconomics, which eventually led to a serious crisis from which it is only now re-emerging. I describe the initial synthesis, the mature synthesis, the crisis and the new emerging synthesis. The term 'neoclassical synthesis' appears to have been coined by Paul Samuelson to denote the consensus view of macroeconomics which emerged in the mid-1950s in the United States. In the third edition of Economics (1955, p. 212), he wrote: In recent years 90 per cent of American Economists have stopped being 'Keynesian economists' or 'anti-Keynesian economists'. Instead they have worked toward a synthesis of whatever is valuable in older economics and in modern theories of income determination. The result might be called neo-classical economics and is accepted in its broad outlines by all but about 5 per cent of extreme left wing and right wing writers. Unlike the old neoclassical economics, the new synthesis did not expect full employment to occur under laissez-faire; it believed, however, that, by proper use of monetary and fiscal policy, the old classical truths would come back into relevance. This synthesis was to remain the dominant paradigm for another 20 years, in which most of the important contributions, by Hicks, Modigliani, Solow, Tobin and others, were to fit quite naturally. Its apotheosis was probably the large econometric models, in particular the MPS model developed by Modigliani and his collaborators, which incorporated most of these contributions in an empirically based and mathematically coherent model of the US economy. The synthesis had, however, suffered from the start from schizophrenia in its relation to microeconomics.

1.1.2. NEO CLASSICAL THEORY OF RATE OF INTEREST

1.1.3. Introduction

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

The classical theory did not take into consideration the importance of monetary factors like cash, credit, hoardings etc. The fact that the demand for money may also arise from the desire to hoard, was not given any heed in the classical theory of the rate of interest. It regarded interest as the function of saving and investment and may be expressed as $i = f$ (S, I). The loanable funds theory takes into account the role of the credit and hoarding, and considers the rate of interest to be the function of four variables—saving (S) investment (I), the desire to hoard (L) and the amount of money (M), expressed as : i = f(S, I, L, M). The supply of loanable funds comes from four basic sources namely, savings, dishoarding, bank credit and disinvestment.

Savings:

Savings by individuals or households constitute the most important source of loanable funds.

Savings are visualized in two ways:

Firstly, as ex-ante savings, i.e., savings planned by individuals at the beginning of the period in the hope of expected incomes and expected expenditures on consumption. **Secondly**, savings are thought of in the Robertsonian sense i.e., the difference between the income of the preceding period and the consumption of the present period. In either case the quantum of savings varies at different rates of interest. At a given level of income, the larger would be the savings, the higher is the rate of interest and vice versa. Like individuals and households, business firms also save. A part of the profits of these business houses is distributed as dividend and the rest

constitutes corporate savings. Such savings depend partly on the current rate of interest. A higher rate of interest stimulates business savings as a substitute for borrowing from loan market. But such corporate savings are often invested by the firms themselves and, therefore, do not constitute loanable funds.

Dishoarding:

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

Bank credit:

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

Disinvestment:

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

Similarly, the demand for loanable funds comes from three sources.

Investment:

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

Consumers:

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

Liquidity:

The third source of demand for loanable funds comes from those who want to hold idle cash balances for satisfying their desire for liquidity. At higher rate of interest, people will hold less on account of the higher loss involved in holding cash balances while at a lower rate of interest people will hold more money because the loss involved is not much. Thus, in the market there are lenders who supply loanable funds and there are borrowers who demand loanable funds. Rate of interest will be such as will bring the demand for and supply of loanable funds into equilibrium. The loanable funds theory filled in the deficiencies of the old classical theory of interest by taking into consideration the role of credit on the rate of interest.

By linking it with liquidity preference (L), quantity of credit (M), saving and investment, the theory has generated greater realism because the supply of loanable funds is not the same thing as the supply of saving, for, in addition to saving, account must also be taken of the changes in the quantity of money as a result of expansion and contraction of bank credit. The neo-classical formulation of loanable funds theory of interest represents an improvement on the classical theory, in as much as the term 'loanable funds' is wider in scope and includes, in Robertsonian language, not only voluntary savings (i.e., savings out of disposable income as used by Pigou) but also borrowed bank funds and activated idle balances (dishoarded money). There is, therefore, to all intents and purposes, not much difference between the two theories except that the term 'loanable funds' replaces the terms 'saving' or 'capital'. Actually speaking, the Pigovian supply schedule of savings amounts to the same thing as the Robertsonian or Swedish supply schedule

of loanable funds. The classical theory of interest—the time preference theory—is the real theory of interest, while the neo-classical theory known as the loanable funds theory, is a monetary theory of interest. Except for this, there is no material difference and it is unnecessary to distinguish any more between the two theories; they can, therefore, be used interchangeably.

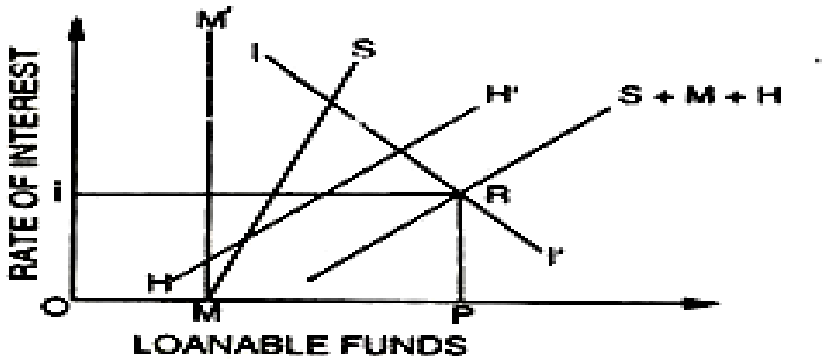

Fig.1.1. Loanable Funds theory

Fig. 1.1. Shows that II' is the demand curve for loanable funds and shows the demand for investment in durable capital and consumer goods. MM 'is the total supply of bank money Which is determined by the monetary authority and is assumed to be independent of interest rate and is more or less fixed for h purposes of simplification, therefore, MM' is vertical (according to loanable fund theorists, M is regarded as a variable dependent on the rate of interest and the curve showing the quantity of money could be upward sloping showing the dependence of M on the rate of interest; whereas, according to strict Keynesian version, M is an independent variable and is represented by a vertical curve showing that the quantity of money is more or less fixed by the central bank). S curve is the supply curve of current savings (out of disposable income). It is somewhat elastic to changes in interest rates though not very elastic (because savings depend upon income). The curve HH' is the supply curve of funds resulting from dishoarding. It is supposed to be elastic to changes in interest rates (in accordance with liquidity preference theory). Thus, by adding the three curves, we get a curve S + M + H called the supply curve of loanable funds. Where the demand (II') and supply curves S + M + H intersect, the rate of interest is determined i.e., RP = Oi. Again, let us note that II' curve in the above diagram could also be shown as I + L curve to include the demand for idl cash balances in the total demand for loanable

funds, which Wick-sell did not take into account while analyzing the demand for loanable funds. II' curve in the figure may, therefore, be interpreted to include the demand for idle balances.

1.2. KEYNESIAN THEORY OF INTEREST RATE:

In Keynes' theory changes in the supply of money affect all other variables through changes in the rate of interest, and not directly as in the Quantity Theory of Money. The rate of interest, according to Keynes, is a purely monetary phenomenon, a reward for parting with liquidity, which is determined in the money market by the demand and supply of money. This is in sharp contrast to the classical theory in which the rate of interest is made a real phenomenon, which is determined in the commodity market by savings and investment at a level which equates the two. It is also in contrast to the loanable-funds theory which is essentially a reformulation of the savings-investment theory of the rate of interest to take note of the phenomenon of hoarding or dis-hoarding and autonomous changes in the stock of money. To understand Keynes' theory, we go to his analysis of the money market.

We have already studied Keynes' theory of the demand for money or, which is the same thing, his theory of the liquidity preference of the public.

We simply recall his equation of the demand for money:

$$M^d = L(Y) + L_2(r).$$

Like other economists, Keynes also assumed the supply of money to be exogenously given by the monetary authority, so that

$$M = M$$

The money market will be in equilibrium when = i.e.

$$L_1(Y)\ L2(r) = M,$$

Implicitly assuming Y and so $L_1(Y)$ to be already known, he argued that the above equation would give the equilibrium value of r, of the rate of interest. That is, for the money market to be in equilibrium, the value of r has to be such at which the public is willing to hold all the amount of money supplied by the monetary authority. There is a serious analytical flaw in this model which we shall discuss later. Before this, let us study Keynes' theory diagrammatically.

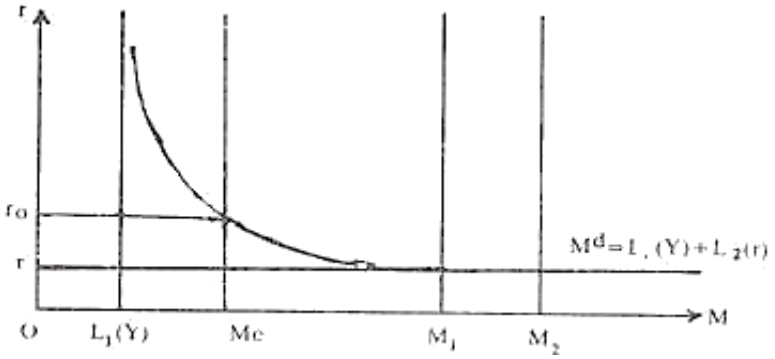

Fig.1.2. Determination of the rate of interest – Keynes theory

Consider Figure 1.2. In it the total demand for money is represented by the downward-sloping curve labelled $M^d = L_1(Y) + L_2(r)$. The first component of the demand for money, namely $L_1(Y)$, representing Keynes' transactions and precautionary demand for money, is assumed to be autonomous or r. Therefore, it is shown by the vertical line $L_1(Y)$. $L_2(r)$ represents Keynes' speculative demand for money.

It has not been shown separately in our figure, because the M_d curve itself becomes the $L_2(r)$ curve when it is read with L_2 (Y) as the origin in place of O, which amounts to subtracting $L_1(Y)$ horizontally from the M^d curve. The other three vertical lines represent alternative supplies of money at Mo. M_1, M_2, all of which are assumed to be given autonomously. Given the M^d curve, when the supply of money is M_o, the money market will be in equilibrium only at one rate of interest r_o. At any other rate of interest, there will be disequilibrium in the money market and the working of market forces will push the rate of interest towards r_o.

For example, at a lower rate of interest (say) r, there will be excess demand for money. In the two-asset world of Keynes' model, with money and bonds as two assets between which alone asset holders make their portfolio choices, this will mean excess supply of bonds in the market for bonds. (The bond market is not considered explicitly in Keynes; it is eliminated implicitly by using Walras' Law.) Therefore, the price of bonds will fall and the rate of interest goes up. The process will continue till the rate of interest goes up to r_o. The reverse will happen if a chance disturbance pushes the rate of interest above r_o. Thus, r_o represents the stable equilibrium value of r under the circumstances.

Moreover, this value of r is determined by purely monetary forces. Hence Keynes concluded that r was a purely monetary phenomenon. Equally important, variations in r alone serve as the adjustment mechanism for the money market, whenever it is in disequilibrium. This is in sharp contrast to the QTM model, in which it is money income or the price level which serves as the variable of adjustment. Now we can easily work out the consequences of autonomous changes in the supply of money or the demand for it. The analysis is limited to only comparative-static exercises. First, suppose the demand for money remains unchanged, .but the supply of money is increased (autonomously) from Mo to M_r. Then, the equilibrium value of r will fall from r_o to r. Any further increase in the supply of money, say to M_2, will not lower r, because at r it is caught in the liquidity trap. Thus r serves as the absolute minimum below which the rate of interest will not fall in a money-using economy. According to the 'liquidity-trap' hypothesis, there is some r low enough at which the public is willing to hold any amount of money instead of bonds.

There can also be autonomous shifts in the liquidity preference of the public due to any number of reasons, such as change in expectations or in uncertainty around them. Consequently, the M^d curve can shift up or down. Then, using Figure 1.2 and holding the supply of money unchanged (at, say, Mo), the resulting increase or decrease in r can be easily worked out, keeping in mind the liquidity trap at7. The implications of Keynes' theory for the effectiveness of monetary policy are briefly noted. Two things are important: one is the interest elasticity of the demand for money; the other is the initial position of economy. The said interest-elasticity varies from one point on the M^d curve to the other; it is assumed to be indefinite at some very low value of r (r in Figure1.2.), which defines Keynes' liquidity trap. If the economy is caught up initially in this trap, no amount of increase in the supply of money by the monetary authority can lower r any further. Monetary policy operating through increases in the supply of money, then becomes totally ineffective in reducing r and thereby having any expansionary effect on I and Y. This happens because, according to the liquidity-trap hypothesis, the public is willing to hold all the extra quantities of money at the same r. This is an

extreme situation, which as yet has not been empirically identified in any country.

A less extreme situation obtains to the left of the liquidity trap. For some quantities of money, the interest elasticity of demand for them may be very high, though not infinite. This would imply that to attain a given reduction in r very large increase in the supply of money will be required or, which is the same thing, for a given increase in the quantity of money the reduction in r will be very small. Looked at either way, monetary policy does not have much effectiveness in lowering r, especially during depression.

Presumably it was this incapacity of monetary policy to lower long-term r significantly that had made Keynes lose faith in monetary policy for fighting depression. Thus, the interest-elasticity of the demand for money (neglected in the QTM) becomes the Key issues in the Keynesian monetary theory.

Modem quantity theorists like Friedman do not deny the theoretical case for the influence of r on M^d. But how important, this influence is or what is the value of the interest elasticity of the demand for money (infinite, high, or very low) is an empirical matter. Empirically, this elasticity has been found to be either quite low or statistically insignificant.

Now we evaluate critically special features of Keynes' theory of the rate of interest:

1. The money-market-equilibrium equation $L_1(Y)$ L2(r) = M, (1.2) which Keynes uses to determine r cannot be so used, because it is one equation in two unknowns' r and Y. Only if the value of Y is already known, or known independently of r, can $L_1(Y)$ be treated as a known quantity as Keynes does, and equation $L_1(Y)L_2(r)$ = M, (1.2) reduced to one equation in one unknown r. But this is not so in Keynes' model, where r affects the rate of investment (I) which in turn affects the equilibrium level of Y. Thus, Y not only affects r through L_1 (Y) but is also affected by r through I; the two (r and Y) are interdependent or jointly-determined variables.

In a later section discussing Hicks' IS-LM model we shall see how they can be jointly determined. Keynes' solution procedure, on the other hand, suffers from circularity of reasoning, because to determine r it assumes a given Y and to determine Y it assumes a given r and so a given I.

2. Through L_1 (Y) Keynes admits the influence of Y, a commodity-market variable, on the demand for money. This is very much in the tradition of the Cambridge cash-balances theory which Keynes had inherited from his early days. But Keynes' (unwarranted) assumption of a given Y for his analysis of the money market ruled out completely any role for quantity-theory-type adjustment of money income in bringing about equilibrium in the money market.

Consequently, the money-market-equilibrium condition that gave Cambridge cash – balances theory its theory of money income was converted by Keynes into a theory of r determination. The former result was achieved by neglecting totally any influence of r on M^d the latter result was attained (by Keynes) by admitting the influence of Y on M^d, but by freezing Y at some predetermined value. Analytically, therefore, each of the two theories is a special case of a more general theory in which both r and Y are allowed to influence M^d as well as adjust to clear the money market. The Cambridge theory (or the QTM) suppresses the role of r and Keynes' theory the role of Y. Hicks' IS-LM model allows for both.

3. Keynes had assumed the money wage rate (W) to be a historically-given datum (and not a variable for his short-run model) and had used it (W) as the numeracies or the deflator for converting all nominal values into real values. This made, the distinction between nominal values and real values totally irrelevant for monetary analysis — an anti-QTM stance, because in the QTM changes in prices and through them changes in the real value of a given quantity of money play the most important role. This ruled out by assumption all adjustment in the money market that might come through changes in P (or W) even in the upward direction.

Once we get out of the framework of a static world into a real dynamic world, price expectations become important. In the present- day real world inflation has become a common experience. This generates inflationary expectations, that is, on the basis of actual experience of inflation, the public comes to expect a certain rate of inflation in the future as well. Once the public comes to expect a certain rate of inflation, the market rate of interest will tend to rise over what this rate will be in the absence of inflationary expectations.

This happens because in the presence of inflationary expectations both the supply curve-and the demand curve for loans with respect to r will shift up. The upward shift in the upward-sloping supply curve of loans shows that lenders are willing to lend any real amount at only a higher r than before so that they can get compensated for the real loss they expect to suffer due to inflation.

The upward shift in the downward-sloping demand curve for loans arises because borrowers would also be willing to pay higher r than before since they expect to recoup it from expected inflation. This kind of argument is widely accepted and the marked rise in the market rate of interest experienced in most countries including India over the past 10-15 years is usually attributed to inflationary expectations generated by actual inflation in these countries. This phenomenon has very damaging consequences for Keynes' theory of r, which says that monetary expansion can be used to lower r. But this will be true, at most, in a short run and for only moderate increases in the supply of money—more correctly, for increases in the supply of money which a growing economy can absorb at stable prices.

4. Keynes denied completely the influence of real factors, represented by real savings and investment (so much emphasised by both classical and neoclassical economists) in the determination of r. This is an extreme view which neo-Keynesians do not share. Now it is widely believed that both the real sector forces and money market forces determine r and real income, and the commonly-accepted model for their joint determination is Hicks' IS-LM model.

5. A strong contender of Keynes' liquidity preference theory of the rate of interest is the neoclassical loanable funds theory of rate interest. The latter combines saving and investment with hoarding, dishoarding, and new injections of money for the demand and supply of the flow of loanable funds in the market.

1.3. Structure of IS – LM Model:

The IS-LM curve model emphasises the interaction between the goods and assets markets. The Keynesian model looks at income determination by arguing that income affects spending, which, in turn, determines output (GNP) and income (GNI). J. R. Hicks and A.H. Hansen add the effects of interest rates on spending, and thus income and the independence of asset markets on income. Higher income raises money demand and thus interest rates. Higher interest rates lower spending and thus income. Spending, interest rates and income are determined jointly by equilibrium in the goods and assets markets as shown in Fig. 1.3.

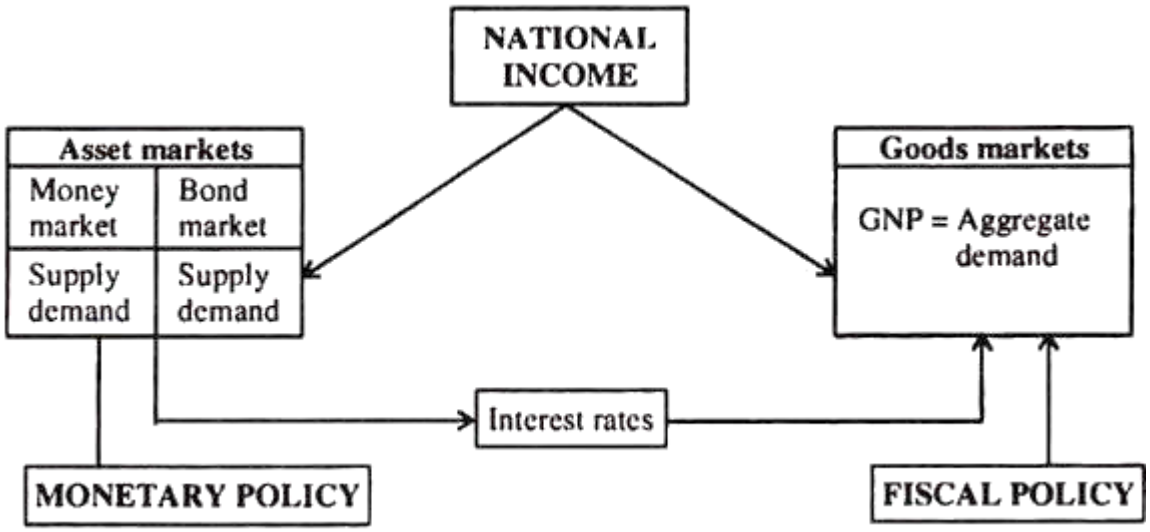

Fig.1.3. the basic structure of the IS – LM curve model

1. Role of Money in the Simple Keynesian System:

The central proposition of Keynes' theory of money is that money affects income via the interest rate. If money supply increases, the rate of interest falls. The lower interest rate, in its turn, leads to a rise in autonomous investment and in national income through the autonomous expenditure multiplier.

2. Interest Rates and Aggregate Demand:

Keynes pointed out that business investment demand depends on the interest rate. In his view, an investment project will be carried only if its expected rate of return (or marginal efficiency of capital) exceeds the cost of borrowing to finance the project so that the net return from the project is positive. For this

reason at a higher interest rate (borrowing cost), fewer projects will be accepted.

In Fig. 1.4 we show the effects of interest rate changes on aggregate demand. In part (a) a fall in the interest rate from r_0 to r, increases investment by ΔI from I_0 to I_1. This shifts the aggregate desired expenditure schedule upward – from $E_0 = C_0 + I_0 + G_0$ to $E_1 = C_0 + I_1, + G_0$. As a result output (income) increases from Y_0 to K, in part (b).

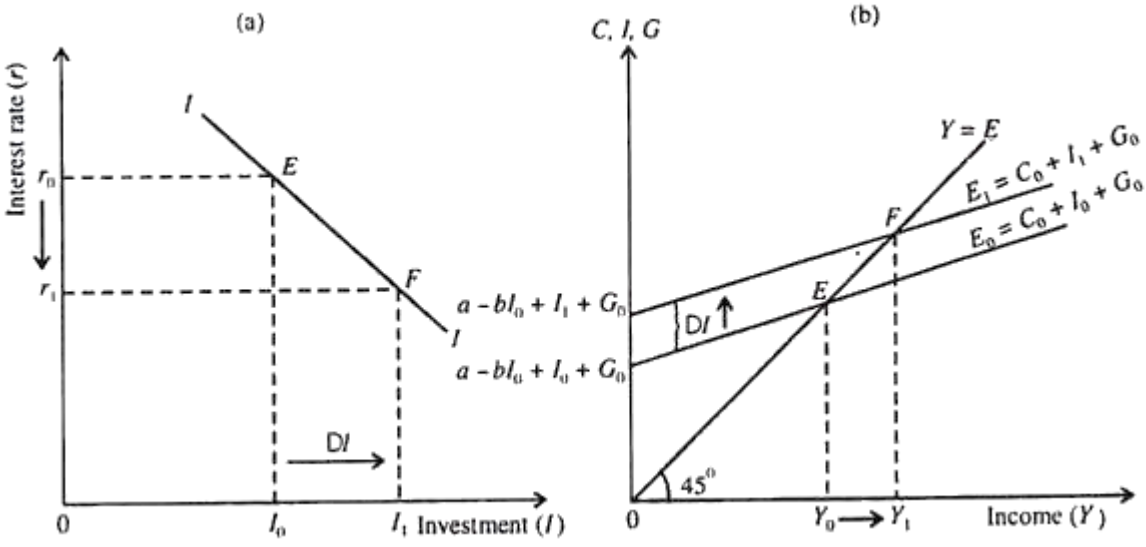

Fig. 1.4. Fall in the interest rate on investment and output

3. The Keynesian Theory of the Interest Rate:

In Keynes' theory the quantity of money plays a key role in interest rate determination. The demand for money (liquidity preference) is the crucial variable in Keynesian theory of money.

Keynes makes two assumptions:

(1) All financial assets can be divided into two groups, viz., money and homogeneous bonds (i.e., all non-monetary assets).

(2) Money pays no interest.

At a fixed point in time, an individual has a fixed amount of wealth (W) which is divided between money (M) and bonds (B):

W = M + B … (1)

So more money holding implies less bond holding and vice versa. Thus there is only independent portfolio decision, the division of W between M and B. Therefore, an excess demand for money implies an excess supply of bonds and an excess supply of money implies an excess demand for bonds.

In Keynes' model the equilibrium rate of interest (r_0) is determined by the demand for money and the supply of money as shown in Fig. 1.5.

Since the money supply is assumed to be fixed exogenously by the policy of the central bank at M_0^S, the demand for money plays the key role in determining the rate of interest. We may now discuss the factors determining the position and slope of the money demand curve (M_d).

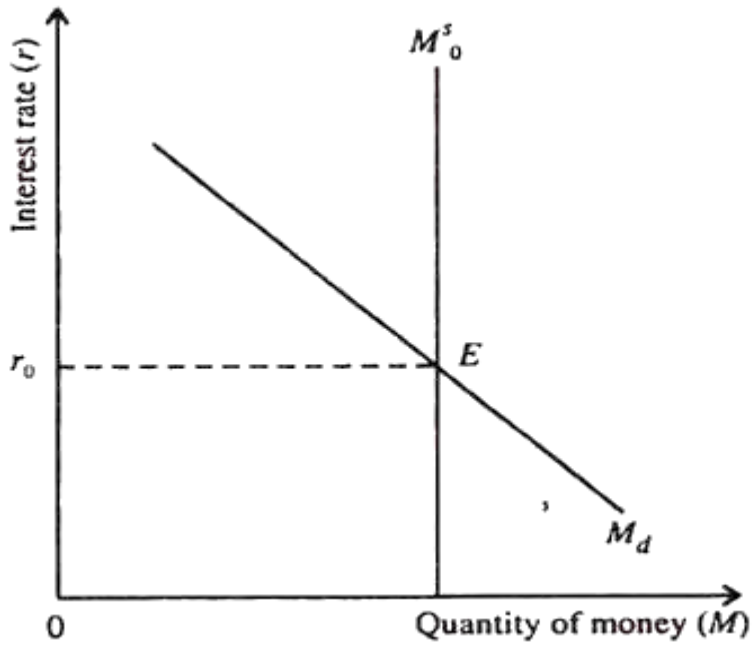

Fig.1.5. Interest Rate Determination

The Keynesian Theory of Demand for Money:

Keynes discussed and analysed three separate motives for holding money:

(a) Transactions demand:

Since money is a medium of exchange, people hold money for purchasing goods and services or for making any type of payments. Money bridges the time gap between the receipt of income and its expenditure. Transactions demand for money varies directly with the volume of transactions which is assumed to depend positively on the level of income.

(b) Precautionary demand:

People also hold money to meet unexpected expenditures, known as the precautionary demand for money. It also depends positively on income. Here we include the precautionary demand under transactions demand (and do not treat the former separately).

(c) Speculative demand:

Finally, people hold money for speculative purposes even if bonds pay interest and money does not. The reason for this, in Keynes' view, is uncertainty about future interest rates and the relationship between changes in the interest rate and the price of bonds. The price of bond is the reciprocal of the rate of interest. Thus if the market rate of interest rises (falls) the price of an old bond will fall (rise) and the bondholder will incur a capital loss (or make a capital gain).

For example, if the current market rate of interest is 5% and a bond promises to pay a fixed sum of Rs.10 per annum, its market price is:

Where B is the price of bonds, A is fixed return on bonds and r is the market rate of interest. If r rises to 10% B_p will be Rs.10/10% = Rs.10/ (1/10) = Rs.100. If r falls to 2½%, B_p will be Rs.10/ (1/40) = Rs.400.

$$B_p = \frac{\bar{A}}{r} = \frac{\text{Rs.10}}{r} = \frac{\text{Rs.10}}{5\%} = \frac{\text{Rs.10}}{\frac{1}{20}} = \text{Rs. 200}$$

If an individual holds only money there is no risk and there is no return either. If he buys bonds, he earns interest but faces uncertainty. In case the rate of interest rises (falls) he will incur capital loss (make capital gains) on old bonds. The expected return on money is zero. But the expected return on bonds has two components:

(a) Interest r plus expected capital gain or r minus expected capital loss. This uncertainty about the future course of interest rates is of crucial significance to Keynes' analysis. So while holding bonds an individual has to strike a balance between two conflicting things. If interest rates are expected to fall, bonds will have the higher expected return in terms of interest and capital gains. If interest rates are expected to rise, the expected capital loss on bonds will outweigh the interest earnings. In such a situation the expected return on bonds would be negative and money would be preferred to bonds. Speculative demand for money refers to money held in anticipation of a fall in the prices of bonds (i.e., a rise in interest rates).

Keynes assumes that when the actual rate of interest goes above the normal level, investors expect it to fall. When the interest rate is below the normal level, they expect it to rise. This relationship between the level of the speculative demand for money and the interest rate may initially be illustrated

in case of an individual investor and then in the case of the market as a whole, (i.e., the corresponding aggregate relationship).

