UNIT - II

VALUE OF MONEY

Value of Money: Quantity theory of Money - Transaction Approach - Cash Balances Approach - Income and Expenditure theory - Keynesian theory of money and prices - Theory of Money - Milton Friedman's re-statement of the Quantity Theory of Money.

"The yard measures distance", said the teacher. "But what measures the yard?" was the question. "Well", came the reply, "distance itself'.

Similarly money measures "goods". But what measures money?

"Goods" is the reply. Value, as we know, is the ratio of exchange between two goods, and money measures that value through price. Money is an object of desire. Efforts are made to obtain it not for its own sake but for the goods it can purchase.

The value of money, then, is the quantity of goods in general that will be exchanged for one unit of money. The value of money is its purchasing power, i.e., the quantity of goods and services it can purchase. What money can buy depends on the level of prices. When the price level rises, a unit of money can purchase less goods than before. Money is then said to have depreciated. Conversely, a fall in prices signifies that a unit of money can buy more than before.

Money is then said to appreciate. The "general level of prices" and the value of money are thus the same thing from two opposite angles. When the prices rise the value of money falls and vice versa. In other words, the value of money and the general price level are inversely proportions' to each other. Violent changes in the value of money (or the price level) disturb economic life and do great harm. We must, therefore, carefully study the factors which' determine the value of money.

QUANTITY THEORY OF MONEY

TRANSACTION APPROACH

The quantity theory of money is a theory that variations in price relate to variations in the money supply. The most common version, sometimes called the "neo-quantity theory" or Fisherian theory, suggests there is a mechanical and fixed proportional

relationship between changes in the money supply and the general price level. This popular, albeit controversial, formulation of the quantity theory of money is based upon an equation by American economist Irving Fisher.

Fisher's Equation of Exchange:

The transactions version of the quantity theory of money was provided by the American economist Irving Fisher in his book- The Purchasing Power of Money (1911). According to Fisher, "Other things remaining unchanged, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa".

Fisher's quantity theory is best explained with the help of his famous equation of exchange:

$MV = PT$ or $P = MV/T$

Like other commodities, the value of money or the price level is also determined by the demand and supply of money.

i. Supply of Money:

The supply of money consists of the quantity of money in existence (M) multiplied by the number of times this money changes hands, i.e., the velocity of money (V). In Fisher's equation, V is the transactions velocity of money which means the average number of times a unit of money turns over or changes hands to effectuate transactions during a period of time.

Thus, MV refers to the total volume of money in circulation during a period of time. Since money is only to be used for transaction purposes, total supply of money also forms the total value of money expenditures in all transactions in the economy during a period of time.

ii. Demand for Money:

Money is demanded not for its own sake (i.e., for hoarding it), but for transaction purposes. The demand for money is equal to the total market value of all goods and

services transacted. It is obtained by multiplying total amount of things (T) by average price level (P).

Thus, Fisher's equation of exchange represents equality between the supply of money or the total value of money expenditures in all transactions and the demand for money or the total value of all items transacted.

Supply of money = Demand for Money

Or

Total value of money expenditures in all transactions = Total value of all items transacted

$MV = PT$

or

$P = MV/T$

Where,

M is the quantity of money

V is the transaction velocity

P is the price level.

T is the total goods and services transacted.

The equation of exchange is an identity equation, i.e., MV is identically equal to PT (or MV = PT). It means that in the ex-post or factual sense, the equation must always be true. The equation states the fact that the actual total value of all money expenditures (MV) always equals the actual total value of all items sold (PT).

What is spent for purchases (MV) and what is received for sale (PT) are always equal; what someone spends must be received by someone. In this sense, the equation of exchange is not a theory but rather a truism.

Irving Fisher used the equation of exchange to develop the classical quantity theory of money, i.e., a causal relationship between the money supply and the price level. On the assumptions that, in the long run, under full-employment conditions, total output (T) does not change and the transactions velocity of money (V) is stable, Fisher was able to demonstrate a causal relationship between money supply and price level.

In this way, Fisher concludes, " the level of price varies directly with the quantity of money in circulation provided the velocity of circulation of that money and the volume of trade which it is obliged to perform are not changed". Thus, the classical quantity theory of money states that V and T being unchanged, changes in money cause direct and proportional changes in the price level.

Irving Fisher further extended the equation of exchange so as to include demand (bank) deposits (M') and their velocity, (V') in the total supply of money.

Thus, the equation of exchange becomes:

$$MV + M'V' = PT$$

or

$$P = \frac{MV + M'V'}{T}$$

Thus, according to Fisher, the level of general prices (P) depends exclusively on five definite factors:

(a) The volume of money in circulation (M);

(b) Its velocity of circulation (V) ;

(c) The volume of bank deposits (M');

(d) Its velocity of circulation (V'); and

(e) The volume of trade (T).