For an individual investor (i), the demand curve for speculative balances is shown in Fig. 1.6 (a).Here we have

Where M_i is total demand for money, M_i^1 is the transactions demand, M_i^2 is the speculative demand, B_i is bond holding and is his total wealth. At any rate of interest above the critical rate (r_i), the speculative demand for money is zero. Below it, the individual holds only money.

$$M_i = M_i^1 + M_i^2$$

and $$M_i + B_i = W_i \qquad \ldots (2)$$

Part (b) shows the aggregate speculative demand for money curve (M). As the interest rate falls below the critical rate for most individuals, the speculative demand for money will increase. This is why the speculative demand curve in Fig. 1.6. (b) Was downward sloping. The smoothness of the curve indicates the gradual increase in the speculative demand for money at lower and lower rates of interest.

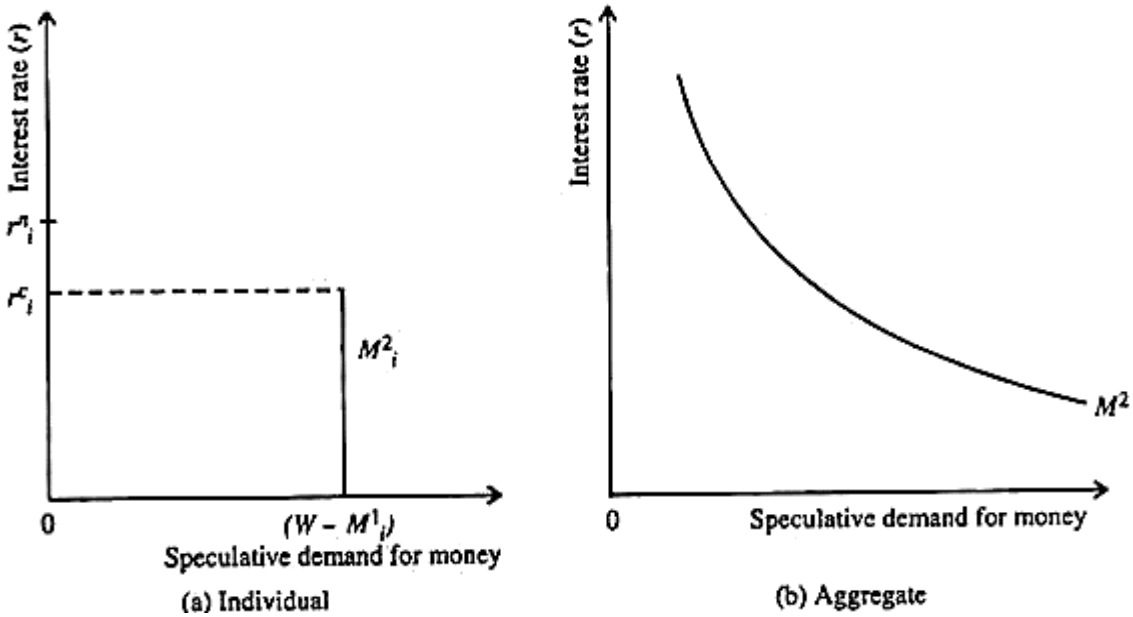

Fig.1.6 Individual and Aggregate Speculative Demand Curves for Money

According to Keynes, it costs money to hold money and the market rate of interest (r) is the opportunity cost of money holding. When the rate of interest is very low most people can afford the luxury of money holding. At the same time when the rate of interest is very low, most people — if not all, expect

it to rise in future, in which case the price of bonds will fall. So to avoid possible capital losses people prefer to hold as much money as possible.

At all rates of interest above r_{in} in Fig. 1.6. (a), interest rates are expected to fall and bond prices expected to rise (giving a chance of making capital gain). If the interest rate does not fall much below r_{in}, the interest earnings on the bond will be greater than the small expected capital loss. As r continues to rise and moves towards r_{in} there will capital loss but this will be less than the interest income as long as $r_{in} < r_{ic}$. So no money will be held and all wealth will be held in bonds. At a very low rate of interest, all investors expect r to rise in future. So the liquidity preference curve gradually flattens out at a very low rate of interest, reflecting that at this rate, most — or even all — people expect capital losses on bonds that outweigh interest earnings. At this rate, all existing wealth (including additions to it) are held in money. So the speculative demand curve for money becomes completely elastic at this critical rate of interest.

Any increase in the stock of money by the central bank will be absorbed by the people in the form of liquidity balances and this will prevent the rate of interest from falling further. This means that the speculative demand curve for money becomes completely elastic. The completely elastic part of the M_2 curve is known as the liquidity trap situation. Keynes argued that in a depressed economy which is experiencing a liquidity trap, the only way to stimulate investment is to increase Government expenditure or reduce taxes in order to increase aggregate demand and improve business confidence about future prosperity, encouraging them to invest. In short, the term 'liquidity trap' was used by Keynes to refer to a situation at a very low rate of interest where the speculative demand for money curve becomes almost completely elastic (nearly horizontal). This type of situation is normally observed during depression. In normal times the speculative demand curve for money is assumed to slope downward.

4. The Total Demand for Money:

Since transactions demand for money varies directly with income and speculative demand for money inversely with the rate of interest, the total

demand for money is a function of both the variables and can be expressed in functional form, as

$$M^d = L(Y, r) \ldots (3)$$

Where Y is income and r is the interest rate while a rise in Y increases M^d, a rise in r reduces it, i.e., $dM^d/dY > 0$ and $dM^d/dr < 0$.

If we assume that the money demand function is linear it can be expressed in the following form:

$$M^d = c_0 + c1Y - C_2r, c_{2r}, > 0; c_2 > 0 \ldots (4)$$

Here c_1 shows the increase in the demand for money per unit increase in income and c_2 is the amount by which M^d falls with every unit increase in the interest rate.

5. The Effect of an Increase in the Money Supply:

An increase in the supply of money from M_0^s to M_1^s initially creates an excess supply of money. This is equivalent to an excess demand for bonds. As a result, the price of bond rises. This is equivalent to a fall in the rate of interest. In Fig. 1.7 the rate of interest falls in from r_0 to r_1 order to restore money market equilibrium.

In other words, the increase in the demand for bonds decrease the rate of interest suppliers of bonds (borrowers) offer to be able sell their bonds. The fall in r causes the demand for money to rise and new equilibrium is reached in the money market at interest rate r_1.

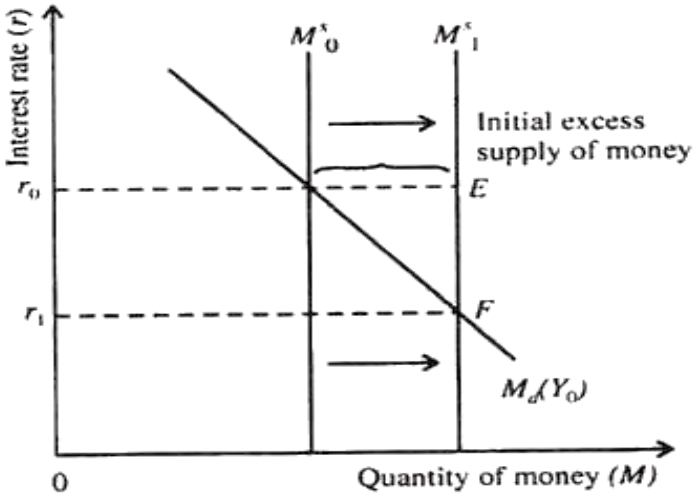

Fig.1.7. Money Market Equilibrium

6. Theory and Practice:

The whole Keynesian theory of demand for money is based on the assumption that money pays no interest. Still money is held for transactions purposes as also to make capital gain (i.e., to buy bonds when their prices fall and to sell bonds when their prices rise). At present due to various developments in the financial market interest is paid on certain types of money.

This very fact is quite contrary to the Keynesian assumption that bonds are the only interest-bearing asset. But the very fact that some components of money pay interest does not alter the Keynesian theory of money at all. In fact, even for those components of money supply that pay interest, the rate of interest adjusts only partially to changes in the interest rate on bonds. Therefore, we continue to assume that the Keynesian money demand function will be downward sloping. Money demand depends negatively on the rate of interest — which always means the interest rate on bonds. So the emergence of interest-paying money does not have implication for the conduct of monetary policy.

The Basic IS-LM Curve Model:

The IS-LM curve model is used to find the values of the interest rate and level of income that simultaneously equilibrate both the commodity market and the money market. First we identify combinations of income and interest rate that equilibrate the commodity market, neglecting the money market. Next we identify combinations of income and rate of interest that equilibrate the money market. Then these two sets of equilibrium combinations of interest rate and income levels are shown to contain one combination that brings about equilibrium in both markets. At this stage we assume that there is no change in policy variables such as money supply, government expenditure and taxes. We also take other autonomous influences on income and interest rates (e.g., the state of business expectations that affect investment) as fixed in the short run. We see that these policy variables and other exogenous influences determine the shapes and slopes of the two curves — called the IS and LM curves — which show

commodity (product) market equilibrium, and money market equilibrium, respectively.

Usefulness of the IS-LM Model:

The IS-LM modes tells us how interest rates and aggregate output are determined when the price level remains fixed. Although we have shown quite clearly that the economy will move towards an aggregate output level of Y_0, there is no reason to assume that at this level of aggregate output the economy is at full employment. If the unemployment rate is too high, government policymakers might want to increase aggregate output to reduce it. The IS-LM apparatus indicates that they can do this by manipulating monetary and fiscal policies. We will conduct the IS-LM analysis of how monetary and fiscal policies can affect economic activities in the next chapter.

Limitation of the IS-LM Analysis:

A serious limitation on the use of basic IS-LM model in analysing economic events is the requirement of a constant price level which, we discovered, reflects our failure to deal explicitly and convincingly with the production or supply side of the economy. Indeed, with the price level allowed to change, we showed that the IS-LM model presents — by using the Keynesian framework — the aggregate demand side of the economy.

1.4. THE CLASSICAL VS KEYNESIAN MODEL OF INCOME AND EMPLOYMENT

The nineteen-thirties was the most turbulent decade that set off the most rapid advance in economic thought with the publication of Keynes's General Theory of Employment, Interest and Money in 1936. Keynes attacked the classical doctrine for its failure to solve the economic problems of the modern world. Around the turn of the present century, the world witnessed a series of crises which cast doubt on the practical utility of the orthodox economics. The Great Depression of the thirties demolished whatever faith was left of the self- regulating capitalist system.

Thus the General Theory was born in a favourable environment and was characterised by economists like Harris as "The New Economics" and by others as revolutionary or evolutionary. But as pointed out by Professor Harris, "It is a matter of judgement whether the General Theory is simply classical economics further developed or embroidered, or whether Keynesian economics represents a genuine break." There has been a public debate in the academic journals among the economists on the occasion of the twentieth and twenty-fifth anniversaries of the publication of the General Theory; in fact right from its publication, as to whether it is evolutionary or revolutionary.
No person is original in any pursuit of knowledge. He draws heavily from the ideas of the successive creative minds and formulates new ideas on their work and thought. Keynes also did the same thing. He accepted the classical theory, criticised and extended it and at the same time rejected parts of it.

The main elements of the General Theory can be found embryonic form in the works of his predecessors but Keynes's novelty lies in giving them a new complexion. As rightly observed by Harris, "Out of the straws of his predecessors, with some additions of his own, he had built a structure which no economist or economic practitioner can afford not to inspect or use." No doubt the Keynesian economics is built on the classical economics but it differs significantly from the latter in terms of assumptions, presentation of tools of analysis and policy measures.

In this sense it is revolutionary rather than evolutionary. Keynes possessed great intuitive power and confidence for he wrote to George Bernard Shaw in 1935 before the publication of his General Theory, "You have to know that I believe myself to be writing a book on economic theory which will largely revolutionise nor, I suppose at once, but in the course of the next ten years—the way the world thinks about economic problem." Undoubtedly, the Keynesian analysis has significantly influenced matters of policy in the capitalist economics of the world.

The following points mark Keynesian theory as revolutionary and a genuine departure from the classical economics:

(1) Full Employment:

The classicists believed in the existence of full employment in the economy and a situation of less than full employment was regarded, as abnormal. They, therefore, never thought it necessary to have a special theory of employment. On the other hand, Keynes considered the existence of full employment in the economy as a special case. He put forth a general theory of employment applicable to every capitalist economy. His notion of underemployment equilibrium is indeed revolutionary and has stood the test of the time.

(2) Say's Law:

The classical analysis was based on Say's Law of Markets that "supply creates its own demand." The classicists thus ruled out the possibility of over production. "Keynes's greatest achievement," according to Prof. Sweezy "was the liberation of Anglo-American economics from this tyrannical dogma." Keynes propounded the opposite view that demand creates its own supply. Unemployment results from the deficiency of effective demand because people do not spend the whole of their income on consumption. Thus the development of the principles of effective demand and consumption function is a revolutionary contribution of Keynes to economic theory.

(3) Laissez-Faire:

The classical economics was based on the laissez-faire policy of a self-adjusting economic system with no government intervention. Keynes discarded the policy of laissez-faire because he believed that enlightened self-interest did not always operate in the public interest and it was this policy which led to the Great Depression. He, therefore, favoured state intervention and stressed the importance of public investment to fill the gap created by the deficiency of private investment. "Viewing Keynes's theory as a whole, its revolutionary nature lies," according to Prof. Dillard, "in the repudiation of any presumption in favour of laissez-faire."

(4) Wage Cut:

Pigou, one of the foremost classical economists, favoured the policy of wage-cut to solve the problem of unemployment. But Keynes opposed such a policy both from the theoretical and practical points of view. Theoretically, a wage-cut policy increases unemployment instead of removing it. Practically,

workers are not prepared to accept a cut in money wage. Keynes, therefore, favoured a flexible monetary policy to a flexible wage policy to raise the level of employment in the economy. Prof. Harris regards Keynes's views on wages and employment as revolutionary.

(5) Saving:

The classicists emphasized the importance of saving or thrift in capital formation for economic growth. To Keynes, saving was a private virtue and a public vice. Increase in aggregate saving leads to a decline in aggregate consumption and demand thereby decreasing the level of employment in the economy. Keynes thus advocated public spending instead of public saving to remove unemployment. He thus 'smashed the last pillar of the bourgeois argument' that unequal income led to increased saving and to capital formation for growth. This view might be termed revolutionary.

(6) Saving-Investment Equality:

The classicists believed that saving and investment were equal at the full employment level and in case of any divergence the equality was brought about by the mechanism of rate of interest. Keynes held that the level of saving depended upon the level of income and not on the rate of interest. Similarly investment is determined not only by rate of interest but by the marginal efficiency of capital.

(7) Trade Cycles:

The classical economists failed to provide an adequate explanation of the cyclical phenomena. They could not explain the turning points of the business cycle satisfactorily and generally referred to boom and depression. Keynes' real contribution to the business cycle analysis lies in his explanation of turning points of the cycle and in the change of attitude as to what should and should not be done by the government to control the cycle. In this field, as opined by Mrs. Robinson, "Keynesian revolution commands the field."

(8) Monetary Theory:

The classicists artificially separated the monetary theory from the value theory. Keynes, on the other hand, integrated monetary theory and value theory. He also brought interest theory into the domain of monetary theory. He regarded the rate of interest as a purely monetary phenomenon.

He emphasized the demand for money as an asset and separated it into transactions demand, precautionary demand and speculative demand to explain the determination of the rate of interest in the short-run. By integrating the value theory and monetary theory through the theory of output, Keynes made money non-neutral as opposed to the classical view of neutrality of money.

(9) Macro Analysis:

The classical economics was a microeconomic analysis which the orthodox economists tried to apply to the economy as a whole. Keynes, on the other hand, adopted the macro approach to economic problems. But the Keynesian revolution lies in its macro-dynamic orientation of aggregate income, employment, output, consumption, demand, supply, saving and investment. As rightly pointed out by Prof. Hansen, "The General Theory has helped to make us think of economics in dynamic rather than in static terms."

(10) Saving Capitalism:

Keynes' most significant contribution lies in saving capitalism from the catastrophe it had fallen in the 1930's. The pure, unadulterated capitalism of the classical ideology could not function because as Keynes wrote, "It is not intelligent, it is not beautiful, it is not just, it is not virtuous and it does not deliver the goods."

Keynes reformed capitalism by advocating the necessity of state intervention in order to increase aggregate demand and employment and thus saved it from giving way to communism. "And in this sense," observes Prof. Galbraith, "Keynes was pretty successful because it brought Marxism in the advanced countries to a halt."

(11) Policies:

The classical economists being the votaries of lassie-faire policy had no faith either in fiscal policy or monetary policy. They believed in the balanced budget policy. Keynes, on the other hand, stressed the importance of deficit budgets during deflation and surplus budgets during inflation along with cheap money and dear money policies respectively. He was thus a practical economist whose models clarify both inflationary and deflationary episodes, and prosperous and depressed economies.

His policy measures have been adopted by almost all the capitalist economies of the world. Thus in the words of Joan Robinson, "The Keynesian revolution has destroyed the old soporific doctrines and we are left in the uncomfortable situation of having to think for ourselves." We may conclude that the General Theory is not evolutionary but is revolutionary in both economic thought and policy and is a genuine departure from the classical thought.

1.4.1. Criticisms of Keynesian Theory:

Despite the theoretical and practical significance of the Keynesian theory, it is necessary to examine its failures and weaknesses for a proper evaluation. "Keynes while providing indispensable tools of analysis…raised more questions than he answered," according to Professor Kurihara.

These problems lie generally outside the scheme of the General Theory. Besides, every bit of Keynesian analysis has been criticised, such as aggregate demand, aggregate supply, the consumption function, the investment function, the monetary theory, etc.

We study some of the major criticisms below:

(1) Aggregate Demand:

Keynes asserted that the, level of employment depended upon the level of aggregate demand which was in turn determined by the inactive consumption demand and active investment demand. And unemployment resulted from the lack of aggregate demand. According to Professor Schlesinger, the Keynesian theory of aggregate demand suffered from certain inherent defects which made his theory of employment unrealistic. He opines that "over-all demand is of course, to some extent, affected by relations on the supply side, Keynes's treatment of demand was therefore over-simple in that it neglected the possibility that the relative prices prevailing in the different sectors determine, in part, the total amount of outlays."

(2) Aggregate Supply:

Professor Don Patinkin regards Keynes' treatment of the aggregate supply function inadequate. The aggregate supply is regarded as stable during the short-run. Moreover, the representation of the aggregate supply curve by the 45° line in the Keynesian cross diagram conveys the meaning that

"demand creates its own supply." In other words, it implies that the aggregate supply is governed by aggregate demand. According to Patinkin, "This line of reasoning is yet another fallacious by-product of the usual Keynesian neglect of the supply side of the commodity market."

(3) Effective Demand:

Economists have criticised Keynes's principle of effective demand for two reasons. First, for taking the aggregate supply to be stable as noted above. Second, for assuming a direct functional relationship between effective demand and the volume of employment. According to Hazlitt, the volume of employment is not a function of effective demand rather it depends upon the inter-relationship between wage- rates, prices and the supply of money.

For instance, it is possible to achieve full employment even when the effective demand is low, provided wage-rates are so flexible that they could be adjusted quickly to the prices. Thus the direct relationship between effective demand and the volume of employment is fallacious. According to Prof. Burns, the determination of Keynes's theory in terms of effective demand "reflects a pleasant but dangerous illusion."

(4) Consumption Function:

Keynes's consumption function though regarded as an epoch-making contribution to the tools of economic analysis yet it is not free from defects. "The relationship does not run simply from current income to current consumption," as Keynes forged, rather it "involves some complex average of past and expected income and consumption," as pointed out by Professor Ackley.

According to Slichter, "The level of consumption is determined to a significant extent by conditions other than the level of real income which Keynes neglects altogether. They are the wealth effect, technological change, education, expectations, attitudes toward assets, etc.

(5) Investment Function:

Keynes has also been criticised for formulating the functional relationship between investment and the rate of interest. The influence of the rate of interest in determining the volume of investment is very uncertain. It was for this purpose that Keynes made his analysis more complicated by

introducing the interrelation between the rate of interest and the marginal efficiency of capital to determine the level of investment. Keynes erred in depending exclusively on the investment function and taking the consumption function to be stable in determining the volume of employment. It has been proved beyond doubt that raising the propensity to consume even during the short-run has a salutary effect on the volume of employment. Further, Keynes neglected the relationship between capital stock and investment. Lastly, his theory of investment failed to consider the effect of investment on technological progress. According to Professor Slichter, "His theory of investment exaggerated the disposition to hoard and gratuitously assumed that the economy possesses only a meagre capacity to discover or to create investment opportunities." Thus Keynes ignores the impact of technology on the economy.

(6) Rate of Interest:

The Keynesian theory of interest rate determination has been severely criticised by post-Keynesian economists, keynes made the rate of interest determined by the demand for and supply of money. The demand for money arises from the transactions motive, the precautionary motive and the speculative motive.

Only the speculative demand for money is regarded interest elastic whereas the transactions demand is considered interest inelastic. According to Hansen, Keynes believed like the quantity theorists that the transactions demand for money was interest inelastic. But he was wrong because it is also interest elastic though at high interest rates.

Keynes's treatment of the speculative demand for money is very narrow because he confined himself only to cash and bonds, and failed to consider other types of assets. There is "money illusion" in the Keynesian speculative demand for money which means that the increased supply of money is absorbed only at a lower rate of interest.

Moreover, Keynes ignored what Patinkin calls the "direct influence of real-balance effect on aggregate demand." When the wealth of the people increases, it affects consumption and hence the demand for money. Further, Keynes failed to consider the influence of price expectations on the demand

for money. He assumed wages and prices to be given. Prof. Friedman in his Restatement of the Quantity of Money considers the demand for money as dependent on the rate of change in the level of prices among other factors. Under normal circumstances, the demand for money remains stable but during hyper-inflation the demand for money falls due to the effects of price-level expectations.

Lastly, Keynes has also been criticised by Harrod for formulating his theory in "stock" terms and neglecting the "flow" variables. This weakness stems from his efforts to formulate a pure monetary theory of interest and his rejection of the Wicksellian natural rate of interest. Thus Keynes failed to incorporate the real forces determining the interest rate. As pointed out by Joan Robinson, "Keynes's theory treated the rate of interest as determined by the demand and supply of money. This was a useful simplification in the pioneering days of the theory…but there is no such thing as the rate of interest and that the demand and supply of every type of asset has just much right to be considered as the demand and supply of money."

(7) Expectations:

Keynes has been criticised for his over emphasis on expectations. Expectations breed uncertainty. Though Keynes gave a dominant role to expectations in influencing the marginal efficiency of capital, yet he failed to formulate a precise theory of expectations.

He relied on "convention" for forecasting changes in business expectations and failed "to confront ex-ante and ex-post reasoning," as Professor Hart puts it. "The essence of this convention," according to Keynes, "lies in assuming that the existing state of affairs will continue indefinitely, except in so far as we have specific reasons to expect a change." The reliance on the convention hypothesis makes Keynes's concept of expectations superfluous and unrealistic.

(8) Saving and Investment:

Keynes did not pay as much importance to saving as to investment in his analysis. This stems from his weakness to relate saving as an ex-post factor pertaining to the current period. It is ex-ante saving that is more important in influencing the level of employment. Moreover, Keynes failed to

recognise that saving is not hoarded but spent on both consumer and capital goods.

Another weakness of the Keynesian analysis pertains to the relation between saving and investment. On the one hand, Keynes regarded saving and investment as "merely different aspects of the same thing" and thus "necessarily equal." On the other, they were regarded as "two essentially different activities without even a nexus" so that they tended to equality only in equilibrium. Thus Keynes makes the saving-investment relationship very confusing.

(8) Wages:

Economists have criticised the Keynesian analysis of wages and employment. The Keynesian under-employment equilibrium is based on wage rigidity. Keynes also suggested increase in money wages or reduction of real wages to remove unemployment.

Patinkin has shown that under-employment equilibrium "can exist even in a system of perfect competition and wage and price flexibility." Hazlitt holds that "the market mechanism applies to the labour market. When money wages are very high, there will be unemployment on the principle that when the price of any commodity is very high, the whole of it will not be sold." Patinkin's argument is more convincing "that a deficiency in commodity demand can generate a decrease in labour input without requiring a priori increase in real wage rate."

(9) Short-run Economics:

Another criticism of the Keynesian economics is that it is applicable to the short-run. Keynes himself remarked, "In the long-run, we are all dead." He, therefore, assumed a given stock of capital equipment, existing technique, tastes and habits of the people, organisation, size of population, etc. But all these factors change during the short-run. This makes Keynes's analysis unrealistic. Moreover, economics is an incomplete study without concentrating on the long-run effects of these forces on the economy.

(10) Closed Economy:

The Keynesian theory is based on the assumption of a closed economy which excludes the impact of foreign trade on the level of employment and

income. This makes Keynes' analysis unrealistic because all economies are open economies, and foreign trade has an important impact on their level of employment. For instance, an unfavourable balance of trade leads to the flow of income abroad which results in the reduction of domestic income, investment and the volume of employment via the reverse operation of the multiplier. On the contrary, a favourable balance of trade has the impact of increasing the level of income, investment and employment in the economy. Thus Keynes's neglect of the repercussions of foreign trade on the volume of employment is a serious defect in his theory.

(11) Perfect Competition:

Another weakness of the Keynesian theory is that it is based on the unrealistic assumption of perfect competition. This makes his theory inapplicable to socialist or communist societies where the entire economy is regulated by the state. There is no cyclical unemployment in such economies. Hence the question of the applicability of Keynesian theory in them does not arise. As Prof. Harris remarked aptly, "If communism comes, Keynes will be as dead as Ricardo." The Keynesian theory is not applicable even to modern capitalist economies where there is monopolistic competition rather than perfect competition. For instance, the principle of effective demand states that when the aggregate demand curve is over the aggregate supply curve, the entrepreneurs employ more labourers in expectation of earning larger profits till the point of effective demand is reached.

1.5. SAVING AND INVESTMENT EQUALITY

An important point of the controversy between Keynes and classics was the saving investment equality. In Keynes' 'General Theory', saving and investment equality is derived from the general equality of aggregate demand and aggregate supply (Y = C + I) Equilibrium in the economy is arrived at when total demand in the economy is equal to aggregate supply. Another name for this Y = C + I is the equality between saving and investment.

Prof. Hansen remarks that there are two Keynes involved in the matter of saving and investment equality in the 'General Theory'-one 'apparent Keynes' and the other 'real Keynes'. We have seen that the economy is in

equilibrium only when saving (in exposit or realised sense) is equal to investment (in the ex-post or realised sense), i.e. S = I. This is what we may call real Keynes. But Keynes also defined saving and investment in such a way that they are always equal S = I. This is what we may call apparent Keynes.

At some places, in his 'General Theory', Keynes says that saving always equals investment. At other places, he writes that saving equals investment only in equilibrium. This double meaning and dual approach to equality between saving and investment has been a source of great confusion for many writers and readers. The equality between saving and investment has been the cause of great debate and controversy on account of the differences of opinion on the definitions adopted by different economists of saving and investment.

The main source of confusion arose from the failure of the critics to realize that while saving and investment are always equal, they the not necessarily in equilibrium. If the economy is in motion and the variables are always in a normal functional relationship to each other, then saving and investment are not only equal but may also be in equilibrium. But if the process of change involves lagged adjustment of certain variables, this will not be the case. For example, if there are consumption-expenditure production lags, saving and investment though equal will not be in equilibrium. There can be no equilibrium position unless lags have worked through, once lags have been overcome or worked through, saving and investment are both equal and in equilibrium.

1.5.1. Saving Investment Equality - The Classical Position:

Keynes was not the first to note the importance of the equality between saving and investment. Classical economists also talked of saving and investment being equal to each other. There are, however, important differences between classical and Keynes. Firstly, classical believed that saving and investment equality is brought about by the rate of interest. When saving tends to exceed investments, the rate of interest falls to discourage savings on the one hand and encourage investment on the other.

Similarly, when investment exceeds saving, rate of interest rises to discourage investment to increase saving. Thus, the disequilibrium between savings and investment is corrected by changes the rate of interest. Secondly, Classical believed that this equality between saving and investment is always brought about at full employment income.

Both these propositions have been questioned by Keynes. Instead, he held the opinion that the equality between saving and investment is brought about not by the rate of interest, but by changes in income. As and when investment exceeds savings, increased investments (through multiplier) must increase the aggregate income of the community to such a level that the increased saving out of the increased income is equal to increased investment. Thus, income change is the mechanism through which the equality between saving and investment is established. Further, the novelty of Keynes's approach to saving and investment equality lies in the belief that they can be equal at less than full employment.

1.5.2.Saving and Investment Equality - Saving Always Equals Investment (Accounting Equality):

Keynes defined saving and investment in such a way that in his theory, saving always equals investment. This is called accounting equality. Accounting equality between saving and investment is also called logical identity. The logic behind this equality is as under. The national output consists of (i) consumption goods, (ii) investment goods, (O = C + I). In the same way, national income is divided between consumption expenditure and saving (Y = C + S). But we know that by definition O = Y, therefore, C + I = C + S or I = S. This equality between saving and investment can be expressed in another way also: for example, Keynes defined savings as the excess of income over consumption, i.e., S Y C. Further, investment is the name given to expenditures other than the consumption expenditures, it is nothing but income minus consumption or I= Y- C. Hence S= I (because both are = Y – C).

Saving and Investment Equality - Accounting Equality is Useful:

(i) It helps us to explain the 'paradox of thrift', i.e., if all people living in the community try to save more, the total or aggregate saving will not rise. This identity reminds us that one man's saving is another man's reduced income,

i.e. when one man saves more in the community; it means somebody else's income is being lowered. Thus, the community's attempt to save more without total increase in the income of the community would prove futile. This is the famous 'paradox of thrift'.

(ii) The identity (S = T) further points to the unfavourable results that flow from an attempt to save more than investment at a particular time. Both saving and investment at a particular time are equal to Y- C; therefore, failure to spend more on the part of one man means the failure to earn more income on the part of another. This happens because a man is able to increase his saving, only by curtailing his consumption, which leads to a decline in effective demand and hence income and employment. This is an important implication of S and I identity.

Saving and Investment Equality - Saving Equals Investment only in Equilibrium (Functional Equality):

Keynes made it known clearly that the equality between saving and investment is brought about by the changes in the national income (and not by the rate of interest as stressed by the classical). Let us see what happens when investment exceeds saving (by Rs. 20 crores) at a certain level of income (say Rs. 100 crores). This will increase national income through multiplier to such an extent that savings out of the increased income would be equal to the investment (or the excess of investment, i.e., Rs. 20 crores).

Let us suppose that S = I when income (Y) is Rs. 100 crores. Let us suppose further that consumption (Q is Rs. 80 crores and investment (i) Rs. 20 crores, which is equal to saving (Rs. 20 crores). Suppose the multiplier (K)= 2. Suppose further that investment increases by Rs. 20 crores and the total investment becomes equal to Rs. 40 crores (i.e., ∆1 by Rs. 20 crores). This will generate a multiplier effect and give us increased income of A7 = K AIRs. 40 crores (∆Y (40 crores) = K (2) x ∆I].

Thus, the total national income will rise from Rs. 100 crores to Rs. 140 crores, and out of this increased income of Rs. 140 crores, increased savings of Rs. 40 crores will flow (which are equal to increased investment of Rs. 40 crores). This will happen because the initial increase in investment (by Rs. 20 crores)

will go to increase business activities in the capital goods industries, where more people will be employed.

Their incomes will increase leading to a rise in the demand for consumption goods. This will result in more income and employment in the consumption goods industries, leading to a multiplier or cumulative rise in the total national income of the community, making it possibly for the increased savings to flow (which are equal to increased total investment i.e., Rs. 40 crores.) It is in this sense we say that savings depend upon changes in income.

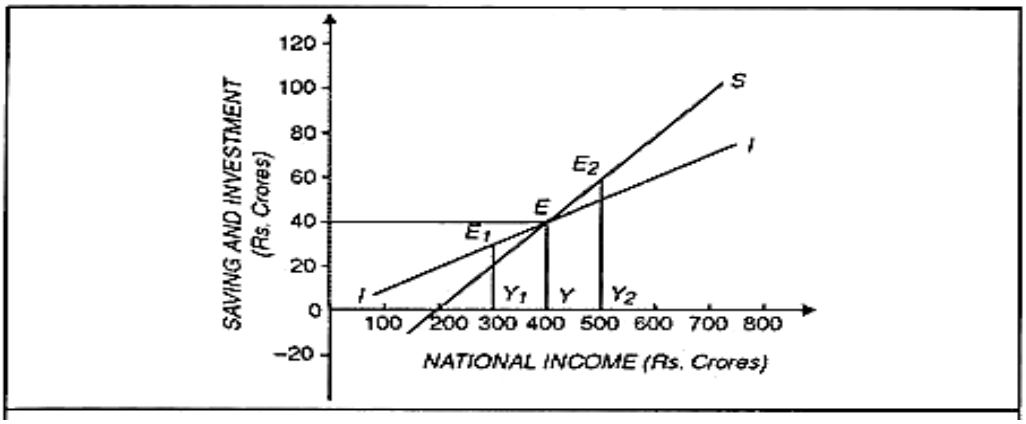

Fig.1.8 The functional equally between saving and investment

Therefore, by functional equality of saving and investment, we mean that both savers and investors, though they are quite different persons having different motives, act and react to income changes in such a way that their desires to save and invest get reconciled in the very process of their actions and reactions. Thus, we can easily conceive of a functional relationship between saving and national income on the one hand and investment and national income on the other. In this manner, saving schedule indicates various amounts of saving corresponding to different levels of national income and the investment schedule represents the various amounts of investment corresponding to different levels of national income. However, there is some unique level (equilibrium level) of national income at which savings calculated from the saving schedule are equal to investment calculated from the investment schedule. This is known as the functional equality of saving and investment and this is shown in the table and diagram as follows.

We have shown the figures of the table given above in the diagram 1.8. National disposable income is shown on the X-axis. The saving schedule is

SS. The investment schedule is II. If we examine the figure, we find that Rs. 400 crores (OY) is that unique level of national income at which saving EY (Rs. 40 crores) is equal to investment EY (Rs. 40 crores), and which represents functional equality S and I.

Disposable Income (Y)	Saving (S)	Investment (I)
100	-20	10
200	0	20
300	20	30
400	40	40
500	60	50
600	80	60
700	100	70
800	120	80

Table1.2. Schedules Of Saving and Investment and the Equilibrium Level Of Income (Rs.crores)

This is also called equilibrium level of income; because of here national income is neither rising nor falling (i.e. S -1 = 0). The economy is in disequilibrium in the diagram when the national income is Rs. 300 crores (OY_1) because investment is greater than saving by Rs. 10 crores. Therefore, income must rise from OY_1 to OY so that savings increase from Rs. 20 crores to 40 crores and are made equal to investment. Similarly, at income of Rs. 500 crores (OY_2), savings (Rs. 60 crores) exceed investment (Rs 50 crores) by Rs. 10 crores. Therefore, income must fall from Rs. 500 crores (OY_2) to Rs. 400 crores. (OY) so that savings are equal to investment at Rs. 40 crores at the equilibrium income level of Rs. 400 crores. This, however, does not mean that this income (OY) is a full employment equilibrium income or a full employment level of income i. e., S and I are equal, does not mean that there is necessarily full employment in the economy. It only means that S and I are and can be, equal at less than full employment (popularly called underemployment equilibrium). Classical would call is a disequilibrium situation of the short period. But Keynes called it an equilibrium of the economy at a point of less than full employment.

1.6. Keynesian Theory of Income, Output and Employment

In the Keynesian theory, employment depends upon effective demand. Effective demand results in output. Output creates income. Income provides employment. Since Keynes assumes all these four quantities, viz., effective demand (ED), output (Q), income (Y) and employment (N) equal to each other, he regards employment as a function of income. Effective demand is determined by two factors, the aggregate supply function and the aggregate demand function. The aggregate supply function depends on physical or technical conditions of production which do not change in the short-run.

Since Keynes assumes the aggregate supply function to be stable, he concentrates his entire attention upon the aggregate demand function to fight depression and unemployment. Thus employment depends on aggregate demand which in turn is determined by consumption demand and investment demand.

According to Keynes, employment can be increased by increasing consumption and/or investment. Consumption depends on income C(Y) and when income rises, consumption also rises but not as much as income. In other words, as income rises, saving rises. Consumption can be increased by raising the propensity to consume in order to increase income and employment. But the propensity to consume depends upon the psychology of the people, their tastes, habits, wants and the social structure which determine the distribution of income.

All these elements remain constant during the short-run. Therefore, the propensity to consume is stable. Employment thus depends on investment and it varies in the same direction as the volume of investment.

Investment, in turn, depends on the rate of interest and the marginal efficiency of capital (MEC). Investment can be increased by a fall in the rate of interest and/or a rise in the MEC. The MEC depends on the supply price of capital assets and their prospective yield.

It can be raised when the supply price of capital assets falls or their prospective yield increases. Since the supply price of capital assets is stable in the short- run, it is difficult to lower it. The second determinant of MEC is the prospective yield of capital assets which depends on the expectations of

yields on the part of businessmen. It is again a psychological factor which cannot be depended upon to increase the MEC to raise investment. Thus there is little scope for increasing investment by raising the MEC.

The other determinant of investment is the rate of interest. Investment and employment can be increased by lowering the rate of interest. The rate of interest is determined by the demand for money and the supply of money. On the demand side is the liquidity preference (LP) schedule. The higher the liquidity preference, the higher is the rate of interest that will have to be paid to cash holders to induce them to part with their liquid assets, and vice versa. People hold money (M) in cash for three motives: transactions, precautionary and speculative.

The transactions and precautionary motives (M) are income elastic. Thus the amount held under these two motives (M_1) is a function (L_1) of the level of income (Y), i.e. M=L (Y). But the money held for speculative motive (M_2) is a function of the rate of interest (r), i.e. M=L_2 (r). The higher the rate of interest, the lower the demand for money, and vice versa. Since LP depends on the psychological attitude to liquidity on the part of speculators with regard to future interest rates, it is not possible to lower the liquidity preference in order to bring down the rate of interest. The other determinant of interest rate is the supply of money which is assumed to be fixed by the monetary authority during the short-run.

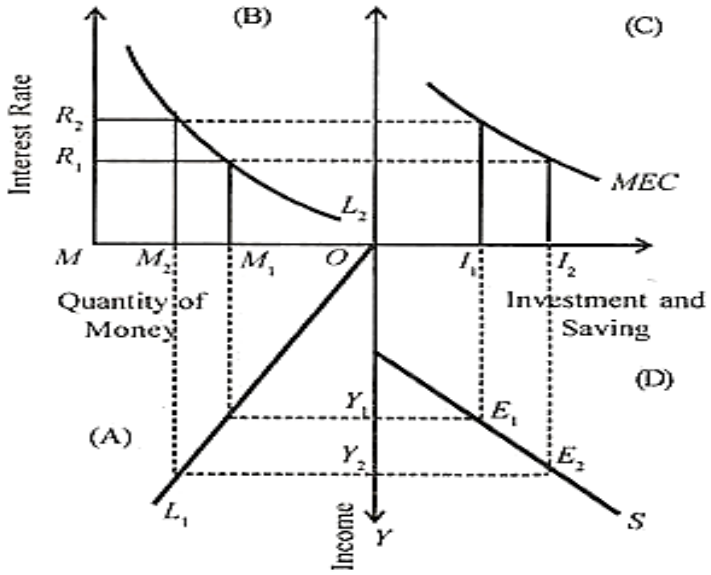

Fig. 1.9. MEC and investment

The relation between interest rate, MEC and investment is shown in Figure 1.9, where in Panels (A) and (B) the total demand for money is measured along the horizontal axis from M onward. The transactions (and precautionary) demand is given by the L_1 curve at OY_1 and OY_2 levels of income in Panel (A) of the figure.Thus at OY_1 income level, the transactions demand is given by OM_1 and at OY_2 level of income it is OM_2. In Panel (B), the L_2 curve represents the speculative demand for money as a function of the rate of interest. When the rate of interest is R_2, the speculative demand for money is MM_2. With the fall in the rate of interest to R_1, the speculative demand for money increases to MM_1. Panel (C) shows investment as a function of the rate of interest and the MEC. Given the MEC, when the rate of interest is R_2, the level of investment is OI_1. But when the rate of interest falls to R_1, investment increases to OI_2.

"In the Keynesian analysis, the equilibrium level of employment and income is determined at the point of equality between saving and investment. Saving is a function of income, i.e. S=f (Y). It is defined as the excess of income over consumption, S=Y-C and income is equal to consumption plus investment.

Thus Y = C + I

Or Y-C = I

Y-C = S

I = S

So the equilibrium level of income is established where saving equals investment. This is shown in Panel (D) of Figure 1 where the horizontal axis from O toward the right represents investment and saving, and OY axis represents income. S is the saving curve.

The line I_1E_1 is the investment curve (imagine that it can be extended beyond E as in an S and I diagram) which touches the S curve at E_1. Thus OY_1 is the equilibrium level of employment and income. This is the level of underemployment equilibrium, according to Keynes. If OY_2 is assumed to be the full employment level of income then the equality between saving and investment will take place at E_2 where I_2E_2 investment equals Y_2E_2 saving.

The Keynesian theory of employment and income is also explained in terms of the equality of aggregate supply (C+S) and aggregate demand (C+I). Since unemployment results from the deficiency of aggregate demand, employment, Income can be increased by increasing aggregate demand.

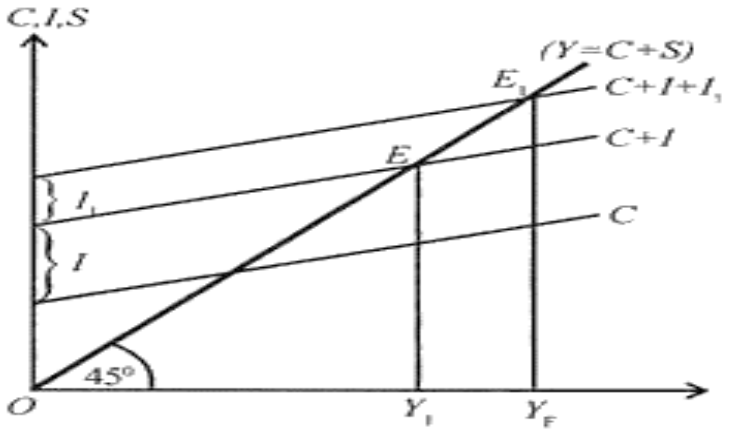

Fig. 1.10 Employment and income

Assuming the propensity to consume to be stable during the short-run, aggregate demand can be increased by increasing investment. Once investment increases, employment and income increase. Increased income leads to a rise in the demand for consumption goods which leads to further increase in employment and income. Once set in motion, employment and income tend to rise in a cumulative manner through the multiplier process till they reach the equilibrium level. According to Keynes, the equilibrium level of employment will be one of under-employment equilibrium because when income increases consumption also increases but by less than the increase in income.

This behaviour of the consumption function widens the gap between income and consumption which ordinarily cannot by filled up due to the lack of required investment. The full employment income level can only be established if the volume of investment is increased to fill the income-consumption gap corresponding to full employment. The Keynesian cross model of under-employment equilibrium is explained in Figure 1.10 where income and employment are taken on the horizontal axis and consumption and investment on the vertical axis. Autonomous investment is taken as a first approximation. C+I is the aggregate demand curve plotted by adding to consumption function C an equal amount of investment at all levels of income.

The 45° line is the aggregate supply curve. The economy is in equilibrium at point E where the aggregate demand curves C+I intersects the 45° line. This is the point of effective demand where the equilibrium level of income and employment OY_1 is determined. This is the level of underemployment equilibrium and not of full employment. There are no automatic forces that can make the two curves cross at a full employment income level. If it happens to be a full employment level, it will be accidental. Keynes regarded the under-employment equilibrium level as a normal case and the full employment income level as a special case. Suppose OY_F is the full employment income level. To reach this level, autonomous investment is increased by I_1 so that the C+I curve shifts upward as $C+I+I_1$, curve. This is the new aggregate demand curve which intersects the 45° line (the aggregate supply curve) at E_1, the higher point of effective demand corresponding to the full employment income level OY_F. This also reveals that to get a desired increase in employment and income of Y_1Y_F, it is the multiplier effect of an increase in investment by I_1 (=I_2 in Panel C of Figure 1.9) which leads to an increase in employment and income by Y_1Y_F through successive rounds of investment.

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UNIT – II

POST-KEYNESIAN DEMAND FOR MONEY

2.1. Introduction

The demand for money arises from two important functions of money. The first is that money acts as a medium of exchange and the second is that it is a store of value. Thus individuals and businesses wish to hold money partly in cash and partly in the form of assets. What explains changes in the demand for money? There are two views on this issue. The first is the "scale" view which is related to the impact of the income or wealth level upon the demand for money. The demand for money is directly related to the income level. The higher the income level, the greater will be the demand for money.

The second is the "substitution" view which is related to relative attractiveness of assets that can be substituted for money. According to this view, when alternative assets like bonds become unattractive due to fall in interest rates, people prefer to keep their assets in cash, and the demand for money increases, and vice versa. The scale and substitution view combined together have been used to explain the nature of the demand for money which has been split into the transactions demand, the precautionary demand and the speculative demand. There are three approaches to the demand for money: the classical, the Keynesian, and the post-Keynesian. We discuss these approaches below.

2.1.1. The Classical Approach:

The classical economists did not explicitly formulate demand for money theory but their views are inherent in the quantity theory of money. They emphasized the transactions demand for money in terms of the velocity of circulation of money. This is because money acts as a medium of exchange and facilitates the exchange of goods and services. In Fisher's "Equation of Exchange".

$$MV=PT$$

Where M is the total quantity of money, V is its velocity of circulation, P is the price level, and T is the total amount of goods and services exchanged for money.

The right hand side of this equation PT represents the demand for money which, in fact, "depends upon the value of the transactions to be undertaken in the economy, and is equal to a constant fraction of those transactions." MV represents the supply of money which is given and in equilibrium equals the demand for money. Thus the equation becomes

$$Md = PT$$

This transactions demand for money, in turn, is determined by the level of full employment income. This is because the classicists believed in Say's Law whereby supply created its own demand, assuming the full employment level of income. Thus the demand for money in Fisher's approach is a constant proportion of the level of transactions, which in turn, bears a constant relationship to the level of national income. Further, the demand for money is linked to the volume of trade going on in an economy at any time. Thus its underlying assumption is that people hold money to buy goods.

But people also hold money for other reasons, such as to earn interest and to provide against unforeseen events. It is therefore, not possible to say that V will remain constant when M is changed. The most important thing about money in Fisher's theory is that it is transferable. But it does not explain fully why people hold money. It does not clarify whether to include as money such items as time deposits or savings deposits that are not immediately available to pay debts without first being converted into currency. It was the Cambridge cash balance approach which raised a further question: Why do people actually want to hold their assets in the form of money? With larger incomes, people want to make larger volumes of transactions and that larger cash balances will, therefore, be demanded.

The Cambridge demand equation for money is

$$Md=kPY$$

where Md is the demand for money which must equal the supply to money (Md=Ms) in equilibrium in the economy, k is the fraction of the real money income (PY) which people wish to hold in cash and demand deposits or the ratio of money stock to income, P is the price level, and Y is the aggregate real income. This equation tells us that "other things being equal, the demand for

money in normal terms would be proportional to the nominal level of income for each individual, and hence for the aggregate economy as well."

2.1.2. Its Critical Evaluation:

This approach includes time and saving deposits and other convertible funds in the demand for money. It also stresses the importance of factors that make money more or less useful, such as the costs of holding it, uncertainty about the future and so on. But it says little about the nature of the relationship that one expects to prevail between its variables, and it does not say too much about which ones might be important. One of its major criticisms arises from the neglect of store of value function of money. The classicists emphasized only the medium of exchange function of money which simply acted as a go-between to facilitate buying and selling. For them, money performed a neutral role in the economy. It was barren and would not multiply, if stored in the form of wealth.

This was an erroneous view because money performed the "asset" function when it is transformed into other forms of assets like bills, equities, debentures, real assets (houses, cars, TVs, and so on), etc. Thus the neglect of the asset function of money was the major weakness of classical approach to the demand for money which Keynes remedied.

2.2. The Keynesian Approach: Liquidity Preference:

Keynes in his General Theory used a new term "liquidity preference" for the demand for money. Keynes suggested three motives which led to the demand for money in an economy: (1) the transactions demand, (2) the precautionary demand, and (3) the speculative demand.

(1). Transactions Demand for Money:

The transactions demand for money arises from the medium of exchange function of money in making regular payments for goods and services. According to Keynes, it relates to "the need of cash for the current transactions of personal and business exchange" It is further divided into income and business motives. The income motive is meant "to bridge the interval between the receipt of income and its disbursement." Similarly, the business motive is meant "to bridge the interval between the time of incurring business costs and that of the receipt of the sale proceeds." If the time between

the incurring of expenditure and receipt of income is small, less cash will be held by the people for current transactions, and vice versa. There will, however, be changes in the transactions demand for money depending upon the expectations of income recipients and businessmen. They depend upon the level of income, the interest rate, the business turnover, the normal period between the receipt and disbursement of income, etc.

Given these factors, the transactions demand for money is a direct proportional and positive function of the level of income, and is expressed as

$$L_1 = kY$$

Where L_1 is the transactions demand for money, k is the proportion of income which is kept for transactions purposes, and Y is the income. This equation is illustrated in Figure 2.1 where the line kY represents a linear and proportional relation between transactions demand and the level of income. Assuming k= 1/4 and income Rs 1000 crores, the demand for transactions balances would be Rs 250 crores, at point A. With the increase in income to Rs 1200 crores, the transactions demand would be Rs 300 crores at point B on the curve kY.

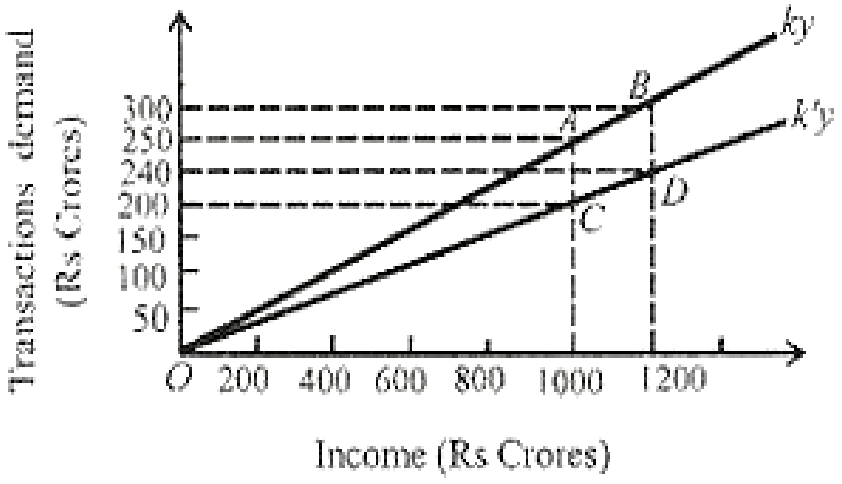


Fig. 2.1. Transaction demand for Money

If the transactions demand falls due to a change in the institutional and structural conditions of the economy, the value of κ is reduced to say, 1/5, and the new transactions demand curve is kY. It shows that for income of Rs 1000 and 1200 crores, transactions balances would Rs 200 and 240 crores at points C and D respectively in the figure. "Thus we conclude that the chief

determinant of changes in the actual amount of the transactions balances held is changes in income. Changes in the transactions balances are the result of movements along a line like kY rather than changes in the slope of the line. In the equation, changes in transactions balances are the result of changes in Y rather than changes in k."

Interest Rate and Transactions Demand:

Regarding the rate of interest as the determinant of the transactions demand for money Keynes made the L_T function interest inelastic. But the pointed out that the "demand for money in the active circulation is also the some extent a function of the rate of interest, since a higher rate of interest may lead to a more economical use of active balances." "However, he did not stress the role of the rate of interest in this part of his analysis, and many of his popularizes ignored it altogether." In recent years, two post-Keynesian economists William J. Baumol and James Tobin have shown that the rate of interest is an important determinant of transactions demand for money.

They have also pointed out the relationship, between transactions demand for money and income is not linear and proportional. Rather, changes in income lead to proportionately smaller changes in transactions demand. Transactions balances are held because income received once a month is not spent on the same day. In fact, an individual spreads his expenditure evenly over the month. Thus a portion of money meant for transactions purposes can be spent on short-term interest-yielding securities. It is possible to "put funds to work for a matter of days, weeks, or months in interest-bearing securities such as U.S. Treasury bills or commercial paper and other short-term money market instruments.

The problem here is that there is a cost involved in buying and selling. One must weigh the financial cost and inconvenience of frequent entry to and exit from the market for securities against the apparent advantage of holding interest-bearing securities in place of idle transactions balances. Among other things, the cost per purchase and sale, the rate of interest, and the frequency of purchases and sales determine the profitability of switching from ideal transactions balances to earning assets. Nonetheless, with the cost per purchase and sale given, there is clearly some rate of interest at which it

becomes profitable to switch what otherwise would be transactions balances into interest-bearing securities, even if the period for which these funds may be spared from transactions needs is measured only in weeks. The higher the interest rate, the larger will be the fraction of any given amount of transactions balances that can be profitably diverted into securities."

The structure of cash and short-term bond holdings is shown in Figure 2.2 (A), (B) and (C). Suppose an individual receives Rs 1200 as income on the first of every month and spends it evenly over the month. The month has four weeks. His saving is zero. Accordingly, his transactions demand for money in each week is Rs 300. So he has Rs 900 idle money in the first week, Rs 600 in the second week, and Rs 300 in the third week. He will, therefore, convert this idle money into interest bearing bonds, as illustrated in Panel (B) and (C) of Figure 2.2.

He keeps and spends Rs 300 during the first week (shown in Panel B), and invests Rs 900 in interest-bearing bonds (shown in Panel C). On the first day of the second week he sells bonds worth Rs. 300 to cover cash transactions of the second week and his bond holdings are reduced to Rs 600. Similarly, he will sell bonds worth Rs 300 in the beginning of the third and keep the remaining bonds amounting to Rs 300 which he will sell on the first day of the fourth week to meet his expenses for the last week of the month. The amount of cash held for transactions purposes by the individual during each week is shown in saw-tooth pattern in Panel (B), and the bond holdings in each week are shown in blocks in Panel (C) of Figure 2.2.

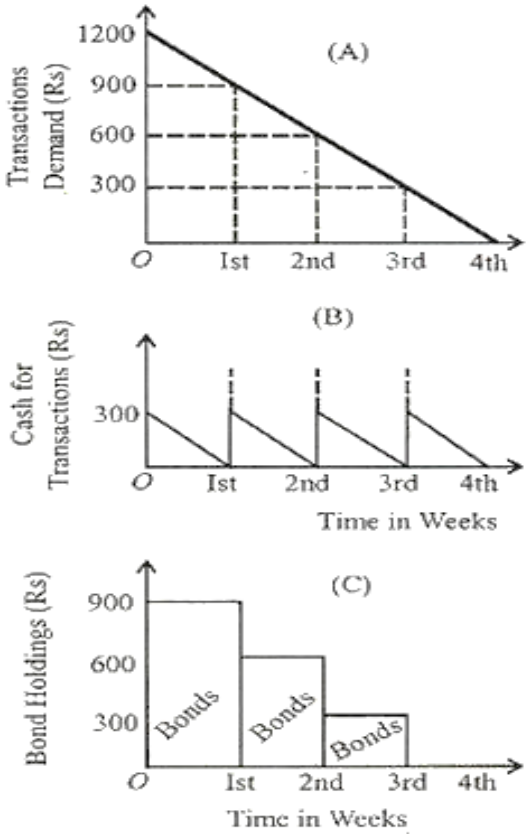


Fig.2.2 Interest rate

The modern view is that the transactions demand for money is a function of both income and interest rates which can be expressed as $L_1 = f(Y, r)$. This relationship between income and interest rate and the transactions demand for money for the economy as a whole is illustrated in Figure 3. We saw above that $L_T = kY$. If y=Rs 1200 crores and k= 1/4, then L_T = Rs 300 crores.

This is shown as Y_1 curve in Figure 2.3. If the income level rises to Rs 1600 crores, the transactions demand also increases to Rs 400 crores, given k = 1/4. Consequently, the transactions demand curve shifts to Y_2. The transactions demand curves Y_1, and Y_2 are interest- inelastic so long as the rate of interest does not rise above r_8 per cent.