The transactions approach to the quantity theory of money maintains that, other things remaining the same, i.e., if V, M', V', and T remain unchanged, there exists a direct and proportional relation between M and P; if the quantity of money is doubled, the

price level will also be doubled and the value of money halved; if the quantity of money is halved, the price level will also be halved and the value of money doubled.

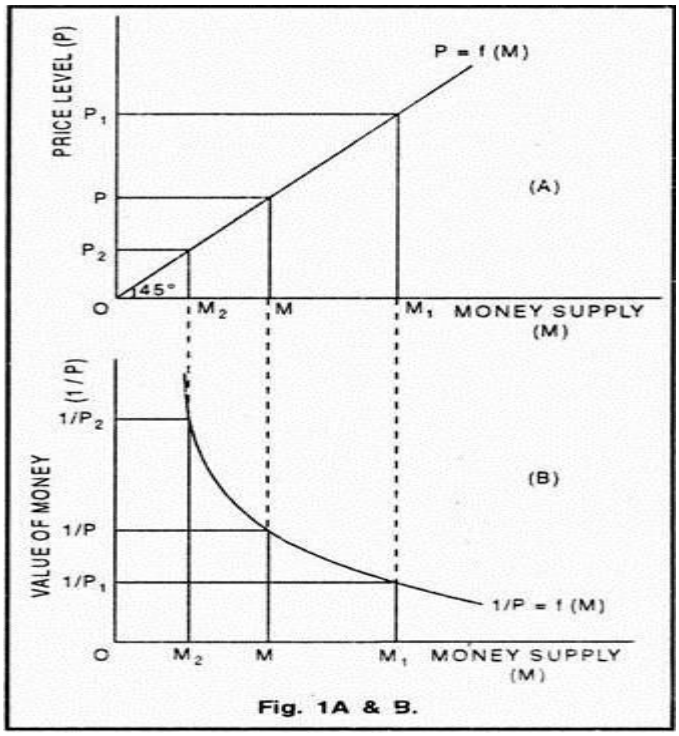

Fig. 1A & B.

Example:

Fisher's quantity theory of money can be explained with the help of an example. Suppose M = Rs. 1000. M' = Rs. 500, V = 3, V' = 2, T = 4000 goods.

$$P = \frac{MV + M'V'}{T}$$

$$P = \frac{(1000 \times 3) + (500 \times 2)}{4000}$$

= Re. 1 per good

Value of money (1/P) = 1

If the supply of money is doubled

$$P = \frac{(2000 \times 3) + (1000 \times 2)}{4000}$$

= Rs. 2 per good

Value of money (1/P) =1/2

Thus, when money supply in doubled, i.e., increases from Rs. 4000 to 8000, the price level is doubled. i.e., from Re. 1 per good to Rs. 2 per good and the value of money is halved, i.e., from 1 to 1/2.

If the supply of money is halved

$$P = \frac{(500 \times 3) + (250 \times 2)}{4000} = \text{Rs. } 1/2 \text{ per good}$$

Value of money (1/P) = 2

Thus, when money supply is halved, i.e., decreases from Rs. 4000 to 2000, the price level is halved, i.e., from 1 to 1/2, and the value of money is doubled, i.e., from 1 to 2.

The effects of a change in money supply on the price level and the value of money are graphically shown in Figure 1-A and B respectively:

(i) In Figure 1-A, when the money supply is doubled from OM to OM_1, the price level is also doubled from OP to OP_1. When the money supply is halved from OM to OM_2, the price level is halved from OP to OP_2. Price curve, P = f(M), is a 45° line showing a direct proportional relationship between the money supply and the price level.

(ii) In Figure 1-B, when the money supply is doubled from OM to OM_1; the value of money is halved from O1/P to $O1/P_1$ and when the money supply is halved from OM to OM_2, the value of money is doubled from O1/P to $O1/P_2$. The value of money curve, 1/P = f (M) is a rectangular hyperbola curve showing an inverse proportional relationship between the money supply and the value of money.

CASH BALANCE APPROACH

Cambridge Equations in Cash Balance Approach:

The cash balance version of the quantity theory of money, though found in earlier writings of Locke, Petty and Cantillon became popular only in the twentieth century.

Following the lead of Dr. Marshall, some Cambridge economists, specially Pigou, Robertson, Keynes including R.G. Hawtrey, popularized and adhered to a slightly different version of the quantity theory of money, known as the cash balance approach, on account of its emphasis on cash balance (instead of transactions).