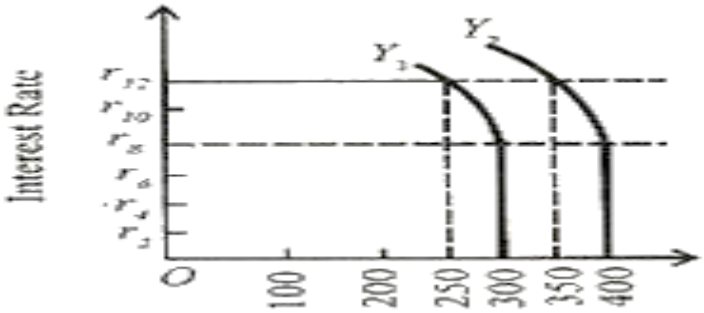


Fig.2.3. Transaction demand for money

As the rate of interest starts rising above r_8, the transactions demand for money becomes interest elastic. It indicates that "given the cost of switching into and out of securities, an interest rate above 8 per cent is sufficiently high to attract some amount of transaction balances into securities." The backward slope of the K, curve shows that at still higher rates, the transaction demand for money declines. Thus when the rate of interest rises to r_{12}, the transactions demand declines to Rs 250 crores with an income level of Rs 1200 crores. Similarly, when the national income is Rs 1600 crores the transactions demand would decline to Rs 350 crores at r_{12} interest rate. Thus the transactions demand for money varies directly with the level of income and inversely with the rate of interest.

(**2). Precautionary Demand for Money:**

The Precautionary motive relates to "the desire to provide for contingencies requiring sudden expenditures and for unforeseen opportunities of advantageous purchases." Both individuals and businessmen keep cash in reserve to meet unexpected needs. Individuals hold some cash to provide for illness, accidents, unemployment and other unforeseen contingencies.

Similarly, businessmen keep cash in reserve to tide over unfavourable conditions or to gain from unexpected deals. Therefore, "money held under the precautionary motive is rather like water kept in reserve in a water tank." The precautionary demand for money depends upon the level of income, and business activity, opportunities for unexpected profitable deals, availability of cash, the cost of holding liquid assets in bank reserves, etc.

Keynes held that the precautionary demand for money, like transactions demand, was a function of the level of income. But the post-Keynesian economists believe that like transactions demand, it is inversely related to high interest rates. The transactions and precautionary demand for money will be unstable, particularly if the economy is not at full employment level and transactions are, therefore, less than the maximum, and are liable to fluctuate up or down.

Since precautionary demand, like transactions demand is a function of income and interest rates, the demand for money for these two purposes is expressed in the single equation LT=f(Y, r).

(3). Speculative Demand for Money:

The speculative (or asset or liquidity preference) demand for money is for securing profit from knowing better than the market what the future will bring forth". Individuals and businessmen having funds, after keeping enough for transactions and precautionary purposes, like to make a speculative gain by investing in bonds. Money held for speculative purposes is a liquid store of value which can be invested at an opportune moment in interest-bearing bonds or securities.

Bond prices and the rate of interest are inversely related to each other. Low bond prices are indicative of high interest rates, and high bond prices reflect low interest rates. A bond carries a fixed rate of interest. For instance, if a bond of the value of Rs 100 carries 4 per cent interest and the market rate of interest rises to 8 per cent, the value of this bond falls to Rs 50 in the market. If the market rate of interest falls to 2 per cent, the value of the bond will rise to Rs 200 in the market.

This can be worked out with the help of the equation

$V = R/r$

Where V is the current market value of a bond, R is the annual return on the bond, and r is the rate of return currently earned or the market rate of interest. So a bond worth Rs 100 (V) and carrying a 4 per cent rate of interest (r), gets an annual return (R) of Rs 4, that is, V=Rs 4/0.04=Rs 100. When the market rate of interest rises to 8 per cent, then V=Rs 4/0.08=Rs50; when it fall to 2 per cent, then V=Rs 4/0.02=Rs 200.

Thus individuals and businessmen can gain by buying bonds worth Rs 100 each at the market price of Rs 50 each when the rate of interest is high (8 per cent), and sell them again when they are dearer (Rs 200 each when the rate of interest falls (to 2 per cent). According to Keynes, it is expectations about changes in bond prices or in the current market rate of interest that determine the speculative demand for money. In explaining the speculative demand for money, Keynes had a normal or critical rate of interest (r_c) in mind. If the

current rate of interest (r) is above the "critical" rate of interest, businessmen expect it to fall and bond price to rise. They will, therefore, buy bonds to sell them in future when their prices rise in order to gain thereby. At such times, the speculative demand for money would fall. Conversely, if the current rate of interest happens to be below the critical rate, businessmen expect it to rise and bond prices to fall. They will, therefore, sell bonds in the present if they have any, and the speculative demand for money would increase.

Thus when $r > r_0$, an investor holds all his liquid assets in bonds, and when $r < r_0$ his entire holdings go into money. But when $r = r_0$, he becomes indifferent to hold bonds or money. Thus relationship between an individual's demand for money and the rate of interest is shown in Figure. Where the horizontal axis shows the individual's demand for money for speculative purposes and the current and critical interest rates on the vertical axis. The figure shows that when r is greater than r_0, the asset holder puts all his cash balances in bonds and his demand for money is zero.

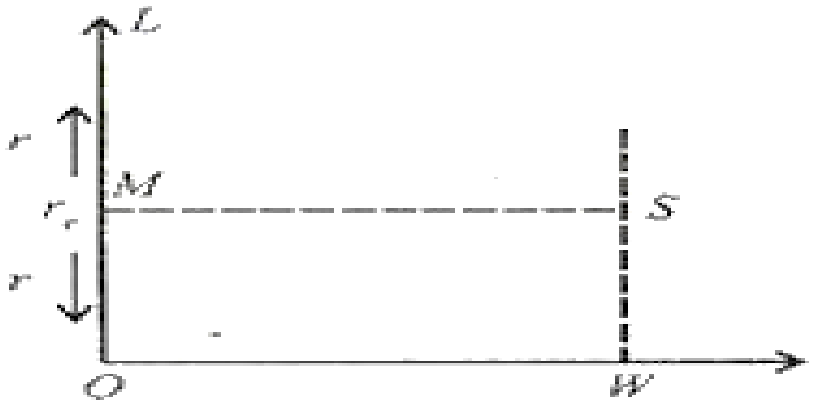


Fig.2.4. (a) Speculative demand for money

This is illustrated by the LM portion of the vertical axis. When r falls below r_0, the individual expects more capital losses on bonds as against the interest yield. He, therefore, converts his entire holdings into money, as shown by OW in the figure. This relationship between an individual asset holder's demand for money and the current rate of interest gives the discontinuous step demand for money curve LMSW. For the economy as a whole the individual demand curve can be aggregated on this presumption that individual asset-

holders differ in their critical rates r_0. It is smooth curve which slopes downward from left to right, as shown in Figure 2.4.

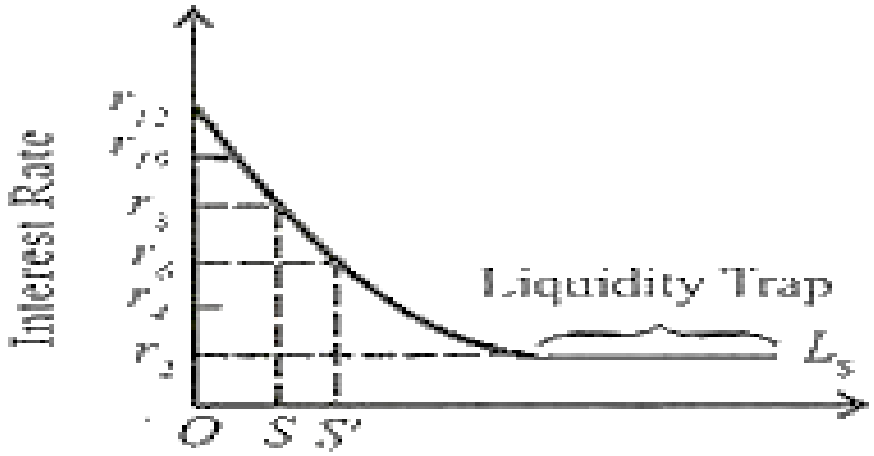


Fig.2.4 (b) speculative demand for money with liquidity

Thus the speculative demand for money is a decreasing function of the rate of interest. The higher the rate of interest, the lower the speculative demand for money and the lower the rate of interest, the higher the speculative demand for money. It can be expressed algebraically as Ls = f (r), where Ls is the speculative demand for money and r is the rate of interest. Geometrically, it is shows in Figure 2.4. (b). The figure shows that at a very high rate of interest r_{J2}, the speculative demand for money is zero and businessmen invest their cash holdings in bonds because they believe that the interest rate cannot rise further. As the rate of interest falls to say, r_8 the speculative demand for money is OS. With a further fall in the interest rate to r_6, it rises to OS'. Thus the shape of the Ls curve shows that as the interest rate rises, the speculative demand for money declines; and with the fall in the interest rate, it increases. Thus the Keynesian speculative demand for money function is highly volatile, depending upon the behaviour of interest rates.

Liquidity Trap:

Keynes visualised conditions in which the speculative demand for money would be highly or even totally elastic so that changes in the quantity of money would be fully absorbed into speculative balances. This is the famous Keynesian liquidity trap. In this case, changes in the quantity of money have no effects at all on prices or income. According to Keynes, this is likely to happen when the market interest rate is very low so that yields on bond, equities and other securities will also be low.

At a very low rate of interest, such as r_2, the Ls curve becomes perfectly elastic and the speculative demand for money is infinitely elastic. This portion of the Ls curve is known as the liquidity trap. At such a low rate, people prefer to keep money in cash rather than invest in bonds because purchasing bonds will mean a definite loss. People will not buy bonds so long as the interest rate remain at the low level and they will be waiting for the rate of interest to return to the "normal" level and bond prices to fall.

According to Keynes, as the rate of interest approaches zero, the risk of loss in holding bonds becomes greater. "When the price of bonds has been bid up so high that the rate of interest is, say, only 2 per cent or less, a very small decline in the price of bonds will wipe out the yield entirely and a slightly further decline would result in loss of the part of the principal." Thus the lower the interest rate, the smaller the earnings from bonds. Therefore, the greater the demand for cash holdings. Consequently, the Ls curve will become perfectly elastic.

Further, according to Keynes, "a long-term rate of interest of 2 per cent leaves more to fear than to hope, and offers, at the same time, a running yield which is only sufficient to offset a very small measure of fear." This makes the Ls curve "virtually absolute in the sense that almost everybody prefers cash to holding a debt which yields so low a rate of interest." Prof. Modigliani believes that an infinitely elastic Ls curve is possible in a period of great uncertainty when price reductions are anticipated and the tendency to invest in bonds decreases, or if there prevails "a real scarcity of investment outlets that are profitable at rates of interest higher than the institutional minimum."
The phenomenon of liquidity trap possesses certain important implications.
First, the monetary authority cannot influence the rate of interest even by following a cheap money policy. An increase in the quantity of money cannot lead to a further decline in the rate of interest in a liquidity-trap situation.
Second, the rate of interest cannot fall to zero.
Third, the policy of a general wage cut cannot be efficacious in the face of a perfectly elastic liquidity preference curve, such as Ls in Figure 2.4. No doubt, a policy of general wage cut would lower wages and prices, and thus release money from transactions to speculative purpose, the rate of interest would

remain unaffected because people would hold money due to the prevalent uncertainty in the money market. Last, if new money is created, it instantly goes into speculative balances and is put into bank vaults or cash boxes instead of being invested. Thus there is no effect on income. Income can change without any change in the quantity of money. Thus monetary changes have a weak effect on economic activity under conditions of absolute liquidity preference.

2.2.1 The Total Demand for Money:

According to Keynes, money held for transactions and precautionary purposes is primarily a function of the level of income, L_T=f (F), and the speculative demand for money is a function of the rate of interest, Ls = f (r). Thus the total demand for money is a function of both income and the interest rate:

$L_T + L_S$ = f (Y) + f (r)

or L = f (Y) + f (r)

or L=f (Y, r)

Where L represents the total demand for money.

Thus the total demand for money can be derived by the lateral summation of the demand function for transactions and precautionary purposes and the demand function for speculative purposes, as illustrated in Figure 2.5. (A), (B) and (C). Panel (A) of the Figure shows OT, the transactions and precautionary demand for money at Y level of income and different rates of interest. Panel (B) shows the speculative demand for money at various rates of interest. It is an inverse function of the rate of interest.

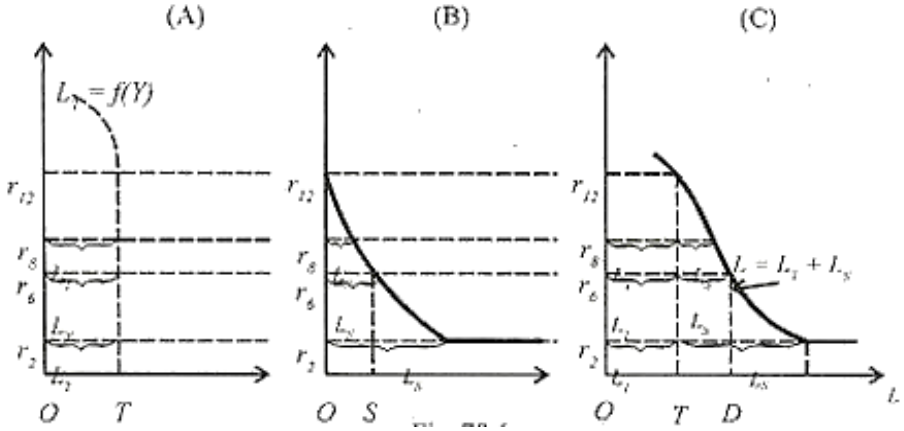


Fig.2.5. Liquidity trap

For instance, at r_6 rate of interest it is OS and as the rate of interest falls to r the Ls curve becomes perfectly elastic. Panel (C) shows the total demand curve for money L which is a lateral summation of LT and Ls curves: $L=L_T+L_S$. For example, at r_b rate of interest, the total demand for money is OD which is the sum of transactions and precautionary demand OT plus the speculative demand TD, OD=OT+TD. At r_2 interest rate, the total demand for money curve also becomes perfectly elastic, showing the position of liquidity trap.

2.3. Approaches of Baumol and Tobin

By introducing speculative demand for money, Keynes made a significant departure from the classical theory of money demand which emphasized only the transactions demand for money. However, as seen above, Keynes' theory of speculative demand for money has been challenged. The main drawback of Keynes' speculative demand for money is that it visualises that people hold their assets in either all money or all bonds. This seems quite unrealistic as individuals hold their financial wealth in some combination of both money and bonds.

This gave rise to portfolio approach to demand for money put forward by Tobin, Baumol and Freidman. The portfolio of wealth consists of money, interest-bearing bonds, shares, physical assets etc. Further, while according to Keynes' theory, demand for money for transaction purposes is insensitive to interest rate, the modem theories of money demand put forward by Baumol and Tobin show that money held for transaction purposes is interest elastic. We discuss below the Post-Keynesian theories of demand for money put forward by Tobin, Baumol and Friedman.

1. Tobin's Portfolio Approach to Demand for Money:

An American economist James Tobin, in his important contribution explained that rational behaviour on the part of the individuals is that they should keep a portfolio of assets which consists of both bonds and money. In his analysis he makes a valid assumption that people prefer more wealth to less. According to him, an investor is faced with a problem of what proportion of his portfolio of financial assets he should keep in the form of money (which earns no interest) and interest-bearing bonds. The portfolio of individuals may

also consist of more risky assets such as shares. According to Tobin, faced with various safe and risky assets, individuals diversify their portfolio by holding a balanced combination of safe and risky assets. According to Tobin, individual's behaviour shows risk aversion. That is, they prefer less risk to more risk at a given rate of return. In the Keynes' analysis an individual holds his wealth in either all money or all bonds depending upon his estimate of the future rate of interest.

But, according to Tobin, individuals are uncertain about future rate of interest. If a wealth holder chooses to hold a greater proportion of risky assets such as bonds in his portfolio, he will be earning a high average return but will bear a higher degree of risk. Tobin argues that a risk averter will not opt for such a portfolio with all risky bonds or a greater proportion of them. On the other hand, a person who, in his portfolio of wealth, holds only safe and riskless assets such as money (in the form of currency and demand deposits in banks) he will be taking almost zero risk but will also be having no return and as a result there will be no growth of his wealth. Therefore, people generally prefer a mixed diversified portfolio of money, bonds and shares, with each person opting for a little different balance between riskiness and return. It is important to note that a person will be unwilling to hold all risky assets such as bonds unless he obtains a higher average return on them. In view of the desire of individuals to have both safety and reasonable return, they strike a balance between them and hold a mixed and balanced portfolio consisting of money (which is a safe and riskless asset) and risky assets such as bonds and shares though this balance or mix varies between various individuals depending on their attitude towards risk and hence their trade-off between risk and return.

Tobin's Liquidity Preference Function:

Tobin derived his liquidity preference function depicting relationship between rate of interest and demand for money (that is, preference for holding wealth in money form which is a safe and "riskless" asset. He argues that with the increase in the rate of interest (i.e. rate of return on bonds), wealth holders will be generally attracted to hold a greater fraction of their wealth in bonds and thus reduce their holding of money.

That is, at a higher rate of interest, their demand for holding money (i.e., liquidity) will be less and therefore they will hold more bonds in their portfolio. On the other hand, at a lower rate of interest they will hold more money and less bonds in their portfolio. This means, like the Keynes's speculative demand for money, in Tobin's portfolio approach demand function for money as an asset (i.e. his liquidity preference function curve) slopes downwards as is shown in Fig. 2.6, where on the horizontal axis asset demand for money is shown. This downward-sloping liquidity preference function curve shows that the asset demand for money in the portfolio increases as the rate of interest on bonds falls.

In this way Tobin derives the aggregate liquidity preference curve by determining the effects of changes in interest rate on the asset demand for money in the portfolio of individuals. Tobin's liquidity preference theory has been found to be true by the empirical studies conducted to measure interest elasticity of the demand for money. As shown by Tobin through his portfolio approach, these empirical studies reveal that aggregate liquidity preference curve is negatively sloped. This means that most of the people in the economy have liquidity preference function similar to the one shown by curve M_d in Fig.

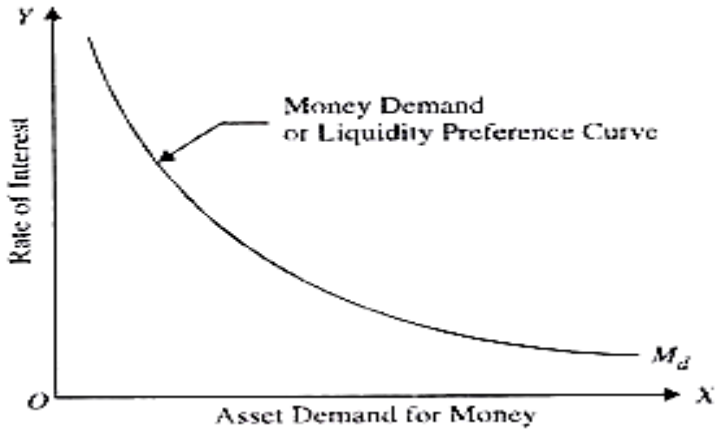


Fig.2.6. Tobin's Liquidity Preference Curve

Evaluation:

Tobin's approach has done away with the limitation of Keynes' theory of liquidity preference for speculative motive, namely, individuals hold their wealth in either all money or all bonds. Thus, Tobin's approach, according to which individuals simultaneously hold both money and bonds but in different

proportion at different rates of interest yields a continuous liquidity preference curve.

Further, Tobin's analysis of simultaneous holding of money and bonds is not based on the erroneous Keynes's assumption that interest rate will move only in one direction but on a simple fact that individuals do not know with certainty which way the interest rate will change. It is worth mentioning that Tobin's portfolio approach, according to which liquidity preference (i.e. demand for money) is determined by the individual's attitude towards risk, can be extended to the problem of asset choice when there are several alternative assets, not just two, of money and bonds.

2. Baumol's Inventory Approach to Transactions Demand for Money:

Instead of Keynes's speculative demand for money, Baumol concentrated on transactions demand for money and put forward a new approach to explain it. Baumol explains the transaction demand for money from the viewpoint of the inventory control or inventory management similar to the inventory management of goods and materials by business firms. As businessmen keep inventories of goods and materials to facilitate transactions or exchange in the context of changes in demand for them, Baumol asserts that individuals also hold inventory of money because this facilitates transactions (i.e. purchases) of goods and services.

In view of the cost incurred on holding inventories of goods there is need for keeping optimal inventory of goods to reduce cost. Similarly, individuals have to keep optimum inventory of money for transaction purposes. Individuals also incur cost when they hold inventories of money for transactions purposes. They incur cost on these inventories as they have to forgone interest which they could have earned if they had kept their wealth in saving deposits or fixed deposits or invested in bonds. This interest income forgone is the cost of holding money for transactions purposes. In this way Baumol and Tobin emphasised that transaction demand for money is not independent of the rate of interest.

It may be noted that by money we mean currency and demand deposits which are quite safe and riskless but carry no interest. On the other hand, bonds yield interest or return but are risky and may involve capital loss if

wealth holders invest in them. However, saving deposits in banks, according to Baumol, are quite free from risk and also yield some interest. Therefore, Baumol asks the question why an individual holds money (i.e. currency and demand deposits) instead of keeping his wealth in saving deposits which are quite safe and earn some interest as well.

According to him, it is for convenience and capability of it being easily used for transactions of goods that people hold money with them in preference to the saving deposits. Unlike Keynes both Baumol and Tobin argue that transactions demand for money depends on the rate of interest. People hold money for transaction purposes "to bridge the gap between the receipt of income and its spending." As interest rate on saving deposits goes up people will tend to shift a part of their money holdings to the interest-bearing saving deposits. Individuals compare the costs and benefits of funds in the form of money with the interest- bearing saving deposits. According to Baumol, the cost which people incur when they hold funds in money is the opportunity cost of these funds, that is, interest income forgone by not putting them in saving deposits.

Baumol's Analysis of Transactions Demand:

A Baumol analysis the transactions demand for money of an individual who receives income at a specified interval, say every month, and spends it gradually at a steady rate. This is illustrated in Fig. 2.7. It is assumed that individual is paid Rs. 12000 salary cheque on the first day of each month. Suppose he gets it cashed (i.e. converted into money) on the very first day and gradually spends it daily throughout the month. (Rs. 400 per day) so that at the end of the month he is left with no money. It can be easily seen that his average money holding in the month will be Rs. = 12000/2 = Rs. 6,000 (before 15th of a month he will be having more than Rs. 6,000 and after 15th day he will have less than Rs. 6,000).Average holding of money equal to Rs. 6,000 has been shown by the dotted line. Now, the question arises whether it is the optimal strategy of managing money or what is called optimal cash management. The simple answer is no. This is because the individual is losing interest which he could have earned if he had deposited some funds in

interest-bearing saving deposits instead of withdrawing all his salary in cash on the first day.

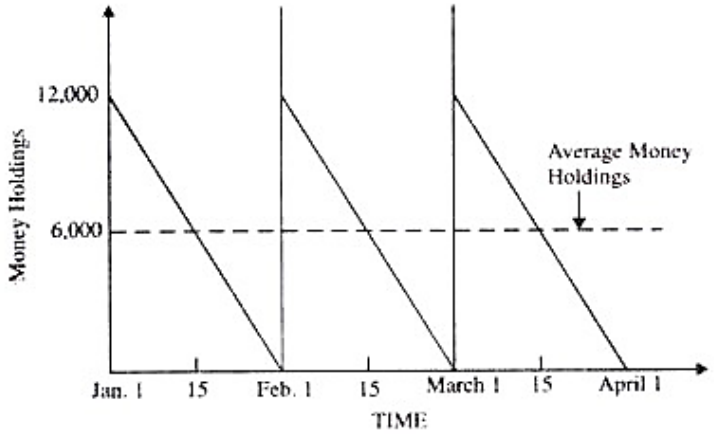


Fig.2.7. stream of cash payments and transactions demand for money

He can manage his money balances so as to earn some interest income as well. Suppose, instead of withdrawing his entire salary on the first day of a month, he withdraws only half of it i.e. (Rs. 6,000 in cash and deposits the remaining amount of Rs. 6,000 in saving account which gives him interest of 5 per cent, his expenditure per day remaining constant at Rs. 400. Thus the total cost incurred on broker's fee and interest income forgone is given by

Total Cost =bT + r.C/2

Where b stands for broker's fee

As seen above, T = Y/C

Therefore, Total Cost = Y/Cb + r.C/2

Baumol has shown that average amount of cash withdrawal which minimises cost is given by

$$C = \sqrt{2bY/r}$$

This means that average amount of cash withdrawal which minimise cost is the square root of the two times broker's fee multiplied by the size of individual's income (Y) and divided by the interest rate. This is generally referred to as Square Root Rule. For this rule, it follows that a higher broker's fee will raise the money holdings as it will discourage the individuals to make more trips to the bank. On the other hand, a higher interest rate will induce them to reduce their money holdings for transaction purposes as they will be induced to keep more funds in saving deposits to earn higher interest income. That is, at a higher rate of interest transactions demand for money holdings

will decline. Keynes thought that transactions demand for money was independent of rate of interest. According to him, transactions demand for money depends on the level of income. However, Baumol and Tobin have shown that transactions demand for money is sensitive to rate of interest.

As explained above, interest represents the opportunity cost of holding money instead of bonds, saving and fixed deposits. The higher the rate of interest, the greater the opportunity cost of holding money (i.e. the greater the interest income forgone for holding money for transactions).

Therefore, at a higher rate of interest people will try to economise the use of money and will demand less money for transactions. At a lower interest rate on bonds, saving and fixed deposits, the opportunity cost of holding money will be less which will prompt people to hold more money for transactions. Therefore, according to Baumol and Tobin, transactions demand curve for money slopes downward as shown in Fig. 2.8. At higher interest rates, bonds, savings and fixed deposits are more attractive relative to money holding for transactions. Therefore, at higher interest rates people tend to hold less money for transaction purposes. On the other hand, when the rates of interest are low, opportunity cost of holding money will be less and, as a consequence, people will hold more money for transactions.

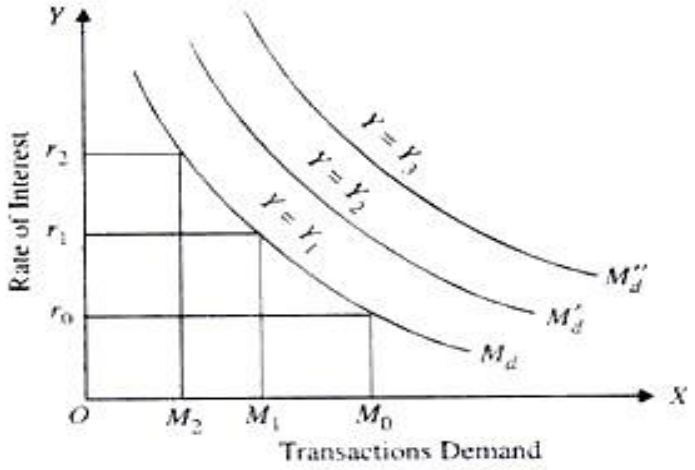


Fig.2.8. Transactions Demand for Money: Baumol - Tobin Approach

Therefore, the curve of transaction demand for money slopes downward. It will be observed from the square root rule given above that transactions demand for money varies directly with the income (Y) of the individuals.

Therefore, the higher the level of income, the greater the transactions demand for money at a given rate of interest.

In Fig. 2.8. The three transactions demand curves for money M_d, M_d'and M_d", for three different income levels, Y_1, Y_2, Y_3 are shown. It will be known from the square root rule that optimum money holding for transactions will increase less than proportionately to the increase in income. Thus, transactions demand for money, according to Baumol and Tobin, is function of both rate of interest and the level of income.

$M_{td} = f(r, Y)$

Where M_{td} stands for transactions demand for money, r for rate of interest and Y for the level of income.

3. Friedman's Theory of Demand for Money:

A noted monetarist economist Friedman put forward demand for money function which plays an important role in his restatement of the quantity theory of money and prices. Friedman believes that money demand function is most important stable function of macroeconomics. He treats money as one type of asset in which wealth holders can keep a part of their wealth. Business firms view money as a capital good or a factor of production which they combine with the services of other productive assets or labour to produce goods and services.

Thus, according to Friedman, individuals hold money for the services it provides to them. It may be noted that the service rendered by money is that it serves as a general purchasing power so that it can be conveniently used for buying goods and services. His approach to demand for money does not consider any motives for holding money, nor does it distinguishes between speculative and transactions demand for money. Friedman considers the demand for money merely as an application of a general theory of demand for capital assets.

Like other capital assets, money also yields return and provides services. He analyses the various factors that determine the demand for money and from this analysis derives demand for money function. Note that the value of goods and services which money can buy represents the real yield on money. Obviously, this real yield of money in terms of goods and services

which it can purchase will depend on the price level of goods and services. Besides money, bonds are another type of asset in which people can hold their wealth. Bonds are securities which yield a stream of interest income, fixed in nominal terms. Yield on bond is the coupon rate of interest and also anticipated capital gain or loss due to expected changes in the market rate of interest.

Equities or Shares are another form of asset in which wealth can be held. The yield from equity is determined by the dividend rate, expected capital gain or loss and expected changes in the price level. The fourth form in which people can hold their wealth is the stock of producer and durable consumer commodities. These commodities also yield a stream of income but in kind rather than in money. Thus, the basic yield from commodities is implicit one. However, Friedman also considers an explicit yield from commodities in the form of expected rate of change in their price per unit of time.

Friedman's nominal demand function (M_d) for money can be written as

$Md=f (W, h, r_m, r_b, r_e, P, \Delta P/P, U)$

As demand for real money balances is nominal demand for money divided by the price level, demand for real money balances can be written as

$M_d/P = f(W, h, r_m, r_b, r_e, P, \Delta P/P, U)$

Where M_d stands for nominal demand for money and M_d/P for demand for real money balances, W stands for wealth of the individuals, h for the proportion of human wealth to the total wealth held by the individuals, r_m for rate of return or interest on money, r_b for rate of interest on bonds, r_e for rate of return on equities, P for the price level, $\Delta P/P$ for the change in price level {i.e. rate of inflation), and U for the institutional factors.

1. Wealth (W):

The major factor determining the demand for money is the wealth of the individual (W) In wealth Friedman includes not only non-human wealth such as bonds, shares, money which yield various rates of return but also human wealth or human capital. By human wealth Friedman means the value of an individual's present and future earnings.

Whereas non-human wealth can be easily converted into money, that is, can be made liquid. Such substitution of human wealth is not easily possible. Thus human wealth represents illiquid component of wealth and, therefore, the proportion of human wealth to the non-human wealth has been included in the demand for money function as an independent variable. Individual's demand for money directly depends on his total wealth. Indeed, the total wealth of an individual represents an upper limit of holding money by an individual and is similar to the budget constraint of the consumer in the theory of demand.

The greater the wealth of an individual, the more money he will demand for transactions and other purposes. As a country, becomes richer, its demand for money for transaction and other purposes will increase. Since as compared to non- human wealth, human wealth is much less liquid, Friedman has argued that as the proportion of human wealth in the total wealth increases, there will be a greater demand for money to make up for the illiquidity of human wealth.

2. Rates of Interest or Return (r_m, r_b, r_e):

Friedman considers three rates of interest, namely, r_b, r_e and which determine the demand for money, r_m is the own rate of interest on money. Note that money kept in the form of currency and demand deposits does not earn any interest. But money held as saving deposits and fixed deposits earns certain rates of interest and it is this rate of interest which is designated by r_m in the money demand function. Given the other rates of interest or return, the higher the own rate of interest, the greater the demand for money.

In deciding how large a part of his wealth to hold in the form of money the individual will compare the rate of interest on money with rates of interest (or return) on bonds and other assets. As mentioned earlier, the opportunity cost of holding money is the interest or return given up by not holding these other forms of assets. As rates of return on bond (r_b) and equities (r_e) rise, the opportunity cost of holding money will increase which will reduce the demand for money holdings. Thus, the demand for money is negatively related to the rate of interest (or return) on bonds, equities and other such non-money assets.

3. Price Level (P):

Price level also determines the demand for money balances. A higher price level means people will require a larger nominal money balances in order to do the same amount of transactions, that is, to purchase the same amount of goods and services. If income (Y) is used as proxy for wealth (W) which, as stated above, is the most important determinant of demand for money, then nominal income is given by Y.P which becomes a crucial determinant of demand for money. Here Y stands for real income (i.e. in terms of goods and services) and P for price level. As the price level goes up, the demand for money will rise and, on the other hand, if price level falls, the demand for money will decline. As a matter of fact, people adjust the nominal money balances (M) to achieve their desired level of real money balances (M/P).

4. The Expected Rate of Inflation (∆P/P):

If people expect a higher rate of inflation, they will reduce their demand for money holdings. This is because inflation reduces the value of their money balances in terms of its power to purchase goods and services. If the rate of inflation exceeds the nominal rate of interest, there will be negative rate of return on money. Therefore, when people expect a higher rate of inflation they will tend to convert their money holdings into goods or other assets which are not affected by inflation. On the other hand, if people expect a fall in the price level, their demand for money holdings will increase.

5. Institutional Factors (U):

Institutional factors such as mode of wage payments and bill payments also affect the demand for money. Several other factors which influence the overall economic environment affect the demand for money. For example, if recession or war is anticipated, the demand for money balances will increase. Besides, instability in capital markets, which erodes the confidence of the people in making profits from investment in bonds and equity shares will also raise the demand for money. Even political instability in the country influences the demand for money. To account for these institutional factors Friedman includes the variable U in his demand for money function.

2.4. KEYNES'S REFORMULATED QUANTITY THEORY OF MONEY

2.4.1. Introduction:

He then presented a reformulated quantity theory of money which brought about a transition from a monetary theory of prices to a monetary theory of output. In doing this, Keynes made an attempt to integrate monetary theory with value theory and also linked the theory of interest into monetary theory. But "it is through the theory of output that value theory and monetary theory is brought into just a position with each other." Keynes does not agree with the older quantity theorists that there is a direct and proportional relationship between quantity of money and prices. According to him, the effect of a change in the quantity of money on prices is indirect and non-proportional.

Keynes complains "that economics has been divided into two compartments with no doors or windows between the theory of value and the theory of money and prices." This dichotomy between the relative price level (as determined by demand and supply of goods) and the absolute price level (as determined by demand and supply of money) arises from the failure of the classical monetary economists to integrate value theory with monetary theory. Consequently, changes in the money supply affect only the absolute price level but exercise no influence on the relative price level.

Further, Keynes criticises the classical theory of static equilibrium in which money is regarded as neutral and does not influence the economy's real equilibrium relating to relative prices. According to him, the problems of the real world are related to the theory of shifting equilibrium whereas money enters as a "link between the present and future".

2.4.2. Keynes's Reformulated Quantity Theory of Money:

The Keynesian reformulated quantity theory of money is based on the following:

Assumptions:

1. All factors of production are in perfectly elastic supply so long as there is any unemployment.
2. All unemployed factors are homogeneous, perfectly divisible and interchangeable.

3. There are constant returns to scale so that prices do not rise or fall as output increases.
4. Effective demand and quantity of money change in the same proportion so long as there are any unemployed resources.

Given these assumptions, the Keynesian chain of causation between changes in the quantity of money and in prices is an indirect one through the rate of interest. So when the quantity of money is increased, its first impact is on the rate of interest which tends to fall. Given the marginal efficiency of capita], a fall in the rate of interest will increase the volume of investment. The increased investment will raise effective demand through the multiplier effect thereby increasing income, output and employment. Since the supply curve of factors of production is perfectly elastic in a situation of unemployment, wage and non-wage factors are available at constant rate of remuneration. There being constant returns to scale, prices do not rise with the increase in output so long as there is any unemployment.

Under the circumstances, output and employment will increase in the same proportion as effective demand, and the effective demand will increase in the same proportion as the quantity of money. But "once full employment is reached, output ceases to respond at all to changes in the supply of money and so in effective demand. The elasticity of supply of output in response to changes in the supply, which was infinite as long as there was unemployment falls to zero. The entire effect of changes in the supply of money is exerted on prices, which rise in exact proportion with the increase in effective demand." Thus so long as there is unemployment, output will change in the same proportion as the quantity of money, and there will be no change in prices; and when there is full employment, prices will change in the same proportion as the quantity of money. Therefore, the reformulated quantity theory of money stresses the point that with increase in the quantity of money prices rise only when the level of full employment is reached, and not before this.

This reformulated quantity theory of money is illustrated in Figure 2.9 (A) and (B) where OTC is the output curve relating to the quantity of money and PRC is the price curve relating to the quantity of money. Panel A of the

figure shows that as the quantity of money increases from O to M, the level of output also rises along the OT portion of the OTC curve.

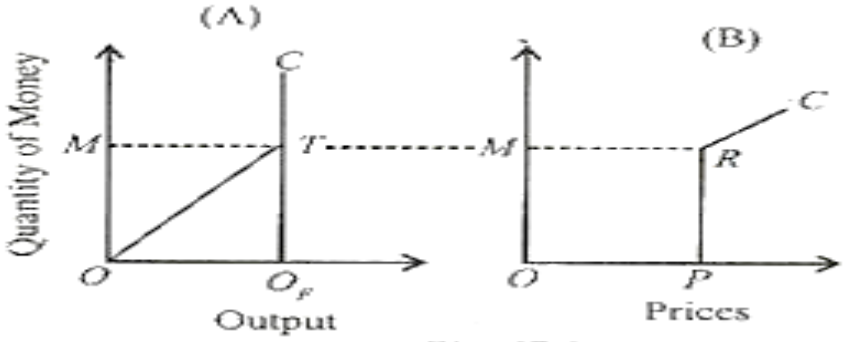


Fig.2.9 (A) and (B) quantity theory of money

As the quantity of money reaches OM level, full employment output OQF is being produced. But after point T the output curve becomes vertical because any further increase in the quantity of money cannot raise output beyond the full employment level OQ_F.

Panel B of the figure shows the relationship between quantity of money and prices. So long as there is unemployment, prices remain constant whatever the increase in the quantity of money. Prices start rising only after the full employment level is reached. In the figure, the price level OP remains constant at the OM quantity of money corresponding to the full employment level of output OQ_1. But an increase in the quantity of money above OM raises prices in the same proportion as the quantity of money. This is shown by the RC portion of the price curve PRC.

Keynes himself pointed out that the real world is so complicated that the simplifying assumptions, upon which the reformulated quantity theory of money is based, will not hold. According to him, the following possible complications would qualify the statement that so long as there is unemployment, employment will change in the same proportion as the quantity of money, and when there is full employment, prices will change in the same proportion as the quantity of money."

(1) "Effective demand will not change in exact proportion to the quantity of money.

(2) Since resources are homogenous, there will be diminishing, and not constant returns as employment gradually increases.

(3) Since resources are not interchangeable, some commodities will reach a condition of inelastic supply while there are still unemployed resources available for the production of other commodities.

(4) The wage-unit will tend to rise, before full employment has been reached.

(5) The remunerations of factors entering into marginal cost will not all change in the same proportion."

Taking into account these complications, it is clear that the reformulated quantity theory of money does not hold. An increase in effective demand will not change in exact proportion to the quantity of money, but it will partly spend itself in increasing output and partly in increasing the price level. So long as there are unemployed resources, the general price level will not rise much as output increases. But a sudden large increase in aggregate demand will encounter bottlenecks when resources are still unemployed.

It may be that the supply of some factors becomes inelastic or others may be in short supply and are not interchangeable. This may lead to increase in marginal cost and price. Price would accordingly rise above average unit cost and profits would increase rapidly which, in turn, tend to raise money wages owing to trade union pressures. Diminishing returns may also set in. As full employment is reached, the elasticity of supply of output falls to zero and prices rise in proportion to the increase in the quantity of money.

The complicated model of the Keynesian theory of money and prices is shown diagrammatically in Figure 2.10 in terms of aggregate supply (S) and aggregate demand (D) curves. The price level is measured on the vertical axis and output on the horizontal axis.

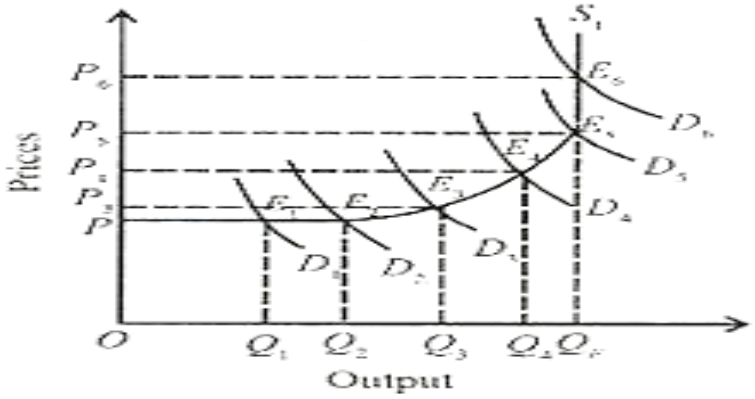


Fig.2.10. Keynesian theory of money

According to Keynes, an increase in the quantity of money increases aggregate money demand on investment as a result of the fall in the rate of interest. This increases output and employment in the beginning but not the price level. In the figure, the increase in the aggregate money demand from D_1 to D_2 raises output from OQ_1 to OQ_2 but the price level remains constant at OP. As aggregate money demand increases further from D_2 to D_3 output increases from OQ_2 to OQ_3 and the price level also rises to OP_3.

This is because costs rise as bottlenecks develop through the immobility of resources. Diminishing returns set in and less efficient labour and capital are employed. Output increases at a slower rate than a given increase in aggregate money demand, and this leads to higher prices. As full employment is approached, bottlenecks increase. Further-more, rising prices lead to increased demand, especially for stocks. Thus prices rise at an increasing rate. This is shown over the range in the figure.

But when the economy reaches the full employment level of output, any further increase in aggregate money demand brings about a proportionate increase in the price level but output remains unchanged at that level. This is shown in the figure when the demand curve D^5 shifts upward to D_6 and the price level increases from OP_5 to OP_6 while the level of output remains constant at OQ_F.

Superiority of the Keynesian Theory over the Traditional Quantity Theory of Money:

The Keynesian theory of money and prices is superior to the traditional quantity theory of money for the following reasons.

Keynes's reformulated quantity theory of money is superior to the traditional approach in that he discards the old view that the relationship between the quantity of money and prices is direct and proportional. Instead, he establishes an indirect and non-proportional relationship between quantity of money and prices. In establishing such a relationship, Keynes brought about a transition from a pure monetary theory of prices to a monetary theory of output and employment. In so doing, he integrates monetary theory with value theory. He integrates monetary theory with value

theory and also with the theory of output and employment through the rate of interest.

In fact, the integration between monetary theory and value theory is done through the theory of output in which the rate of interest plays the crucial role. When the quantity of money increases the rate of interest falls which increases the volume of investment and aggregate demand thereby raising output and employment. In this way, monetary theory is integrated with the theory of output and employment.

As output and employment increase they further raise the demand for factors of production. Consequently, certain bottlenecks appear which raise the marginal cost including money wage rates. Thus prices start rising.
Monetary theory is integrated with value theory in this way. The Keynesian theory is, therefore, superior to the traditional quantity theory of money because it does not keep the real and monetary sectors of the economy into two separate compartments with 'no doors or windows between the theory of value and the theory of money and prices.'

Again, the traditional quantity theory is based on the unrealistic assumption of full employment of resources. Under this assumption, a given increase in the quantity of money always leads to a proportionate increase in the price level. Keynes, on the other hand, believes that full employment is an exception. Therefore, so long as there is unemployment, output and employment will change in the same proportion as the quantity of money, but there will be no change in prices; and when there is full employment, prices will change in the same proportion as the quantity of money. Thus the Keynesian analysis is superior to the traditional analysis because it studies the relationship between the quantity of money and prices both under unemployment and full employment situations.

Further, the Keynesian theory is superior to the traditional quantity theory of money in that it emphasises important policy implications. The traditional theory believes that every increase in the quantity of money leads to inflation.

Keynes, on the other hand, establishes that so long as there is unemployment, the rise in prices is gradual and there is no danger of inflation.

It is only when the economy reaches the level of full employment that the rise in prices is inflationary with every increase in the quantity of money. Thus "this approach has the virtue of emphasising that the objectives of full employment and price stability may be inherently irreconcilable."

2.4.3. Criticisms of Keynes Theory of Money and Prices:

Keynes' views on money and prices have been criticised by the monetarists on the following grounds.

1. Direct Relation:

Keynes mistakenly took prices as fixed so that the effect of money appears in his analysis in terms of quantity of goods traded rather than their average prices. That is why Keynes adopted an indirect mechanism through bond prices, interest rates and investment of the effects of monetary changes on economic activity. But the actual effects of monetary changes are direct rather than indirect.

2. Stable Demand for Money:

Keynes assumed that monetary changes were largely absorbed by changes in the demand for money. But Friedman has shown on the basis of his empirical studies that the demand for money is highly stable.

3. Nature of Money:

Keynes failed to understand the true nature of money. He believed that money could be exchanged for bonds only. In fact, money can be exchanged for many different types of assets like bonds, securities, physical assets, human wealth, etc.

4. Effect of Money:

Since Keynes wrote for a depression period, this led him to conclude that money had little effect on income. According to Friedman, it was the contraction of money that precipitated the depression. It was, therefore, wrong on the part of Keynes to argue that money had little effect on income. Money does affect national income.

2.4. CRISIS IN KEYNESIAN ECONOMICS AND THE REVIVAL OF MONETARISM

2.4.1. Introduction

Keynesian Economic Theory is an economic school of thought that broadly states that government intervention is needed to help economies emerge out of recession. The idea comes from the boom-and-bust economic cycles that can be expected from free-market economies and positions the government as a "counterweight" to control the magnitudes of these cycles. The theory was developed by British economist John Maynard Keynes (1883-1946) in the 1940s.

Government intervention

According to Keynesian Economic Theory, there are three main metrics that governments should closely monitor: interest rates, tax rates, and social programs.

Interest rates

Interest rates, or the cost of borrowing money, play a crucial role in enabling economic prosperity.

During times of prosperity (or "boom" cycles), Keynesian Economic Theory argues that central banks should increase interest rates in order to generate more income from borrowers. Controlling the magnitude of an economic boom is important since too much investment in the public and private sectors could lead to a reduction in the money supply and a severe recession as a result. Keynesian Economic Theory also prompts central and commercial banks to accumulate cash reserves off the back of interest rate hikes in order to prepare for future recessions.

During times of recession (or "bust" cycles), the theory prompts governments to lower interest rates in a bid to encourage borrowing. Thus, investments in the private sector will help bolster output and drive the economy out of recession. Unlike in boom cycles, banks should aggressively combat the magnitude of the bust cycle in order to ensure that the economy recovers within a reasonable time frame.

Tax rates

Income taxes are the government's main source of income to finance public sector initiatives such as infrastructure, healthcare, social programs, etc. During times of prosperity (or "boom" cycles), Keynesian Economic Theory argues that governments should increase income tax rates in order to participate in the growth of economic activity. Such times are also ideal to launch new public initiatives such as a tax system remap or healthcare system overhaul, as they face a lower risk of failing.

Governments may choose to introduce entirely new taxes that did not exist before in order to generate even more income from rising wages. To help supplement the initiative, governments may also offer proportionately smaller tax breaks in order to spur consumer spending. During times of economic recession (or "bust" cycles), Keynesian Economic Theory argues that governments should lower income tax rates on individuals and businesses. Thus, the private sector would have additional financial capital to invest in projects and drive the economy forward. The hope here is that cash reserves generated during economic booms would help cushion the dip in government proceeds.

Social programs

During times of prosperity (or "boom" cycles), Keynesian Economic Theory argues that governments should decrease spending on social programs since they would no longer be as needed during boom cycles. Social programs aim to provide skills training to individuals in order to stimulate the labor market with an influx of skilled labourers. During prosperous economic times, the economy is thought to have a thriving labour force, thus, additional investments are not necessarily needed.

During times of economic recession (or "bust" cycles), Keynesian Economic Theory argues that governments should increase spending on social programs in order to stimulate the job market with an influx of skilled labor. The thought is that a rise in the supply of skilled labour would cause wages to drop, thus enabling businesses to gain more productive employees without significant cost increases. Thus, the economy would be able to slowly get out of a recession through a strong labour force.

2.5. Meaning of Monetarist Revolution:

The "monetarist revolution" refers to the new and important contributions made to monetary theory and policy by Prof. Friedman and his colleagues at the University of Chicago. It was a sort of revolution against the views of Keynesians who held the view that "money does not matter."

The Keynesians regarded the money supply as a passive factor in the economic system whose economic effects were highly unpredictable. On the other hand, in the monetarist revolution "only money matters" for three reasons: one, because the quantity of money is capable of being controlled fairly accurately by deliberate policy; two, because changes in the quantity of money can produce substantial changes in the flow of income, prices and other important variables; and three, because the" relationships between stock of money and other assets are relatively stable and dependable."

2.5.1. Features of Monetarist Revolution:

The monetarist revolution possesses the following characteristics:

1. The money supply is the crucial determinant of economic activity in the short-run.

It is the money supply that determines total spending, and therefore, output, employment and the price level. Thus there is a direct link between the money supply and the national income. That link is the constant velocity of money. The constant velocity is expressed as Y/M.

As a result of the stability of monetary velocity, a change in the money supply will change total spending and national income by a predictable amount. The demand for money is a stable function of income. The demand for money is the transactions demand for money which is determined by the level of income. If the central bank increases the money supply by purchasing securities, people who sell securities find that their holdings of money have increased. They will, therefore, spend their excess holding of money partly on assets and partly on consumer goods and services. This spending will reduce their money balances and at the same time raise the national income. On the contrary, a reduction in the money supply by selling securities on the part of the central bank will reduce money holdings of the buyers of securities.

They will, therefore, increase their money holdings partly by selling their assets and partly by reducing their consumption expenditure on goods and services. This will reduce the national income. Thus, on both counts, the demand for money remains stable.

According to Friedman, a change in the money supply causes a proportionate change in the price level or income or both. Given the demand for money, if the economy is operating at less than full employment level, an increase in the money supply will raise output and employment with a rise in total expenditure in the short-run. Thus an increase in the money supply in the short run raises output, employment and income. But a rise in the money supply in the long-run, with further increase in demand, prices and wages will increase. In the expectation of inflation, price-wage spiral will rise further. Thus there will be inflation due to inappropriate increase in money supply. That is why the monetarists regard inflation as a purely monetary phenomenon. The monetarists regard their viewpoint as revolutionary as against the Keynesians because the rate of interest plays no part in influencing either the demand for money or the supply of money. Moreover, changes in the money supply influence economic activity directly and not indirectly through changes in the interest rate like the Keynesians.

2. The transmission mechanism of monetary influences on economic activity involves reshuffling of both financial and real assets in the portfolios of economic units:

Keynes considered only two types of assets, bonds and speculative cash balances, in his transmission mechanism. According to the monetarists, when the central bank increases the money supply by purchasing securities in the open market, their prices rise but yields fall due to a fall in the market rate of interest. People will, therefore, sell securities, and their holdings of money will increase. This raises the demand for financial and real assets. This will lead to the substitution of excess money balances for financial assets and durable consumer goods. The increase in aggregate expenditure on assets and goods will tend to raise the national income. This is the substitution effect of the portfolio adjustment process. Further, when money is converted into securities with their purchase in the open market, the nominal wealth of the

community increases. This is the direct wealth effect. Again, with the fall in the market rate of interest, the market value of current capital stock increases which also raises the nominal wealth of the society.

This is the interest induced effect of wealth effect. But these effects increase the net wealth. Consequently, people buy financial and real assets which lead to the production of new producer and consumer durables goods and encourage the purchase of consumer non-durable products. In the monetarist system, a central bank cannot influence interest rates through changes in the supply of money.

3. In the long-run the level of real national income is determined by the forces of demand and supply:

This is based on the assumptions that prices and wages in all markets are inherently flexible. They rise in response to excess demand and fall in response to excess supply. If some prices are inflexible, the burden of their adjustments would fall on other products. Thus the economy is usually at or near the full employment level where there is no involuntary unemployment. Friedman refers to this as the natural rate of unemployment. This view is in marked contrast to the Keynesian view that there is always underemployment equilibrium in the economy and unemployment is involuntary.

4. The monetarists hold that the economy is stable:

They do not believe like the Keynesians that it is subject to wide or sudden fluctuations due to changes in the propensities to consume and invest. According to them, instability exists in the economy on account of monetary and fiscal policies adopted by the government. These policies destabilise rather than stabilise the economy. Friedman does not favour even contra cyclical monetary policy. According to him, monetary policy might do more harm than good because of the operation lag. On average, it takes a long time for a change in the money supply to affect national income. The time lag involved is so large that contra cyclical monetary policy might actually have a destabilising effect on the economy. Fiscal policy has no place in the monetarist system. It does not affect the economy unless it is accompanied by changes in the money supply. So there is no need for fiscal policy as the same results can be achieved by monetary policy. However, to stabilise the

economy and avoid inflation, Friedman advocates a steady and inflexible growth in the rate of money supply. When the money supply increases at the same rate as output, the national income grows without inflation.

5. Expectations play an important role in the monetarist's view:

Every person whether he is a businessman, consumer or worker is capable of correctly anticipating the effects of his own and other persons' actions. The monetarists hold that expectations are rational. "Decisions taken on the basis of such expectations will cause the anticipated future results to occur even more quickly, if not at once. Thus intelligent expectations are self-reinforcing and stabilising, so long as the government does not create false signals by erratic and irrational intervention."

They have revolutionised economic thinking through the rational expectations hypothesis, e.g., the rational expectations deny the possibility of any inflation-unemployment trade-off even in the short run. Economists regard the above views of the monetarists as revolutionary.

2.5.2. Criticisms of Monetarist Revolution:

Prof. Kaldor does not regard the above views of the monetarists as revolutionary. He characterizes them as a "counter-reformation" the reaction against the new economics of the 1930s and return to 19th century orthodoxies."

He and many Keynesians have criticised the monetarist tenets on the following grounds:

1. Money Supply Endogenous:

The supply of money is varied by the monetary authorities in an exogenous manner in Friedman's system. But the fact is that in the United States the money supply consists of bank deposits created by changes in bank lending.

Bank lending in turn, is based upon bank reserves which expand and contract with:

- Deposits and withdrawals of currency by non-bank financial intermediaries;
- Borrowings by commercial banks from the Federal Reserve System;
- Inflows and outflows of money from and to abroad; and

- ❖ Purchase and sale of securities by the Federal Reserve System.

The first three items definitely impart an endogenous element to the money supply. Thus the money supply is not exclusively exogenous, as assumed by Friedman. It is mostly endogenous.

2. Demand for Money not Stable:

Regarding the stability of the demand for money, Prof. Kaldor found that the demand for money as a proportion of income is neither stable between countries nor stable over time except in some countries.

3. Money Supply and GNP not positively correlated:

Money supply and money GNP have been found to be positively correlated in Friedman's findings. But Kaldor found his evidence to be largely irrelevant. For example, he found that in Switzerland, Italy and Japan, the money supply on the broad definition, M_3 had been rising for over twenty years in relation to incomes, while it had been falling in the US and the UK. Even on the narrow definition, M,, the money supply in Switzerland was nearly three times as great as in the UK or the US as a proportion of the GNP. From this, he concludes that "yet no one would regard Switzerland as an 'inflation prone' country (let alone more inflation prone) than the US cr the UK."

4. Neglects the Role of NBFIs:

The transmission mechanism explained by the monetarists has also been questioned. The Radcliffe Committee and Gurley and Shaw criticize the monetarist transmission mechanism for neglecting the role played by the non-bank financial intermediaries and their effects on real and financial assets.

5. Real World does not approximate to a General Equilibrium System:

The monetarist view that prices in all markets are completely flexible, is based on the Walrasian general equilibrium model of the economy. This implies that the economy is at the full employment level. Critics point out that wages and prices do not adjust themselves simultaneously in the Walrasian sense.

In fact, trade unions are engaged in wage bargains with the rise in prices in the past. Similarly, entrepreneurs try to adjust their reduced profit margins which have been eroded by inflation. This further increases inflation.

As pointed out by Kaldor, the monetarists failed to recognise the all-important difference between a demand inflation and cost-inflation. Thus the real world does not approximate to a general equilibrium system.