According to cash-balance approach, the value of money depends upon the demand for money. But the demand for money arises not on account of transactions but on account of its being a store of value. Money has two characteristics—flatness and

roundness—money sitting and money on wings— to serve as a store of value and as a medium of exchange. “In the one use money piles up, in the other it runs round.”

Thus, according to the advocates of this theory the real demand for money comes from those who-want to hold it on account of various motives and not from those who simply want to exchange it for goods and services: just as the real demand for houses comes from those who want to live in them and not from those who simply want to construct and sell them.

The cash balance approach relates the process of determination of the value of money to cash the subjective valuations of individuals who are the real force behind all economic activities. Such an approach enables us to throw more light on the somewhat puzzling phenomenon of the velocity of circulation of money, by enquiring more deeply into the nature of the demand for money, as the demand for the money in the cash-balance approach has reference to the store of value function of money.

This type of demand for money arises from the fact that holding of money has great utility, as when it is held (hoarded) it acquires wealth value. Hence, instead of interpreting the ‘demand for money’ with reference to its ‘medium of exchange’ function as is done in the transactions approach; it is interpreted with reference to the ‘store of value’ function of money in the cash balance. It is, thus, the demand for ‘money sitting’ rather than money ‘on wings’ that matters.

Pigou expresses it in the form of an equation:

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

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

M = PKT or P = M/KT

where P is the price level, T is the total amount of goods and services (like R of Pigou), K represents the fraction of T for which people wish to keep cash. Prof.

Robertson's equation is considered better than that of Pigou as it is more comparable with that of Fisher. It is the best of all the Cambridge equations, as it is the easiest.

Superiority of Cash Balances Version:

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

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

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

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

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

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

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

Professor Robertson establishes the superiority of cash-balances approach in the words as:

"Broadly speaking, the sitting money exercise is more useful for enabling us to understand the underlying psychological forces determining the value of money; while the money on the wing exercise is more useful for equipping us to watch with understanding the actual processes by which in real life prices of goods and services change for reminding us that the quantity of money and the quantity of goods do not affect the price level by some kind of occult planetary influence, but by modifying the capacity or willingness of human beings to buy or refrain from buying, to sell or refrain from selling. But in any case we have not reached the end of our task'."

Criticism of the Cash Balances Version:

Despite the superiority of the Cambridge version, it suffers from many shortcomings.

(i) Although this approach was evolved and popularized by Keynes, the theory does not to take into consideration various motives for holding money. Cambridge approach to the quantity theory ignored the speculative demand for money which turned out to be one of the most important determinants for holding money. Ignoring the speculative demand for money meant that the linkage between the theories of the rate of interest and the level of income through the demand for money was not complete.

(ii) Although Cambridge equation brought into the picture the level of income, yet it ignored other elements, like productivity, thrift, liquidity preference—all necessary in a comprehensive theory of the value of money.

(Hi) Cambridge approach like Fisher's approach also assumes K and T as given, thus, it becomes subject to those criticisms, which were leveled against Fisher's approach.

(iv) The Cambridge approach does not furnish an adequate monetary theory which could be utilized to explain and analyse the dynamic behaviour of prices in the economy, as it does not tell us by how much price and output shall change as a result of a given change in money supply in short period.

(v) The cash balances approach fails to assign an explicit role to the rate of interest thereby creating an impression that changes in the supply of money are directly related to the price level. A realistic theory of prices can hardly ignore the vital role of the rate of interest.

(vi) By assuming that an increased desire for holding cash balance leads, pari passu, to a fall in the price level to the same extent, the theory is assuming the elasticity of demand for money to be unity. Unitary elasticity of demand for money means that a 10 percent increase in the demand for cash balances (money) diminishes the price level by 10 per cent. This is true only when the stock of money and the volume of goods and services remain constant. The volume of goods and services which money buys is bound to change with variations in the money supply. Hence, the elasticity of demand for money cannot be assumed to its unity except in a stationary state.

(vii) The theory cannot explain the phenomenon of trade cycle, i.e., why prosperity follows depression and vice versa. Moreover, the theory deals with the purchasing power of money in terms of consumption goods only.

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

INCOME AND EXPENDITURE THEORY

The old quantity theory of money is weak in that it establishes a direct relationship between the money supply and the aggregate demand. According to the quantity theorists, an increase in the money supply leads to an increase in the aggregate demand for goods and services, and vice versa.

It is the increase in the quantity of money which by increasing the aggregate demand for goods and services leads to rise in prices, and vice versa. But the experience during the Great Depression has shown that increase in the money supply failed to increase the aggregate demand.