6. Economy not inherently stable:

The monetarists contend that the economy is inherently stable and it is interference in the form of monetary policy that brings instability. This view has not been accepted by the Keynesians who argue that there are frequent wild and erratic shocks in the economy due to variations in investment and consumption spendings that produce business cycle. This necessitates appropriate contra cyclical monetary and fiscal policies.

7. Money Supply fails to grow at a Smooth and Steady Rate:

Further, to stabilise the economy and avoid Inflation, the monetarists favour a steady growth in the rate of money supply, and the rate of intent no place in their policy-frame. But the experience of both the US and the UK tells a different story where the monetarist monetary policy was put into operation in 1979-80. "The money supply failed to grow at a smooth and steady rate; its behaviour exhibited a series of wriggles. The rate of interest and the rate of inflation, though both were very high at the start, soared to unprecedented heights in a very short time." Thus on the basis of above criticisms, it can be concluded that the monetarist viewpoint was not a revolution but a sort of reformation of the Keynesian economics and the revival of the orthodox monetarism. The monetarists hold that the aggregate demand is relatively elastic, while the aggregate supply is inelastic in relation to the expansion of money supply and price level.

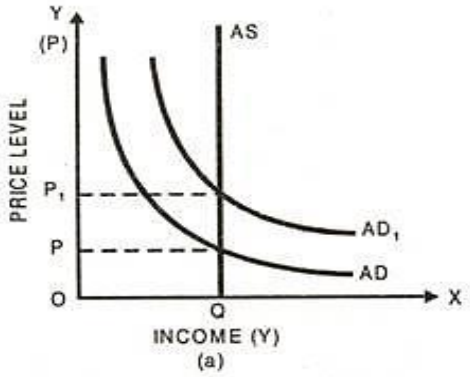
Apparently, at a given level of real income on output (aggregate supply being fixed), a rise in M leads to an increase in the aggregate demand, and a corresponding rise in the price level. This argument is clarified in terms of Fig. 2.10 given below:

In Fig. 2.10 (a), when the aggregate demand curve (AD) shifts up as AD_X corresponding an increase in M, AS remaining fixed, price level rises from P to P_r The level of real income remains unchanged at OQ. The monetarists opine that variations in money income and expenditure (MV) in the economy are primarily due to variations in the money supply (M). In their opinion, the

velocity of circulation (v) and the demand for money remains stable phenomena, as their determinants are slow in variation.

They, thus, hold that "inflation is always and everywhere a monetary phenomenon" which implies that as long as there is a sufficient monetary flow to keep the pace, prices will tend to rise. In their view, an increase in the money supply cannot have any lasting effect on the real working of the economy. It will just cause only prices to rise. They, therefore, suggest that if inflation is to be contained or avoided, the growth of the money supply should be reduced to the minimum.

Keynesians, on the other hand, believe that the aggregate supply is relatively more elastic, even greater than the elasticity of the aggregate demand to the price level. Thus, when the money supply (M) or the government spending (G) increases through deficit financing or otherwise, it will produce a healthy effect on the level of employment and output, as unutilised resources would be activated into productive uses till the economy reaches the full employment level. Fig. 2.10 (b) clarifies this argument.



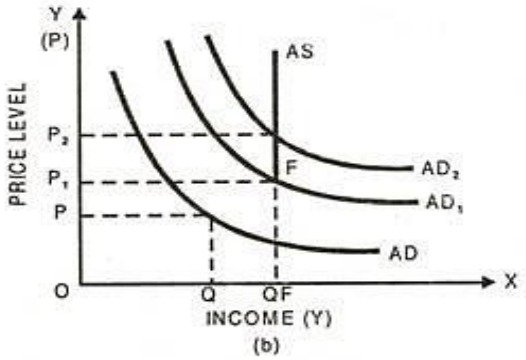


Fig.2.10 (a) Monetarist view **Fig.2.10 (b) Keynesian view**

In Fig. 2.10 (b) AS is the aggregate supply curve which becomes a vertical line only at point F. While AD is the aggregate demand curve, which intersects with AS to determine the price level P, real output is OQ. Here, the aggregate real income or output is OQ_1 When the aggregate demand curve shifts to AD_1 on account of a change in M and particularly due to a change in G, the new price level is rising only less proportionately, as there is a simultaneous increase in real income up to OQ_1P. According to Keynesians, this general price rise from P to P_1 is reflation and not inflation. To them, "inflation is a post full employment phenomenon." Thus when the money

supply (M) expands further after this point of output, when the AS curve becomes vertical, increase in the aggregate demand AD_2 reflects a proportionate rise in price level from P_1 to P_2.

The following issues have been turned out by this controversy between the Keynesians and the monetarists:

- According to the monetarists the value of interest rates in affecting expenditure is more significant than in affecting the demand for money. Keynesians hold the opposite view that the role of interest rates in affecting the demand for money is more important than influence on expenditures in the economy.
- Monetarists, hold that there is no empirical evidence or cause for the volatility of the demand for money. Keynesians, on the other hand, recognise the possibility of the volatility of demand for money.
- Monetarists also point out those changes in the money supply take place because the monetary authority, the Central Bank, allows them. Hence, they argue that the Central Bank should control the money supply and also set out a plan of long-term targets for monetary growth, as a rule, and avoid a discretionary monetary policy. Keynesians, however, stress the possibility of endogenous changes in the money supply.
- In short, both the groups of economists agree on the issue that an increase in money supply contains a dual effect, partly on real output, and partly on prices, but they have a difference of opinion about the relative importance of these two effects, and their outcomes in the economy.
- Keynesians argue that the main effect comes through MV and not just M. Again, there will be growth of output maybe exceeding the rate of increase in prices. Monetarists, on the other hand, believe that the main effect comes through M, and there may be some rise in the output initially, but soon the prices will zoom, leaving production at its original level.

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UNIT – III

MODERN KEYNESIAN MACRO ECONOMICS

3.1. Introduction

Keynesian economics, named for the economist John Maynard Keynes) are various macroeconomic theories about how economic output is strongly influenced by aggregate demand (total spending in the economy). In the Keynesian view, aggregate demand does not necessarily equal the productive capacity of the economy. Instead, it is influenced by a host of factors. According to Keynes, the productive capacity of the economy sometimes behaves erratically, affecting production, employment, and inflation. Keynesian economics developed during and after the Great Depression from the ideas presented by Keynes in his 1936 book, the general theory of employment, interest and money. The General Theory of Employment, Interest and Money.

Keynes' approach was a stark contrast to the aggregate supply-focused classical economics that preceded his book. Keynesian economics served as the standard economic model in the developed nations during the latter part of the Great Depression, World War II, and the post-war economic expansion (1945–1973). Keynesian economics was later redeveloped as New Keynesian economics, becoming part of the contemporary new neoclassical synthesis. Keynesian economics is a theory of total spending in the economy (called aggregate demand) and its effects on output and inflation.

Six principal tenets seem central to Keynesianism.

3.2. CENTRAL PROPOSITIONS OF KEYNESIAN ECONOMICS

- A Keynesian believes that aggregate demand is influenced by a host of economic decisions—both public and private—and sometimes behaves erratically. The public decisions include, most prominently, those on monetary and fiscal (i.e., spending and tax) policies. Some Keynesians arguing that monetary policy powerless, and some monetarists arguing that fiscal policy is powerless. Nearly all Keynesians and monetarists now believe that both fiscal and monetary policies affect aggregate demand. A few economists, however, believe in debt neutrality—the

doctrine that substitutions of government borrowing for taxes have no effects on total demand.

- According to Keynesian theory, changes in aggregate demand, whether anticipated or unanticipated, have their greatest short-run effect on real output and employment, not on prices. This idea is portrayed, for example, in Philips curves that show inflation rising only slowly when unemployment falls. Monetary policy can produce real effects on output and employment only if some prices are rigid – if nominal wages. For example, do not adjust instantly. Otherwise, an injection of new money would change all prices by the same percentage. So Keynesian models generally either assume or try to explain rigid prices or wages. Rationalizing rigid prices is a difficult theoretical problem because, according to standard microeconomic theory, real supplies and demands should not change if all nominal prices rise or fall proportionally.
- Keynesians believe that prices, and especially wages, respond slowly to changes in supply and demand, resulting in periodic shortages and surpluses, especially of labor. Current parlance that would certainly be called a Keynesian position.
- Keynesians advocate activist stabilization policy to reduce the amplitude of the business cycle, which they rank among the most important of all economic problems.
- Keynesians' belief in aggressive government action to stabilize the economy is based on value judgments and on the beliefs that (a) macroeconomic fluctuations significantly reduce economic well-being and (b) the government is knowledgeable and capable enough to improve on the free market.

3.3. MUNDELL - FLEMING MODEL

3.3.1. Introduction

The basic Mundell-Fleming model — like the IS-LM model — is based on the assumption of fixed price level and shows the interaction between the goods market and the money market. The model explains the causes of short-run fluctuations in aggregate income (or, what comes to the same thing, shifts in the ad curve) in an open economy. The Mundell-Fleming model is based on a very restrictive assumption. It considers a small open economy with perfect capital mobility. This means that the economy can borrow or lend freely from the international capital markets at the prevailing rate of interest since its domestic rate of interest is determined by the world rate of interest. So, the rate of interest is not a policy variable in the small economy being studied.

This means that macroeconomic adjustment occurs only through exchange rate changes. In other words, the brunt of adjustment is borne by exchange rate movements in foreign exchange markets to maintain the officially determined exchange rate. The central bank permits the exchange rate to move up or down in response to changing economic conditions. The basic assumption of this model is that the domestic rate of interest (r) is equal to the world rate of interest (r*) in a small open economy with perfect capital mobility. No doubt any change within the domestic economy may alter the domestic rate of interest, but the rate of interest cannot stay out of line with the world rate of interest for long.

The difference between the two, if any, is removed quickly through inflows and outflows of financial capital. It may be recalled that “smallness” of a country has no relation to its size. A small country is one which cannot alter the world rate of interest through its own borrowing and lending activities. In contrast, a large economy is one which has market (bargaining) power so that it can exert influence over the world rate of interest.

For such a country, either international capital mobility is far from perfect, or the country is so large that it can exert influence on world capital markets. The main prediction from the Mundell-Fleming model is that the behaviour of an economy depends crucially on the exchange rate system it adopts, i.e., whether it operates a floating exchange rate system or a fixed

exchange rate system. We start with adjustment under a floating exchange rate system, in which case there is no central bank intervention in the foreign exchange market.

In such a situation, if the domestic interest rate goes above the world rate, foreigners will start lending to the home country. This capital inflow will create excess supply of funds and the domestic rate of interest r again will fall to r*. The converse is also true. If, for some reason, the domestic rate of interest (r) falls below r*, there will be capital outflow from the home country and the resulting shortage of funds will push up r to the level of r*. Thus, in a world of perfect capital mobility, r will quickly get adjusted to r*.

The Open Economy IS Curve:

In the Mundell-Fleming model, the market for goods and services is expressed by the following equation:

$$Y = C(Y - T) + I(r^*) + G + NX(e) \ldots (1)$$

Where all the terms have their usual meanings. Here investment depends on the world rate of interest r* since r = r* and NX depends on the exchange rate e which is the price of a foreign currency in terms of domestic currency. In the Mundell-Fleming model, it is assumed that the price levels at home and abroad remain fixed. So, there is no difference between real exchange rate and nominal exchange rate. We now illustrate the equation of the goods market equilibrium in Fig. 3.1.

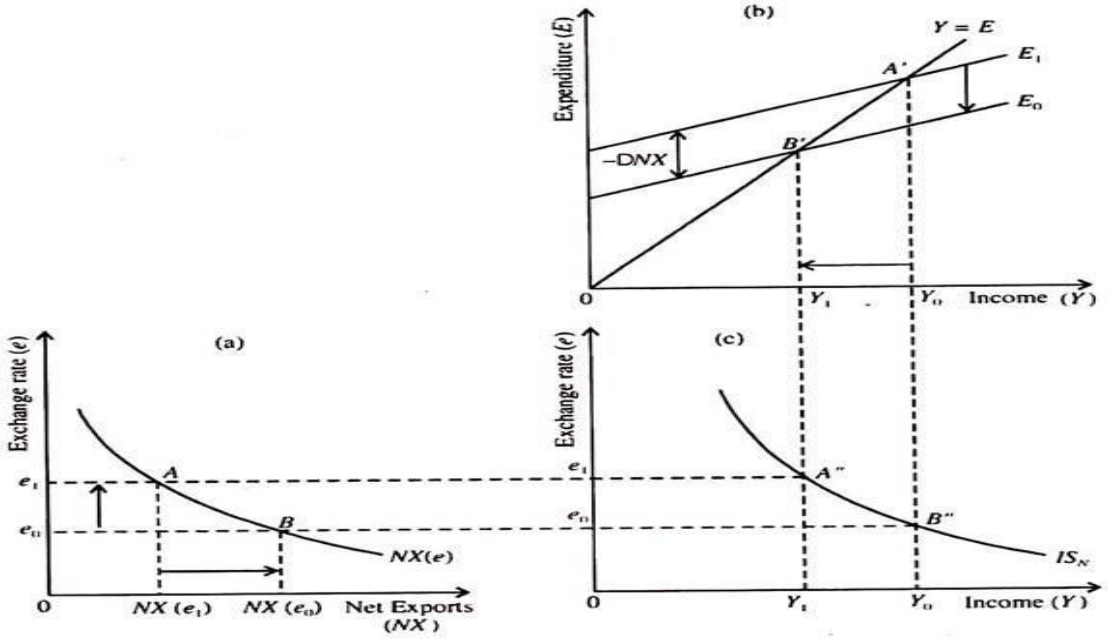

Fig.3.1. the New IS Curve

In part (a), an increase in the rate from e_0 to e_1, lowers net exports from NX (e_0) to NX (e_1). As a result, the planned expenditure line E_1 shifts downward to E_0. Consequently, income falls from Y_1 to Y_0. In part (c), we show the new IS curve, which is the locus of points, indicating alternative combinations of e and Y which ensure equilibrium in the goods market.

The new IS curve is derived by following this sequence:

e rises → NX falls → Y falls

The Open Economy LM Curve:

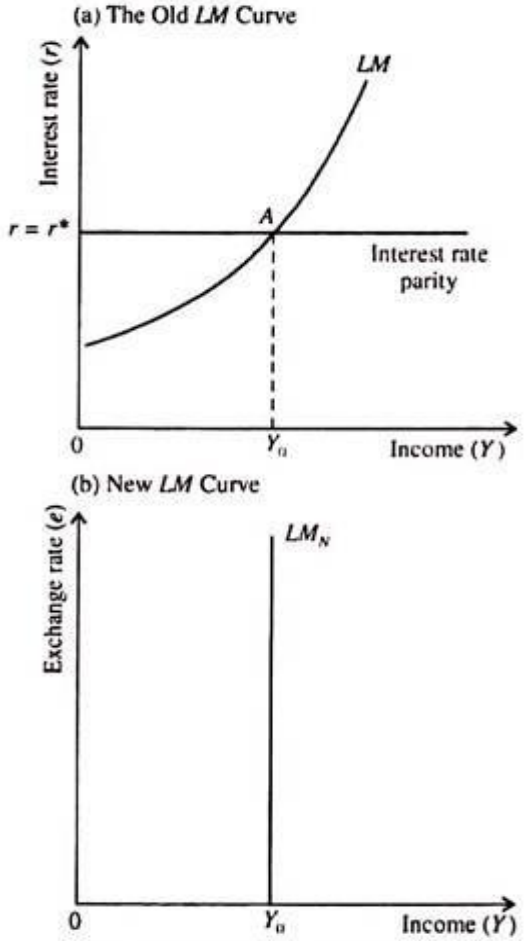

Fig.3.2.The New LM Curve

The equilibrium condition of the money market in the Mundell-Fleming model is:

M = L(r*, Y) … (2)

Since r = r*.

Here the supply of money equals its demand and demand for money varies inversely with r* and the positively with Y. In this model, M remains exogenously fixed by the central bank.

The new LM curve, as shown in Fig. 3.2(b), is vertical — since the equation (2) has no relation to the exchange rate. This equation determines only Y, whether e is high or low. In Fig. 3.2(a), we draw the closed economy LM curve as also a horizontal line showing parity between r and r*. The intersection of the two curves at the point A determines the equilibrium level of income Y_0, which has no relation to e, shown on the vertical axis of Fig. 3.2(b). This is why the new (open economy) LM curve is vertical. The LM_N curve of Fig. 3.2(b) is derived from r* and the closed economy LM curve, shown in Fig. 3.2(a).

General Equilibrium:

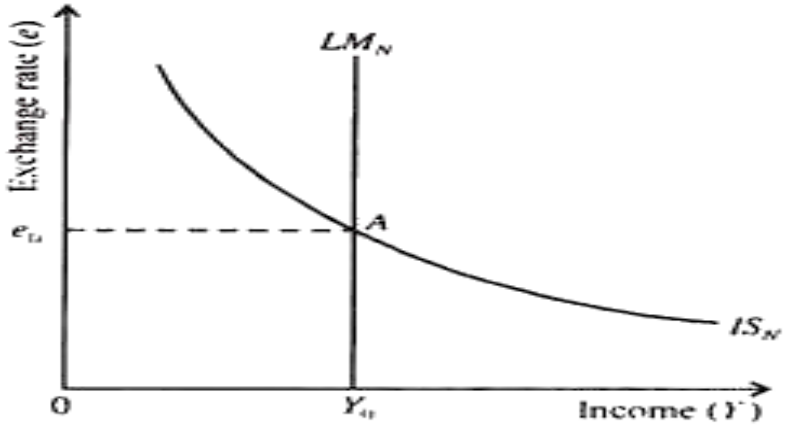

Fig.3.3 General Equilibrium in Mundell Model

In the Fig. 3.3, we show the general equilibrium of goods market and the money market. The equilibrium income (Y_0) and exchange rate (e_0) are determined simultaneously at point A where the IS and LM curves intersect.

3.4. The Great Recession and the Revival of Keynesian Macro Economics.

The central tenet of this school of thought is that government intervention can stabilize the economy. Just how important is money? Few would deny that it plays a key role in the economy. During the Great Depression of the 1930s, existing economic theory was unable either to explain the causes of the severe worldwide economic collapse or to provide an adequate public policy solution to jump-start production and employment.

British economist John Maynard Keynes spearheaded a revolution in economic thinking that overturned the then-prevailing idea that free markets would automatically provide full employment—that is, that everyone who

wanted a job would have one as long as workers were flexible in their wage demands. The main plank of Keynes's theory, which has come to bear his name, is the assertion that aggregate demand—measured as the sum of spending by households, businesses, and the government—is the most important driving force in an economy. Keynes further asserted that free markets have no self-balancing mechanisms that lead to full employment. Keynesian economists justify government intervention through public policies that aim to achieve full employment and price stability. In Britain, which had been plunged into a depression of its own, John Maynard Keynes had begun to develop a new framework of macroeconomic analysis, one that suggested that what for Ricardo were "temporary effects" could persist for a long time, and at terrible cost. Keynes's 1936 book, The General Theory of Employment, Interest and Money, was to transform the way many economists thought about macroeconomic problems.

The revolutionary idea

Keynes argued that inadequate overall demand could lead to prolonged periods of high unemployment. An economy's output of goods and services is the sum of four components: consumption, investment, government purchases, and net exports (the difference between what a country sells to and buys from foreign countries). Any increase in demand has to come from one of these four components. But during a recession, strong forces often dampen demand as spending goes down.

For example, during economic downturns uncertainty often erodes consumer confidence, causing them to reduce their spending, especially on discretionary purchases like a house or a car. This reduction in spending by consumers can result in less investment spending by businesses, as firms respond to weakened demand for their products. This puts the task of increasing output on the shoulders of the government. According to Keynesian economics, state intervention is necessary to moderate the booms and busts in economic activity, otherwise known as the business cycle.

There are three principal tenets in the Keynesian description of how the economy works:

• Aggregate demand is influenced by many economic decisions—public and private. Private sector decisions can sometimes lead to adverse macroeconomic outcomes, such as reduction in consumer spending during a recession. These market failures sometimes call for active policies by the government, such as a fiscal stimulus package (explained below). Therefore, Keynesian economics supports a mixed economy guided mainly by the private sector but partly operated by the government.

• Prices, and especially wages, respond slowly to changes in supply and demand, resulting in periodic shortages and surpluses, especially of labor.

• Changes in aggregate demand, whether anticipated or unanticipated, have their greatest short-run effect on real output and employment, not on prices.

Keynesians believe that, because prices are somewhat rigid, fluctuations in any component of spending—consumption, investment, or government expenditures—cause output to change. If government spending increases, for example, and all other spending components remain constant, then output will increase. Keynesian models of economic activity also include a multiplier effect; that is, output changes by some multiple of the increase or decrease in spending that caused the change. If the fiscal multiplier is greater than one, then a one dollar increase in government spending would result in an increase in output greater than one dollar.

Stabilizing the economy

No policy prescriptions follow from these three tenets alone. What distinguishes Keynesians from other economists is their belief in activist policies to reduce the amplitude of the business cycle, which they rank among the most important of all economic problems.

Rather than seeing unbalanced government budgets as wrong, Keynes advocated so-called countercyclical fiscal policies that act against the direction of the business cycle. For example, Keynesian economists would advocate deficit spending on labor-intensive infrastructure projects to stimulate employment and stabilize wages during economic downturns. They would raise taxes to cool the economy and prevent inflation when there is

abundant demand-side growth. Monetary policy could also be used to stimulate the economy—for example, by reducing interest rates to encourage investment. The exception occurs during a liquidity trap, when increases in the money stock fail to lower interest rates and, therefore, do not boost output and employment.

Keynes argued that governments should solve problems in the short run rather than wait for market forces to fix things over the long run, because, as he wrote, "In the long run, we are all dead." This does not mean that Keynesians advocate adjusting policies every few months to keep the economy at full employment. In fact, they believe that governments cannot know enough to fine-tune successfully.

Keynesianism evolves

Even though his ideas were widely accepted while Keynes was alive, they were also scrutinized and contested by several contemporary thinkers. Particularly noteworthy were his arguments with the Austrian School of Economics, whose adherents believed that recessions and booms are a part of the natural order and that government intervention only worsens the recovery process.

Keynesian economics dominated economic theory and policy after World War II until the 1970s, when many advanced economies suffered both inflation and slow growth, a condition dubbed "stagflation." Keynesian theory's popularity waned then because it had no appropriate policy response for stagflation. Monetarist economists doubted the ability of governments to regulate the business cycle with fiscal policy and argued that judicious use of monetary policy (essentially controlling the supply of money to affect interest rates) could alleviate the crisis Members of the monetarist school also maintained that money can have an effect on output in the short run but believed that in the long run, expansionary monetary policy leads to inflation only. Keynesian economists largely adopted these critiques, adding to the original theory a better integration of the short and the long run and an understanding of the long-run neutrality of money—the idea that a change in the stock of money affects only nominal variables in the economy, such as

prices and wages, and has no effect on real variables, like employment and output.

Both Keynesians and monetarists came under scrutiny with the rise of the new classical school during the mid-1970s. The new classical school asserted that policymakers are ineffective because individual market participants can anticipate the changes from a policy and act in advance to counteract them. A new generation of Keynesians that arose in the 1970s and 1980s argued that even though individuals can anticipate correctly, aggregate markets may not clear instantaneously; therefore, fiscal policy can still be effective in the short run.

The global financial crisis of 2007–08 caused a resurgence in Keynesian thought. It was the theoretical underpinnings of economic policies in response to the crisis by many governments, including in the United States and the United Kingdom. As the global recession was unfurling in late 2008, Harvard professor N. Gregory Mankiw wrote in the New York Times, "If you were going to turn to only one economist to understand the problems facing the economy, there is little doubt that the economist would be John Maynard Keynes. Although Keynes died more than a half-century ago, his diagnosis of recessions and depressions remains the foundation of modern macroeconomics. Keynes wrote, 'Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slave of some defunct economist.' In 2008, no defunct economist is more prominent than Keynes himself."

However, the Great Recession of 2008-13, saw a resurgence of interest in Keynesianism because there were many similarities to the great depression of the 1930s.There was a precipitous fall in GDP. The recession lasted for a long time. Bond yields remained low despite higher government borrowing. In the US and UK, government borrowing rose rapidly, but bond yields fell – suggesting government borrowing wasn't crowded out.

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UNIT – IV

NEW KEYNESIAN ECONOMICS

4.1. Introduction

Keynesian economics, named for the economist John Maynard Keynes) are various macroeconomic theories about how economic output is strongly influenced by aggregate demand (total spending in the economy). In the Keynesian view, aggregate demand does not necessarily equal the productive capacity of the economy. Instead, it is influenced by a host of factors. According to Keynes, the productive capacity of the economy sometimes behaves erratically, affecting production, employment, and inflation. Keynes' approach was a stark contrast to the aggregate supply-focused classical economics that preceded his book. Keynesian economics developed during and after the Great Depression from the ideas presented by Keynes in his 1936 book, *The General Theory of Employment, Interest and Money*. Keynesian economics served as the standard economic model in the developed nations during the latter part of the Great Depression, World War II, and the post-war economic expansion (1945–1973). Keynesian economics was later redeveloped as New Keynesian economics, becoming part of the contemporary new neoclassical synthesis.

4.2. Core proposition of new Keynesian Macro Economics

A Keynesian believes that aggregate demand is influenced by a host of economic decisions—both public and private—and sometimes behaves erratically. The public decisions include, most prominently, those on monetary and fiscal (i.e., spending and tax) policies.

1. Some Keynesians arguing that monetary policy is powerless, and some monetarists arguing that fiscal policy is powerless. Nearly all Keynesians and monetarists now believe that both fiscal and monetary policies affect aggregate demand. A few economists, however, believe in debt neutrality—the doctrine that substitutions of government borrowing for taxes have no effects on total demand.
2. According to Keynesian theory, changes in aggregate demand, whether anticipated or unanticipated, have their greatest short-run effect on real

output and employment, not on prices. This idea is portrayed, for example, in Phillip's curves that show inflation rising only slowly when unemployment falls. Monetary policy can produce real effects on output and employment only if some prices are rigid—if nominal wages. For example, do not adjust instantly. Otherwise, an injection of new money would change all prices by the same percentage. So Keynesian models generally either assume or try to explain rigid prices or wages. Rationalizing rigid prices is a difficult theoretical problem because, according to standard microeconomic theory, real supplies and demands should not change if all nominal prices rise or fall proportionally.

3. Keynesians believe that prices, and especially wages, respond slowly to changes in supply and demand, resulting in periodic shortages and surpluses, especially of labor. Current parlance that would certainly be called a Keynesian position.
4. Keynesians advocate activist stabilization policy to reduce the amplitude of the business cycle, which they rank among the most important of all economic problems.
5. Keynesians' belief in aggressive government action to stabilize the economy is based on value judgments and on the beliefs that (a) macroeconomic fluctuations significantly reduce economic well-being (b) the government is knowledgeable and capable enough to improve on the free market.

4.3. Wage and Price rigidities

The short-term macro-economic issues, in textbooks and in formal model-building many different assumptions are made as to what is held rigid and what is flexible. The focus is on the central issue: what are the roles of aggregate demand management and of the real and money wage levels in determining employment. A further literature is concerned (a) with the reasons for short-term rigidities (or tendencies towards rigidities), and (b) with the rationale of how particular prices that are rigid in the short- term were originally determined.

Assumptions

- It will be assumed that

  (1) A single good is produced

  (2) There are two factors of production, labour and capital, both in fixed total supply

  (3) The production function is unchanging

  (4) The economy is closed

  (5) Money expenditure (MV) is a policy-determined variable.

VARIOUS MODELS AND RIGIDITIES

Rigidities concern (a) money-wage determination, (b) product price determination, and (c) the production function. One could assume continuous substitution between capitals and labour (no rigidity) or fixed coefficients (production function rigidity). Initially we shall assume continuous substitution, so that (with constant returns to scale) there are diminishing returns to increased employment of labour when the stock of capital is given. Capital is always fully employed at this stage

Money wages might be (i) rigid downwards, (ii) market-flexible, or (iii) price-responsive. 'Market-flexible' means that money wages fall (rapidly) when there is unemployment, and only cease falling when 'full employment' has been reached. 'Price-responsive' means that money wages rise (again, rapidly) in response to price (cost-of-living) increases with the aim of maintaining a desired or target real wage. With regard to product price determination there are also three usual cases. Product prices might be (i) rigid, (ii) market-flexible, or (iii) cost- responsive. 'Cost responsive' means that prices rise (rapidly) in response to unit cost changes with the aim of maintaining a constant percentage profit margin. We shall assume that cost-responsive prices react also to down- ward changes in costs. Similarly, product price rigidity applies not only downwards but also upwards. The models have been numbered, and in addition, to fix ideas, some of them have been named, but the names should not be taken too literally, since this is not a paper in the history of economic thought.

4.4. POLICY IMPLICATIONS OF NEW KEYNESIAN ECONOMICS.

Some of the main policy implications of new Keynesian economics are as follows: 1. Monetary and Fiscal Policies 2. Prices and Incomes Policies 3. Government and Corporate Policies 4. Re-establishment of Policy Effectiveness 5. Favour Rough or Coarse Tuning 6. Existence of Involuntary Unemployment.

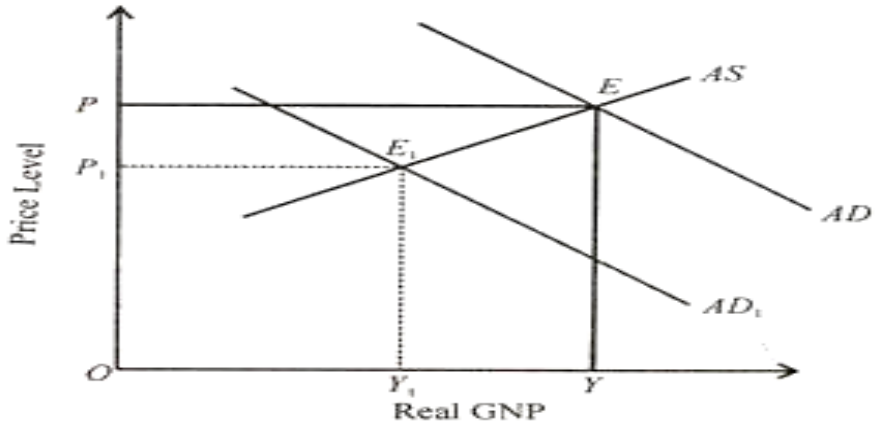
1. Monetary and Fiscal Policies:

The adherents of new Keynesian economics do not hold a unified view of economic policy because of its different strands. They base their models/theories on the real world imperfectly competitive markets with asymmetrical information where wages and prices are sticky. These lead to decrease in demand, economy-wide market failures, recessions and existence of involuntary unemployment. The main elements of new Keynesian economics comprising menu costs, staggered contracts, coordination failures and efficiency wages are substantial departures from the market clearing assumption of new classical economics. So new Keynesian economics provides a rational for government intervention in the form of active monetary and fiscal policies to prevent recessions and fall in output and employment. When there is decrease in aggregate demand due to sticky wages and contracts, how stabilisation policy can be used to overcome a recession. This is illustrated in Figure 4.

It is assumed that:

(i) The economy is at full employment level,

(ii) Unions and firms have rational expectations, and



(iii) Aggregate demand decreases after wage contracts, based on these expectations, have been signed and before they are renewed.

In the figure, AD is the aggregate demand and AS is the aggregate supply curve. They meet at point E which is the full employment level where OY is the real GNP and OP is the price level. A decrease in aggregate demand due to sticky wages and prices shifts the aggregate demand and curve leftwards to AD_1 which intersects the as curve at E_1.

This brings a fall in real GNP to OY_1 and the price to OP_1 leading to a recession. When active monetary and fiscal policies are used, the aggregate demand increases to ad and the economy returns to the full employment level e with the rise in real GNP to OY and price level to OP. Stiglitz favours discretionary monetary and fiscal policies because changing economic circumstances require changes in economic policy. According to him, "If the employment rate becomes high, government must and will do something regardless of what is said."

2. Prices and Incomes Policies:

New Keynesian theory also provides for prices and incomes agreements between firms and unions. In the new Keynesian theory, asymmetries and imperfections in labour market tend to divide the market in terms of

employment opportunities. Such imperfections lead to involuntary unemployment. To overcome this problem, prices and incomes policies can increase the power of outsiders in relation to insiders by reducing the effect of market imperfections and limit the use of insider's power thereby reducing unemployment of outsiders.

3. Government and Corporate Policies:

Another important implication relates to corporate and government policies when involuntary unemployment persists in the long run after an adverse employment shock. This is called hysteresis or lagged effects. In times of high involuntary unemployment in a recession, the insiders may use their bargaining power to prevent outsiders from entering the labour force. Those who become outsiders lose their influence on wage bargaining contracts because they are no longer union members.

In such a situation, a long period of high involuntary unemployment will tend to be locked-in. When outsiders cannot enter the labour market, unemployment among them cannot exert pressure on wages which remain sticky.

To reduce hysteresis effects of involuntary unemployment, new Keynesian economists have suggested a number of measures:

(i) Institutional Reforms:

Lind-back and Snower have suggested a greater role of the government in the bargaining process by centralization of wage bargaining to reduce the power of insiders and to attract outsiders. For this, the government should soften the job security legislation in order to reduce the costs of hiring and

firing of workers. It should also reform industrial relations to reduce the frequency of strikes.

(ii) Reform of Benefits System:

To provide more-employment opportunities to outsiders, the benefits system should be reformed so that the unemployed workers do not depend too much on unemployment insurance, social insurance or 'dole' because such a system encourages workers to shirk jobs. Moreover, efforts should be made to increase labour mobility through efficient employment exchanges and employment bureaus.

(iii) Organisational Changes:

Corporations should make organisational changes to increase the power of outsiders by introducing on-the-job training and profit-sharing schemes for workers. By such measures, high involuntary unemployment may persist for a short period.

4. Re-establishment of Policy Effectiveness:

New Keynesian theories which emphasise price and wage stickiness, re-establish non-neutrality of money and policy effectiveness. Fisher and Phelps and Taylor have shown that nominal demand disturbances produce real effects in theories that incorporate rational expectations when market-clearing assumption is abandoned. In such theories, monetary policy can help in stabilising the economy. Thus new Keynesian economics re-establishes monetary policy effectiveness as against the policy ineffectiveness of the new classical macroeconomics.

5. Favour Rough or Coarse Tuning:

Monetarists and new classical economists undermined the case for fine-tuning the economy by making frequent changes in monetary and/or fiscal policy to keep GNP at, or near, its full employment level. But new Keynesian economists favour 'rough' or 'coarse' tuning where monetary and fiscal policies are used to correct or avoid only large deviations from potential GNP.

6. Existence of Involuntary Unemployment:

As against the new classical approach, new Keynesian economists have maintained the existence of involuntary unemployment equilibrium. For example, in efficiency wage models, firms do not cut wages even when there is an excess supply of labour due to persistent unemployment because such a policy would lead to lower efficiency and productivity.

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UNIT – V

MACRO-ECONOMIC POLICIES

5.1. GOAL OF MACRO ECONOMIC POLICIES

Macroeconomic policy refers to the instruments by which a government tries to regulate or modify the economic affairs of the country in keeping with certain objectives. In other words, it attempts to assess the behaviour of the economy as a whole and to seek ways in which its aggregate performance might be improved. These are achieved through certain instruments and objectives of macroeconomic policy. Its two main instruments are monetary and fiscal policy and four main objectives are full employment, price stability, economic growth, and balance of payments equilibrium.

5.1.1. Macroeconomic Policy Objectives:

Macroeconomic policies have several objectives. They may be divided into primary and secondary objectives. The primary objectives are full employment, price stability, economic growth, and balance of payments equilibrium. The secondary objectives include full production, high standard of living, reduction in inequalities of income, social welfare.

(i) Full employment:

Full employment has been ranked among the foremost objectives of economic policy. The classical economist always believed in the existence of full employment in the economy. To them full employment was a normal situation and may deviation from this regarded as something abnormal. According to the Pigou, the tendency of the economic system was to automatically provide full employment in the labour market. Unemployment resulted from the rigidity in the wage structure and interference in the of the market system in the form of trade union legislation, minimum wage legislation, etc. According to Keynes, full employment means the absence of involuntary unemployment. Full employment so defined is consistent with frictional and voluntary unemployment. Thus the Keynesian concept of full employment involves three conditions: (i) reduction in the real wage rate, (ii) increase in effective demand and (iii) inelastic supply of output at the level of full employment.

ii) Price stability:

One of the policy objectives of monetary and fiscal policy is to stabilise the price level. Rising and falling prices are both bad because they being unnecessary loss to some and undue advantages to others. So a policy of price stability keeps the value of money stable, eliminates cyclical fluctuations, brings economic stability, helps in reducing inequalities of income and wealth, secures social justice and promotes economic welfare. As pointed out by Dasgupta and Hagger price stability means, " stability of some appropriate price index in the sense that we can detect no definite upward trend in the index after making proper allowance for the upward bias inherent in all price indexes." Price stability can be maintained by following counter cyclical monetary and fiscal policies.

2. Macroeconomic Policy Instruments:

As our macroeconomic goals are not typically confined to "full employment", "price stability", "rapid growth", "BOP equilibrium and stability in foreign exchange rate", so our macroeconomic policy instruments include monetary policy, fiscal policy, income policy in a narrow sense. But, in a broder sense, these instruments should include policies relating to labour, tariff, agriculture, anti-monopoly and other relevant ones that influence the macroeconomic goals of a country. Confining our attention in a restricted way we intend to consider two types of policy instruments the two "giants of the industry" monetary (credit) policy and fiscal (budgetary) policy. These two policies are employed toward altering aggregate demand so as to bring about a change in aggregate output (GNP/GDP) and prices, wages and interest rates, etc., throughout the economy.

Monetary policy attempts to stabilise aggregate demand in the economy by influencing the availability or price of money, i.e., the rate of interest, in an economy. Monetary policy may be defined as a policy employing the central bank's control of the supply of money as an instrument for achieving the macroeconomic goals.

Fiscal policy, on the other hand, aims at influencing aggregate demand by altering tax- expenditure-debt programme of the government. The credit for using this kind of fiscal policy in the 1930s goes to J.M. Keynes who

discredited the monetary policy as a means of attaining some of the macro-economic goals—such as the goal of full employment. As fiscal policy has come into scrutiny in terms of its effectiveness in achieving the desired macroeconomic objectives, the same is true about the monetary policy. One can see several rounds of ups and downs in the effectiveness of both these policy instruments consequent upon criticisms and counter- criticisms in their theoretical foundations.

It may be pointed out here that as there are conflicts among different macroeconomic goals, policymakers are in a dilemma in the sense that neither of the policies can achieve desired goals. Hence the need for additional policy measures like income policy, price control, etc. Further, while the objectives represent economic, social and political value judgements they do not normally enter the mainstream economic analysis. Ultimately, policymakers and bureaucrats are blamed as trouble shooters.

5.2. Monetary and Fiscal Policy

5.2.1. Meaning of Monetary Policy:

Monetary policy refers to the credit control measures adopted by the central bank of a country. Johnson defines monetary policy "as policy employing central bank's control of the supply of money as an instrument for achieving the objectives of general economic policy." G.K. Shaw defines it as "any conscious action undertaken by the monetary authorities to change the quantity, availability or cost of money."

Objectives or Goals of Monetary Policy:

The following are the principal objectives of monetary policy:

1. Full Employment:

Full employment has been ranked among the foremost objectives of monetary policy. It is an important goal not only because unemployment leads to wastage of potential output, but also because of the loss of social standing and self-respect.

2. Price Stability:

One of the policy objectives of monetary policy is to stabilise the price level. Both economists and laymen favour this policy because fluctuations in prices bring uncertainty and instability to the economy.

3. Economic Growth:

One of the most important objectives of monetary policy in recent years has been the rapid economic growth of an economy. Economic growth is defined as "the process whereby the real per capita income of a country increases over a long period of time."

4. Balance of Payments:

Another objective of monetary policy since the 1950s has been to maintain equilibrium in the balance of payments.

5.2.2. Instruments of Monetary Policy:

The instruments of monetary policy are of two types: first, quantitative, general or indirect; and second, qualitative, selective or direct. They affect the level of aggregate demand through the supply of money, cost of money and availability of credit. Of the two types of instruments, the first category includes bank rate variations, open market operations and changing reserve requirements. They are meant to regulate the overall level of credit in the economy through commercial banks. The selective credit controls aim at controlling specific types of credit. They include changing margin requirements and regulation of consumer credit. We discuss them as under:

Bank Rate Policy:

The bank rate is the minimum lending rate of the central bank at which it rediscounts first class bills of exchange and government securities held by the commercial banks. When the central bank finds that inflationary pressures have started emerging within the economy, it raises the bank rate. Borrowing from the central bank becomes costly and commercial banks borrow less from it.

The commercial banks, in turn, raise their lending rates to the business community and borrowers borrow less from the commercial banks. There is contraction of credit and prices are checked from rising further. On the contrary, when prices are depressed, the central bank lowers the bank rate.

It is cheap to borrow from the central bank on the part of commercial banks. The latter also lower their lending rates. Businessmen are encouraged to borrow more. Investment is encouraged. Output, employment, income and demand start rising and the downward movement of prices is checked.

Open Market Operations:

Open market operations refer to sale and purchase of securities in the money market by the central bank. When prices are rising and there is need to control them, the central bank sells securities. The reserves of commercial banks are reduced and they are not in a position to lend more to the business community. Further investment is discouraged and the rise in prices is checked. Contrariwise, when recessionary forces start in the economy, the central bank buys securities. The reserves of commercial banks are raised. They lend more. Investment, output, employment, income and demand rise and fall in price is checked.

Changes in Reserve Ratios:

This weapon was suggested by Keynes in his Treatise on Money and the USA was the first to adopt it as a monetary device. Every bank is required by law to keep a certain percentage of its total deposits in the form of a reserve fund in its vaults and also a certain percentage with the central bank.

When prices are rising, the central bank raises the reserve ratio. Banks are required to keep more with the central bank. Their reserves are reduced and they lend less. The volume of investment, output and employment are adversely affected. In the opposite case, when the reserve ratio is lowered, the reserves of commercial banks are raised. They lend more and the economic activity is favourably affected.

Selective Credit Controls:

Selective credit controls are used to influence specific types of credit for particular purposes. They usually take the form of changing margin requirements to control speculative activities within the economy. When there is brisk speculative activity in the economy or in particular sectors in certain commodities and prices start rising, the central bank raises the margin requirement on them. The result is that the borrowers are given less money in loans against specified securities. For instance, raising the margin requirement to 60% means that the pledger of securities of the value of Rs 10,000 will be given 40% of their value, i.e. Rs 4,000 as loan. In case of recession in a particular sector, the central bank encourages borrowing by lowering margin requirements.

5.2.3. Meaning of Fiscal policy:

Fiscal policy means the use of taxation and public expenditure by the government for stabilisation or growth. According to Culbarston, "By fiscal policy we refer to government actions affecting its receipts and expenditures which we ordinarily taken as measured by the government's receipts, its surplus or deficit." The government may offset undesirable variations in private consumption and investment by compensatory variations of public expenditures and taxes.

Objectives of Fiscal Policy

- To maintain and achieve full employment.
- To stabilise the price level.
- To stabilise the growth rate of the economy.
- To maintain equilibrium in the balance of payments.
- To promote the economic development of underdeveloped countries.

Instruments of Fiscal Policy:

The tools of fiscal policy are taxes, expenditure, public debt and a nation's budget. They consist of changes in government revenues or rates of the tax structure so as to encourage or restrict private expenditures on consumption and investment. Public expenditures include normal government expenditures, capital expenditures on public works, relief expenditures, and subsidies of various types, transfer payments and social security benefits.

Government expenditures are income-creating while taxes are primarily income-reducing. Management of public debt in most countries has also become an important tool of fiscal policy. It aims at influencing aggregate spending through changes in the holding of liquid assets. During inflation, fiscal policy aims at controlling excessive aggregate spending, while during depression it aims at making up the deficiency in effective demand for raising the economy from the depths of depression. The following considerations may be noted in the adoption of proper policy instruments.

A Contra cyclical Budgetary Policy:

The policy of managed budgets implies changing expenditures with constant tax rates or changing tax rates with constant expenditures or a combination of the two. Budget management may be used to tackle depression and inflationary situations. Deliberate attempts are made under this policy to adjust revenues, expenditures and public debt to eliminate unemployment during depression and to achieve price stability in inflation.

Contra cyclical policy implies unbalanced budgets. An unbalanced budget during depression implies deficit spending. To make it more effective, the government may finance its deficits by borrowing from the banks. During periods of inflation, the policy is to have a budget surplus by curtailing government outlays. The government may partly utilize the budget surplus to retire the outstanding government debt. The belief is that a surplus budget has deflationary effect on national income while a deficit budget tends to be expansionary. During depression when we need an increase in the flow of income, deficit budgets are desired. Conversely, in inflation when we need to check the overflow of income, surplus budgets are favoured. However, following a contra cyclical budgetary policy is not an easy task. Predicting a recession or an inflationary boom is a difficult job. Adjusting the budget to the fast changing economic conditions is still more difficult especially when budget is a political decision to be taken after a good deal of delay and discussion. Therefore, emphasis has also to be laid on adjustment of individual items of the budget in order to make it more effective as a contra cyclical fiscal policy weapon.

Taxation Policy:

The structure of tax rates has to be varied in the context of conditions prevailing in an economy. Taxes determine the size of disposable income in the hands of general public and therefore, the quantum of inflationary and deflationary gaps. During depression tax policy has to be such as to encourage private consumption and investment; while during inflation, tax policy must curtail consumption and investment.

During depression, a general reduction in corporate and income taxation has been favoured by economists like Prof. A H. Hansen, M. Kalecki, and R.A. Musgrave on the ground that this leaves higher disposable incomes with people inducing higher consumption while low corporate taxation encourages 'venture capital', thereby promoting more investment. But there are others who express grave doubts about the supposed stimulating effect of taxation reliefs on investment. It has been argued that even a heavy reduction in taxes does not alter an entrepreneur's decisions. During inflation, new taxes can be levied to wipe off the surplus purchasing power. Caution, however, should be taken not to raise the taxes so high as to stifle new investment and generate a business recession. Expenditure tax and excise duties are anti-inflationary in character. During inflation fiscal authority should aim at levying such taxes as reduce current excessive demand for specific commodities rather than aggregate demand.

Redistributive taxation is probably the best measure for raising and stabilising the consumption function. Redistributive taxation implies a progressive tax structure. This implies taxing the high-income groups at higher rates, and the middle and low-income groups at lower rates with a view to raising consumer spending.

Public Debt:

A sound programme of public borrowing and debt repayment is a potent weapon to fight inflation and deflation. Government borrowing can be in the form of borrowing from non-bank financial intermediaries, borrowing from commercial banking system, drawings from the central bank or printing of new money. Borrowing from the public through the sale of bonds and securities which curtails consumption and private investment is anti-inflationary in effect. Borrowing from the banking system is effective during depression if banks have got excess cash reserves. Thus, if unused cash lying with banks can be lent to the government, it will cause a net addition to the national income stream. Withdrawals of balances from treasury are inflationary in nature but these balances are likely to be so small as to be of little importance in the

economic system. However, the printing of new money is highly inflationary.

During war, borrowing becomes necessary when inflationary pressures become strong. In a period of inflation, therefore, public debt has to be managed in such a way as reduces the money supply in the economy and curtails credit. The government will do well to retire debt through a budget surplus. During depression, on the opposite, taxes are reduced and public expenditures are increased. Deficits are financed by borrowings from the public, commercial banks or the central bank of the country. The public borrowing of otherwise idle funds will have no adverse effect on consumption or on investment. When budgets are deficit, it is very difficult to retire debts. Actually, it pays to accumulate debt during depression and redeem it during a period of expansion. Along with this, the monetary authority (the central bank) must aim at a low bank rate to keep the burden of debt low. Thus, 'public debt becomes an important tool of anti-cyclical policy.

Public Expenditure:

Public expenditure can be used to stimulate production, income and employment. Government expenditure forms a highly significant part of the total expenditure in the economy. A reduction or expansion in it causes significant variations in the total income. It can be instrumental in adjusting consumption and investment to achieve full employment.

During inflation, the best policy is to reduce government expenditure in order to control inflation by giving up such schemes as are justified only during deflation. While expenditures are reduced, attempts are made to increase public revenues to generate a budget surplus. Though it is true that there is a limit beyond which it may not be possible to reduce government spending (say on account of political, and military considerations), yet the government can vary its expenditure to some extent to reduce inflationary pressures. It is during depression that public spending assumes greater importance. A distinction is made between the concepts of public spending during depression, that is, the concepts of pump priming and the 'compensatory spending'. Pump priming means that

a certain volume of public spending will help to revive the economy which will gradually reach satisfactory levels of employment and output. What this volume of spending may be is not specific. The idea is that, when private spending becomes deficient, then a small dose of public spending may prove to be a good starter. Compensatory spending, on the other hand, means that public spending is undertaken with the clear view to compensating for the decline in private investment. The idea is that when private investment declines, public expenditure should expand and as long as private investment is below normal, public compensatory spending should go on. These expenditures will have multiplier effects of raising the level of income, output and employment.

The compensatory public expenditure may take the forms of relief expenditure, subsidies, social insurance payments, public works etc.

Essential requisites of compensatory public spending are:

(1) It must have the maximum possible leverage effects;

(2) It must not be mutually offsetting;

(3) It must create economically and socially desirable assets. But pump priming expenditures are of limited relevance in advanced economies where the deficiency of investment is not merely cyclical but also secular.

5.3. Effectiveness of Monetary and Fiscal policy

The relative effectiveness of monetary and fiscal policy has been the subject of controversy among economists. The monetarists regard monetary policy more effective than fiscal policy for economic stabilisation. On the other hand, the Keynesians hold the opposite view. In between these two extreme views are the synthesists who advocate the middle path. Before we discuss them, we study the effectiveness of monetary and fiscal policy in terms of shape of the IS curve and the LM curve. The IS curve represents fiscal policy and the LM curve monetary policy.

The government influences investment, employment, output and income through monetary policy. This is done by increasing or decreasing the money supply by the monetary authority. When the money supply is increased, it is an expansionary monetary policy. This is shown by shifting the LM curve to the right. When the money supply is decreased, it is a

contractionary monetary policy. This is shown by shifting the LM curve to the left.

Figure 1 illustrates an expansionary monetary policy with given LM and IS curves. Suppose the economy is in equilibrium at point E with OY income and OR interest rate. An increase in the money supply by the monetary authority shifts the LM curve to the right to LM_1given the IS curve. This reduces the interest rate from OR to OR_1 thereby increasing investment and national income. Thus the national income rises from OY to OY_1.

If the LM curve is horizontal, monetary policy is completely ineffective because the demand for money is perfectly interest elastic. This is the case of "liquidity trap" shown in Figure 3, where the increase in the money supply has no effect on the interest rate OR and the income level OY.

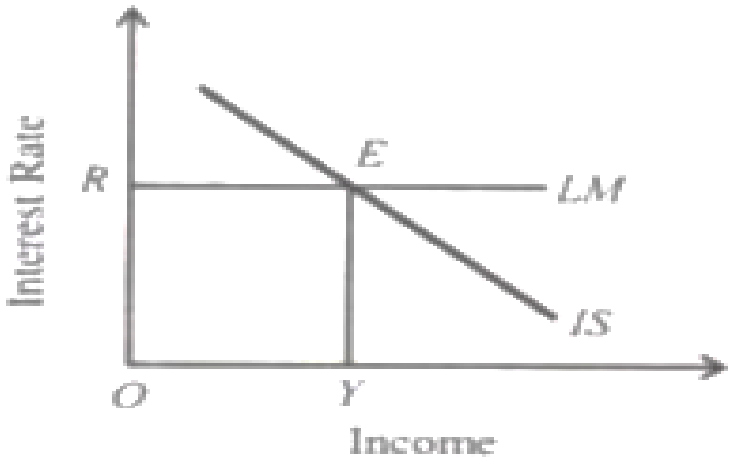

Fig. 3

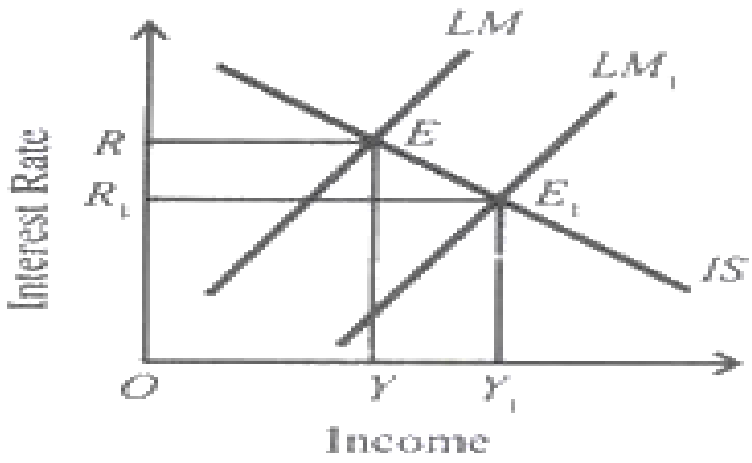

Fig. 1

On the other hand, if the LM curve is vertical, monetary policy is highly effective because the demand for money is perfectly interest inelastic. Figure 4 shows that when the vertical LM curve shifts to the right to LM with the Increase in the money supply, the interest rate falls from OR to OR_1which has no effect on the demand for money and the entire increase in the money supply has the effect of raising the income level from OY to OY_1.

Now take the slope of the IS curve. The patter is the IS curve, the more effective is the monetary' policy. The flatter IS curve means that the investment expenditure is highly interest elastic. When an increase in the money supply lowers the interest rate even slightly, private investment also increases, by a large amount, thereby raising income much.

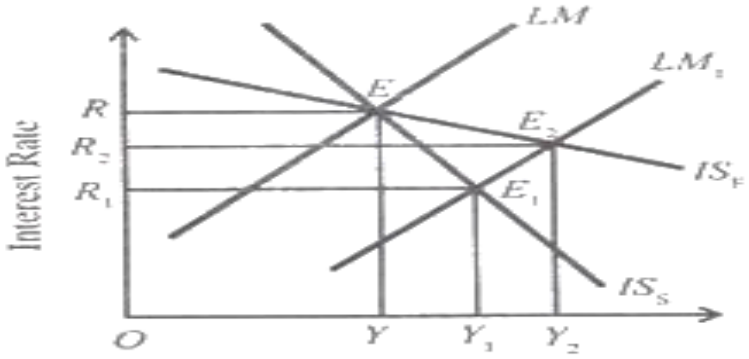

Fig. 5

This is depicted in Figure 5 where the original equilibrium is at point E with OR interest rate and OY income level. When the LM curve shifts to the right to LM_1 with the increase in money supply, it intersects the flatter curve IS_F at E_2 which produces OR_2 interest rate and OY_2 income.

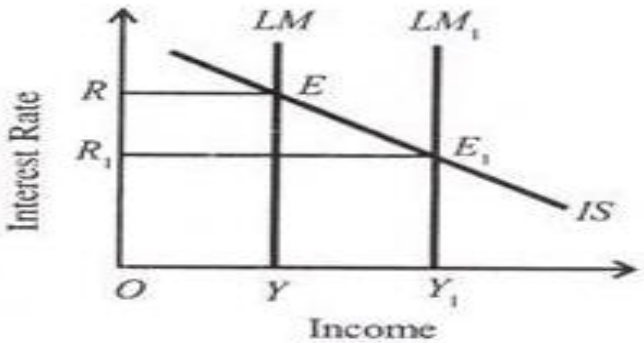

Fig. 4

If we compare this equilibrium position E_2 with the E_1position where the curve ISs is steeper, the interest rate OR_1 and the income level OY_1 are lower than the interest rate and income level of the flatter IS_F curve. This shows that when the money supply is increased, a small fall in the rate of interest leads to a large rise in private investment which raises income more (by YY_2) with the flatter IS_f curve as compared to the steep IS curve (by YY_1) thus making monetary policy more effective.

If the IS curve is vertical monetary policy is completely ineffective because investment expenditure is completely interest inelastic. With the increase in the money supply, the LM curve shifts to the right to LM_1 in Figure 6, the interest rate falls from OR to OR_1 but investment being completely

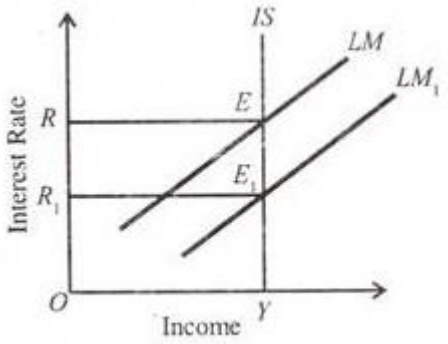

Fig. 6

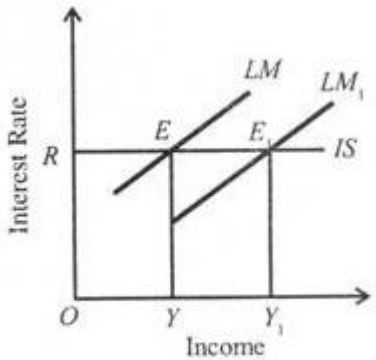

Fig. 7

interest inelastic, the income remains unchanged at OY.

On the other hand, if the IS curve is horizontal, monetary policy is highly effective because investment expenditure is perfectly interest elastic. Figure 7 shows that with the increase in the money supply, the LM curve shifts to LM_1 .But even with no change in the interest rate OR, there is a large change in income from OY to OY_1 This makes monetary policy highly effective.

2. Fiscal Policy

The government also influences investment, employment, output and income in the economy through fiscal policy. For an expansionary fiscal policy, the government increases its expenditure or/and reduces taxes. This shifts the IS curve to the right. The government follows a contractionary fiscal policy by reducing its expenditure or/and increasing taxes. This shifts the IS curve to the left.

Figure 8 illustrates an expansionary fiscal policy with given IS and LM curves. Suppose the economy is in equilibrium at point E with OR interest rate and OY income. An increase in government spending or a decrease in taxes shifts the IS curve upwards to IS which intersects the LM curve at E_1 .This raises the national income from OY to OY_1.The rise in the national income increases the demand for money, given the fixed money supply. This, in turn, raises the interest rate from OR to OR_1.The increase in the interest

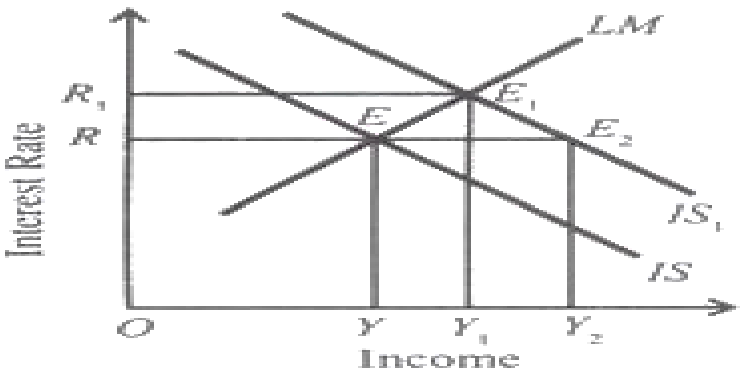

Fig. 8

rate tends to reduce private investment expenditure at the same time when the government expenditure is being increased. If the interest rate had not changed with the increase in government expenditure, income would have risen to OY_1 level. But the actual increase in income has been less by Y_2Y_1 due to the increase in the interest rate to OR_1 which has reduced private investment expenditure. The opposite happens in a contractionary fiscal policy.

The relative effectiveness of fiscal policy depends on the slope of the LM curve and the IS curve. Fiscal policy is more effective, the flatter is the LM curve, and is less effective when the LM curve is steeper. When the IS curve shifts upwards to $IS_1$with the increase in government expenditure, its impact

on the national income is more with the flatter LM curve than with the steeper LM curve.

This is shown in Figure 9 where the IS_1 curve intersects the flatter LM_F curve at point E_2which produces OY_2 income and OR_2 interest rate. On the other hand, it intersects the steeper LMs curve at E_1 which determines OY_1 income and OR_1interest rate. In the case of the steeper curve LMs, the increase in income to OY_1 leads to a large rise in the demand for money which raises the interest rate to a very high level OR_1.

The large increase in the interest rate reduces private investment despite increase in government expenditure which ultimately brings a small rise in income OY_1. But in the case of the flatter curve LM_F the rise in the interest rate to OR_2 is relatively small. Consequently, it reduces private investment to

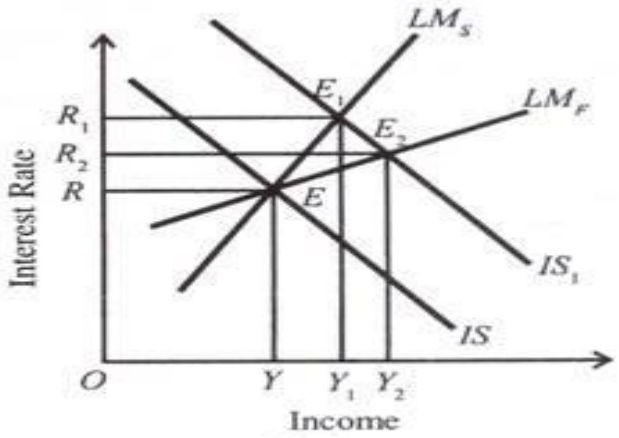

Fig. 9

a lesser degree and its net effect on national income is relatively large. Thus the increase in national income with the flatter curve LM_F is more ($YY_2 > YY_1$) as compared with the steeper curve LMs.

Fiscal policy is completely ineffective, if the LM curve is vertical. It means that the demand for money is perfectly interest inelastic. This is shown in Figure 10 where the level of income remains unchanged. When the IS curve shifts upwards to IS_1, only the interest rate rises from OR to OR_1 and increase in government expenditure does not affect national income at all. It remains constant at OY. At the other extreme is the perfectly horizontal LM curve where fiscal policy is fully effective.

This situation implies that the demand for money is perfectly interest elastic. This is shown in Figure 11 where the horizontal LM curve is intersected by the IS curve at E which produces OR interest rate and OY income. When the IS curve shifts to the right to IS_1, income rises by the full

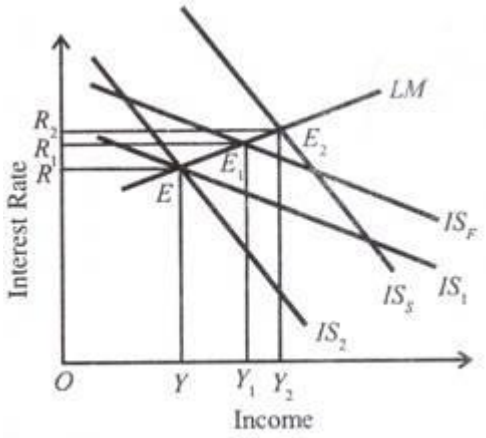

Fig. 12

multiplier of the increase in government expenditure. It rises to OK, but there is no change in interest rate.

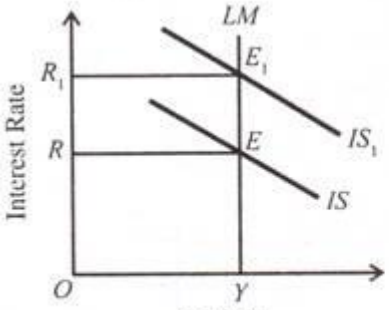

Fig. 10

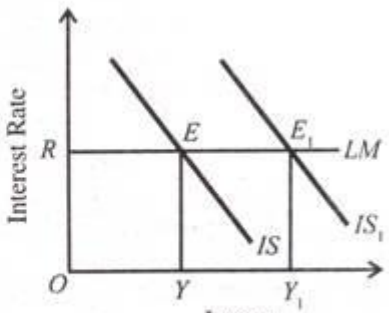

Fig. 11

Now take the slope of the IS curve. The steeper is the IS curve, the more effective is fiscal policy. The flatter is the IS curve, the less effective is fiscal policy. These two cases are illustrated in Figure 12 where E is the original equilibrium point with OR interest rate and OY income level. The increase in government expenditure shifts the flatter curve IS_1 to IS_f so that the new equilibrium with LM curve at point E_1 produces OR_1 interest rate and OY_1 income level. Similarly, the steeper curve IS_2 is shifted to IS_s with the increase in government expenditure and the new equilibrium with LM curve at point E_2 leads to OR_2 interest rate and OY_2 income level. The figure shows that the national income increases more with the shifting of the steeper IS curve than in the case of the flatter IS curve.

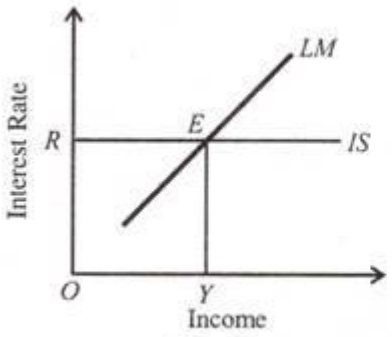

Fig. 13

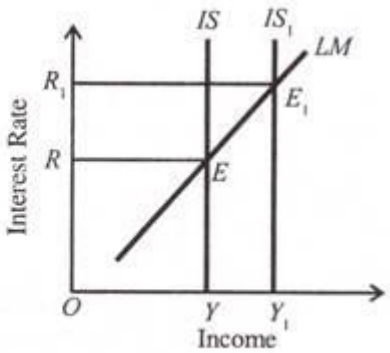

Fig. 14

It rises by YY_2 in the case of the steeper curve IS_s and by YY_1 in the case of the flatter curve IS_1.This is because investment expenditure is less interest-elastic, when the IS curve is steeper. The increase in the interest rate to OR_2 reduces very little private investment with the result that the rise in income is greater. It is YY_1.On the other hand, the increase in income is smaller in the case of the flatter IS curve. It is YY_1.This is because investment expenditure is more interest-elastic. The increase in the interest rate to OR_1 reduces large private investment so that the rise in income is smaller. Thus fiscal policy is more effective, the steeper is the IS curve and is less effective in the case of the flatter IS curve.

Fiscal policy is completely ineffective, if the IS curve is horizontal. Horizontal IS curve means that investment expenditure is perfectly interest elastic. This is depicted in Figure 13 where LM curve intersects the IS curve at E. An increase in government expenditure has no effect on the interest rate OR and hence on the income level OY. Such a situation is not likely to be in practice.

On the other extreme is the vertical IS curve which makes fiscal policy highly effective. This is because government expenditure perfectly interest inelastic. An increase in government expenditure shifts the IS curve to the right to E_1,raises the interest rate to OR_1 and income to OY_1 by the full multiplier of the increase in government expenditure, as shown in Figure 14. This makes fiscal policy highly effective.

5.4. IS – LM model with labour market and flexible prices

The Keynes in his analysis of national income explains that national income is determined at the level where aggregate demand (i.e., aggregate

expenditure) for consumption and investment goods (C +1) equals aggregate output. In other words, in Keynes' simple model the level of national income is shown to be determined by the goods market equilibrium. In this simple analysis of equilibrium in the goods market Keynes considers investment to be determined by the rate of interest along with the marginal efficiency of capital and is shown to be independent of the level of national income.

The rate of interest, according to Keynes, is determined by money market equilibrium by the demand for and supply of money. In this Keynes' model, changes in rate of interest either due to change in money supply or change in demand for money will affect the determination of national income and output in the goods market through causing changes in the level of investment. In this way changes in money market equilibrium influence the determination of national income and output in the goods market. However, there is apparently one flaw in the Keynesian analysis which has been pointed out by some economists and has been a subject of a good deal of controversy. It has been asserted that in the Keynesian model whereas the changes in rate of interest in the money market affect investment and therefore the level of income and output in the goods market, there is seemingly no inverse influence of changes in goods market i.e., (investment and income) on the money market equilibrium.

It has been shown by J.R. Hicks and others that with greater insights into the Keynesian theory one finds that the changes in income caused by changes in investment or propensity to consume in the goods market also influence the determination of interest in the money market. According to him, the level of income which depends on the investment and consumption demand determines the transactions demand for money which affects the rate of interest. Hicks, Hansen, Lerner and Johnson have put forward a complete and integrated model based on the Keynesian framework wherein the variables such as investment, national income, rate of interest, demand for and supply of money are interrelated and mutually interdependent and can be represented by the two curves called the IS and LM curves. This extended Keynesian model is therefore known as IS-LM curve model. In this model they have shown how the level of national income and rate of interest are jointly

determined by the simultaneous equilibrium in the two interdependent goods and money markets. Now, this IS-LM curve model has become a standard tool of macroeconomics and the effects of monetary and fiscal policies are discussed using this IS and LM curves model.

Goods Market Equilibrium: The Derivation of the IS Curve:

The IS-LM curve model emphasises the interaction between the goods and money markets. The goods market is in equilibrium when aggregate demand is equal to income. The aggregate demand is determined by consumption demand and investment demand. In the Keynesian model of goods market equilibrium we also now introduce the rate of interest as an important determinant of investment. With this introduction of interest as a determinant of investment, the latter now becomes an endogenous variable in the model.

When the rate of interest falls the level of investment increases and vice versa. Thus, changes in the rate of interest affect aggregate demand or aggregate expenditure by causing changes in the investment demand. When the rate of interest falls, it lowers the cost c' investment projects and thereby raises the profitability of investment. The businessmen will therefore undertake greater investment at a lower rate of interest. The increase in investment demand will bring about increase in aggregate demand which in turn will raise the equilibrium level of income. In the derivation of the IS Curve we seek to find out the equilibrium level of national income as determined by the equilibrium in goods market by a level of investment determined by a given rate of interest.

Thus IS curve relates different equilibrium levels of national income with various rates of interest. As explained above, with a fall in the rate of interest, the planned investment will increase which will cause an upward shift in aggregate demand function (C + 7) resulting in goods market equilibrium at a higher level of national income.

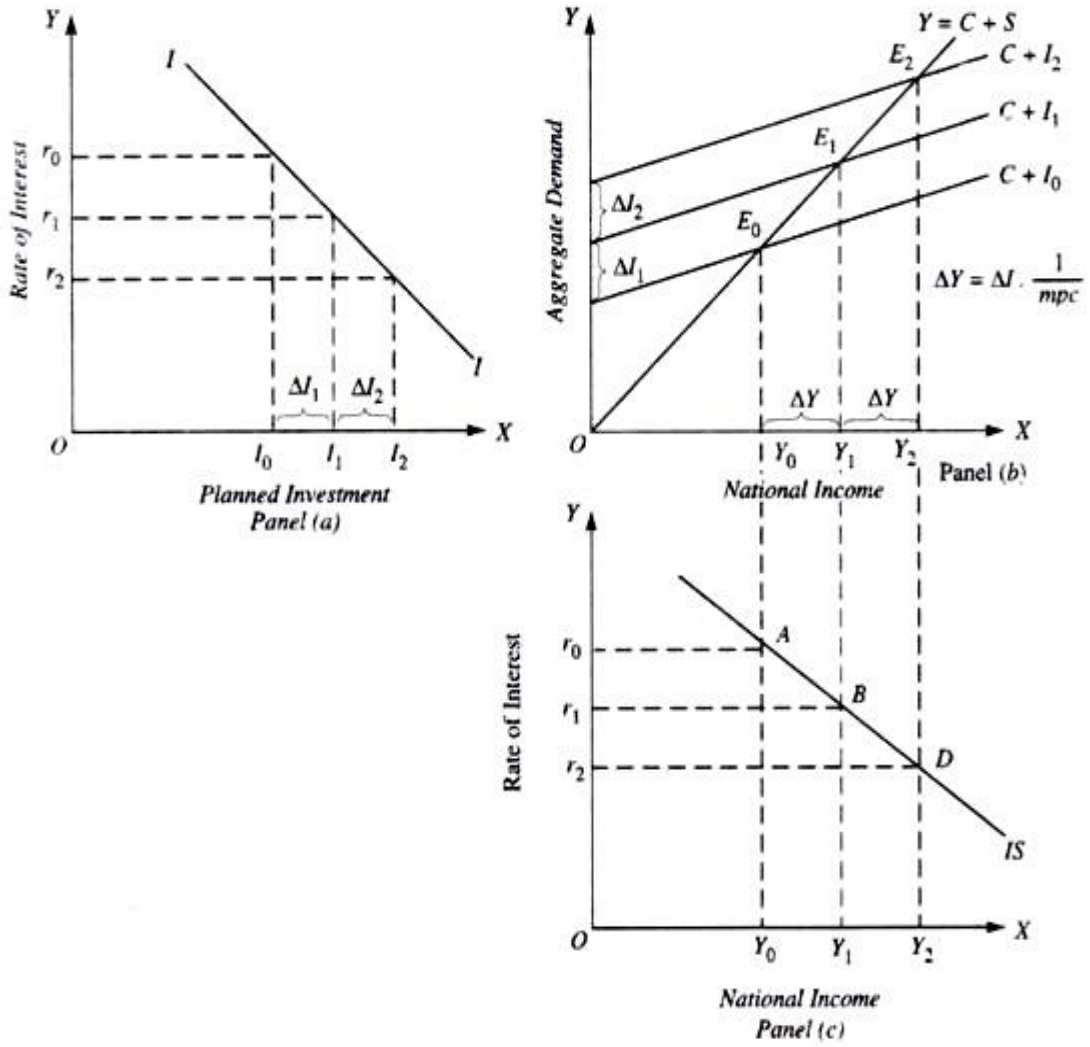

Fig. 5.4. Derivation of IS - Curve

The lower the rate of interest, the higher will be the equilibrium level of national income. Thus, the IS curve is the locus of those combinations of rate of interest and the level of national income at which goods market is in equilibrium.

How the IS curve is derived is illustrated in Fig. 5.4. In panel (a) of Fig. 5.4. the relationship between rate of interest and planned investment is depicted by the investment demand curve II. It will be seen from panel (a) that at rate of interest Or_0 the planned investment is equal to OI_0. With OI_0 as the amount of planned investment, the aggregate demand curve is $C + I_0$ which, as will be seen in panel (b) of Fig. equals aggregate output at OY_1 level of national income.

Therefore, in the panel (c) at the bottom of the Fig.5.4. , against rate of interest Or_2, level of income equal to OY_0 has been plotted. Now, if the rate of interest

falls to Or_2 the planned investment by businessmen increases from OI_0 to OI_1 [see panel (a)]. With this increase in planned investment, the aggregate demand curve shifts upward to the new position C + 11 in panel (b), and the goods market is in equilibrium at OY_1 level of national income. Thus, in panel (c) at the bottom of Fig.5.4. the level of national income OY_1 is plotted against the rate of interest, Or_1.

With further lowering of the rate of interest to Or_2, the planned investment increases to OI_2 (see panel a). With this further rise in planned investment the aggregate demand curve in panel (b) shifts upward to the new position C + I_2 corresponding to which goods market is in equilibrium at OY_2 level of income. Therefore, in panel (c) the equilibrium income OY_2 is shown against the interest rate Or_2. By joining points A, B, D representing various interest-income combinations at which goods market is in equilibrium we obtain the IS Curve. It will be observed from Fig. 5.4. That the IS Curve is downward sloping (i.e., has a negative slope) which implies that when rate of interest declines, the equilibrium level of national income increases.

Why does IS Curve Slope Downward?

What accounts for the downward-sloping nature of the IS curve. As seen above, the decline in the rate of interest brings about an increase in the planned investment expenditure. The increase in investment spending causes the aggregate demand curve to shift upward and therefore leads to the increase in the equilibrium level of national income. Thus, a lower rate of interest is associated with a higher level of national income and vice-versa. This makes the IS curve, which relates the level of income with the rate of interest, to slope downward.

Steepness of the IS curve depends on (1) the elasticity of the investment demand curve, and (2) the size of the multiplier. The elasticity of investment demand signifies the degree of responsiveness of investment spending to the changes in the rate of interest. Suppose the investment demand is highly elastic or responsive to the changes in the rate of interest, then a given fall in the rate of interest will cause a large increase in investment demand which in turn will produce a large upward shift in the aggregate demand curve.

A large upward shift in the aggregate demand curve will bring about a large expansion in the level of national income. Thus when investment demand is more elastic to the changes in the rate of interest, the investment demand curve will be relatively flat (or less steep). Similarly, when investment demand is not very sensitive or elastic to the changes in the rate of interest, the IS curve will be relatively more steep. The steepness of the IS curve also depends on the magnitude of the multiplier. The value of multiplier depends on the marginal propensity to consume (mpc). It may be noted that the higher the marginal propensity to consume, the aggregate demand curve (C + I) will be more steep and the magnitude of multiplier will be large.

In case of a higher marginal propensity to consume (mpc) and therefore a higher value of multiplier, a given increment in investment demand caused by a given fall in the rate of interest will help to bring about a greater increase in equilibrium level of income. Thus, the higher the value of multiplier, the greater will be the rise in equilibrium income produced by a given fall in the rate of interest and this makes the IS curve flatter. On the other hand, the smaller the value of multiplier due to lower marginal propensity to consume, the smaller will be the increase in equilibrium level of income following a given increment in investment caused by a given fall in the rate of interest. Thus, in case of smaller size of multiplier the IS curve will be more steep.

Shift in IS Curve:

It is important to understand what determines the position of the IS curve and what causes shifts in it. It is the level of autonomous expenditure which determines the position of the IS curve and changes in the autonomous expenditure cause a shift in it. By autonomous expenditure we mean the expenditure, be it investment expenditure, the Government spending or consumption expenditure which does not depend on the level of income and the rate of interest.

The government expenditure is an important type of autonomous expenditure. Note that the Government expenditure which is determined by several factors as well as by the policies of the Government does not depend on the level of income and the rate of interest.

Similarly, some consumption expenditure has to be made if individuals have to survive even by borrowing from others or by spending their savings made in the past year. Such consumption expenditure is a sort of autonomous expenditure and changes in it do not depend on the changes in income and rate of interest. Further, autonomous changes in investment can also occur. In the goods market equilibrium of the simple Keynesian model the investment expenditure is treated as autonomous or independent of the level of income and therefore does not vary as the level of income increases. However, in the complete Keynesian model, the investment spending is thought to be determined by the rate of interest along with marginal efficiency of investment.

Following this complete Keynesian model, in the derivation of the IS curve we consider the level of investment and changes in it as determined by the rate of interest along with marginal efficiency of capital. However, there can be changes in investment spending autonomous or independent of the changes in rate of interest and the level of income.

For instance, growing population requires more investment in house construction, school buildings, roads, etc., which does not depend on changes in level of income or rate of interest. Further, autonomous changes in investment spending can also take place when new innovations come about, that is, when there is progress in technology and new machines, equipment, tools etc., have to be built embodying the new technology.

Besides, Government expenditure is also of autonomous type as it does not depend on income and rate of interest in the economy. As is well- known government increases its expenditure for the purpose of promoting social welfare and accelerating economic growth. Increase in Government expenditure will cause a rightward shift in the IS curve.

Money Market Equilibrium: Derivation of LM Curve:

Derivation of the LM Curve:

The LM curve can be derived from the Keynesian theory from its analysis of money market equilibrium. According to Keynes, demand for money to hold depends upon transactions motive and speculative motive.

It is the money held for transactions motive which is a function of income. The greater the level of income, the greater the amount of money held for transactions motive and therefore higher the level of money demand curve.

The demand for money depends on the level of income because they have to finance their expenditure, that is, their transactions of buying goods and services. The demand for money also depends on the rate of interest which is

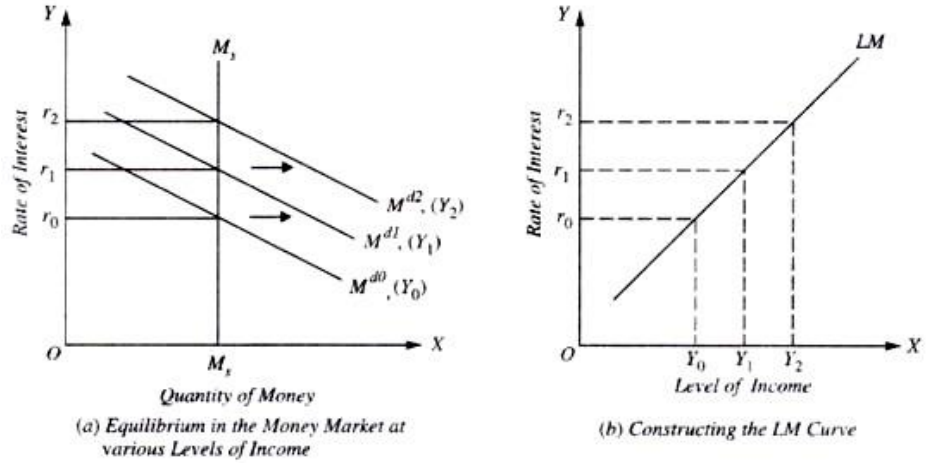

Fig.5.5.Derivation of LM Curve

the cost of holding money. This is because by holding money rather than lending it and buying other financial assets, one has to forgo interest.

Thus demand for money (M^d) can be expressed as:

Md – L(Y, r)

Where M^d stands for demand for money, Y for real income and r for rate of interest. Thus, we can draw a family of money demand curves at various levels of income. Now, the intersection of these various money demand curves corresponding to different income levels with the supply curve of money fixed by the monetary authority would give us the LM curve. The LM curve relates the level of income with the rate of interest which is determined by money-market equilibrium corresponding to different levels of demand for money. The LM curve tells what the various rates of interest will be (given the quantity of money and the family of demand curves for money) at different levels of income. But the money demand curve or what Keynes calls the liquidity preference curve alone cannot tell us what exactly the rate of interest will be. In Fig. 5.5. (a) and (b) we have derived the LM curve from a family of demand curves for money.

As income increases, money demand curve shifts outward and therefore the rate of interest which equates supply of money, with demand for money rises. In Fig. 5.5 (b) we measure income on the X-axis and plot the income level corresponding to the various interest rates determined at those income levels through money market equilibrium by the equality of demand for and the supply of money in Fig. 5.5 (a).

Slope of LM Curve:

It will be noticed from Fig. 5.5 (b) that the LM curve slopes upward to the right. This is because with higher levels of income, demand curve for money (M^d) is higher and consequently the money- market equilibrium, that is, the equality of the given money supply with money demand curve occurs at a higher rate of interest. This implies that rate of interest varies directly with income.

It is important to know the factors on which the slope of the LM curve depends. There are two factors on which the slope of the LM curve depends. First, the responsiveness of demand for money (i.e., liquidity preference) to the changes in income. As the income increases, say from Y_0 to Y_1 the demand curve for money shifts from Md_0 to Md_1 that is, with an increase in income, demand for money would increase for being held for transactions motive, M^d or L_1 =f(Y).

This extra demand for money would disturb the money market equilibrium and for the equilibrium to be restored the rate of interest will rise to the level where the given money supply curve intersects the new demand curve corresponding to the higher income level. It is worth noting that in the new equilibrium position, with the given stock of money supply, money held under the transactions motive will increase whereas the money held for speculative motive will decline. The greater the extent to which demand for money for transactions motive increases with the increase in income, the greater the decline in the supply of money available for speculative motive and, given the demand for money for speculative motive, the higher the rise in tie rate of interest and consequently the steeper the LM curve, r = f (M_2 L_2) where r is the rate of interest, M_2 is the stock of money available for speculative motive and L_2 is the money demand or liquidity preference for speculative motive.

The second factor which determines the slope of the LM curve is the elasticity or responsiveness of demand for money (i.e., liquidity preference for speculative motive) to the changes in rate of interest. The lower the elasticity of liquidity preference for speculative motive with respect to the changes in the rate of interest, the steeper will be the LM curve. On the other hand, if the elasticity of liquidity preference (money demand-function) to the changes in the rate of interest is high, the LM curve will be flatter or less steep.

Shifts in the LM Curve:

Another important thing to know about the IS-LM curve model is that what brings about shifts in the LM curve or, in other words, what determines the position of the LM curve. As seen above, a LM curve is drawn by keeping the stock or money supply fixed. Therefore, when the money supply increases, given the money demand function, it will lower the rate of interest at the given level of income. This is because with income fixed, the rate of interest must fall so that demands for money for speculative and transactions motive rises to become equal to the greater money supply. This will cause the LM curve to shift outward to the right. The other factor which causes a shift in the LM curve is the change in liquidity preference (money demand function) for a given level of income. If the liquidity preference function for a given level of income shifts upward, this, given the stock of money, will lead to the rise in the rate of interest for a given level of income. This will bring about a shift in the LM curve to the left. It therefore follows from above that increase in the money demand function causes the LM curve to shift to the left. Similarly, on the contrary, if the money demand function for a given level of income declines, it will lower the rate of interest for a given level of income and will therefore shift the LM curve to the right.

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