The income theory was gradually developed by Tooke, Wick-sell and Afflation and finally by Keynes. According to them, it is changes in income rather than in the money supply which cause changes in the aggregate demand. When income increases, aggregate demand for goods and services also increases. People spend more and the price level rises. On the contrary, with the decline in income, the aggregate demand falls. People spend less and the price level falls.

Therefore, changes in the price level depend upon the volume of expenditure in the economy which in turn is determined by changes in the level of income. And the level of income depends upon the volume of saving and investment in the economy. Thus changes in the price level or value of money are caused by the income and expenditure of the community or by the volume of saving and investment. Thus income and expenditure, and saving investment are the two approaches to the income theory which we discuss below.

Income-Expenditure Approach:

Keynes income and expenditure theory:

The income theory of prices involves on the one side an analysis of income and aggregate demand, and on the other, an analysis of costs and aggregate supply. Prices are determined by money income and real income.

The total money income (Y) is the value of goods and services produced in any period of time and expressed in terms of money. It is determined by the remuneration paid in terms of money ю the factors of production. Thus it also refers to the sum of total

expenditure (E) incurred on goods and services pricing a period. On the other hand, the ‘real’ income is the total value of real money value of goods and services expressed in terms of a general price level of a particular year taken as the base. Thus the money value of real income is the money income which is determined by the prices of goods and services or output. Symbolically,

$Y = P.O.$

Where Y is Money income or money expenditure which produces a flow of income, P is the general level of prices, and O is the physical volume of goods and services produced. It follows that

$P = Y/O$

It means that prices are determined by the ratio of money income to total output. When money income (Y) rises more rapidly than output (O) prices (P) will tend to increase. If, on the other hand, output (O) increases more rapidly than money income (10, prices (P) will tend to fall.

It is clear from the above that total money income equals total expenditure which, in turn, is equal to consumption expenditure (C) plus investment expenditure (I). Therefore, symbolically, $Y = E = C + I$.

According to Keynes, it is the total money income which determines the total expenditure of the community. An increase in the money income means increase investment expenditure, the propensity to consume being stable in the short run.

The increased investment will raise effective demand which will in-turn, raise output and employment. But what about prices? So long as there is unemployment, prices do not rise with the increase in output. This is because the supply of factors is perfectly elastic. Therefore, output will change in the same proportion as the quantity of money, and there will be no change in prices. When the supply of factors becomes somewhat inelastic (or factor are in short supply), this may lead to increase in marginal costs and prices.

As full employment is reached, the elasticity of supply of output falls to zero (perfectly inelastic), and prices rise in proportion to the increase in the quantity of money. Thus the income theory states that the increase in the quantity of money depends upon increase in money income and aggregate expenditure, and prices start rising when the full employment level is being reached. Once the full employment level is reached, prices rise in the same proportion as the increase in money income and aggregate expenditure.

Saving-Investment Approach:

Introduction:

An alternative to the Keynesian income-expenditure theory is the saving investment approach to income theory. In fact the income-expenditure approach (Y = C + I) is the same thing as the saving-investment approach. Both saving (S) and investment (I) are defined as the excess of income over consumption (Y-C) so that they are necessarily equal. Symbolically

S = Y-C

I = Y -C

S = I

Keynes also established this equality in another way. He defined income as equal to consumption plus investment (Y= C + I), and saving as the excess of income over consumption (S = Y-C). Thus

Y – C + I or I = Y – C S = Y-C

S = I

The Theory:

We have seen above that the equality between saving and investment is brought about by the mechanism of income. On the other hand, income depends upon relation between saving and investment. So long as saving and investment are equal, there will

be the equilibrium level of income and the price level will be stable. If saving and investment are disturbed, the price-level also changes via the change in expenditure.

If saving exceeds investment, it means that people reduce their expenditure on goods and services. They are hoarding more money and spending less. This reduces the velocity of circulation of money. This leads to a reduction in the income of the producers of goods and services.

Reduced expenditure and income lead to a fall in the price level. As prices fall, investment also declines due to a fall in the marginal efficiency of capital which leads to further falling income, output, employment, and prices. This process will continue till prices reach the bottom of the depression.

If investment exceeds saving, people increase their expenditure on goods and services. They are spending more and saving less. This causes the velocity of circulation to increase. This increases the income of the producers of goods and services. Increase in expenditure and income lead to a rise in the price level.

This will increase the profit expectations or marginal efficiency of capital. As a result, investment will increase further which will, in turn, raise employment, income, expenditure, output and prices to still higher levels. But the increase in investment leading to an increase in aggregate expenditure, demand, and income do not lead to a rise in the price level immediately. So long as the output of goods and services rises proportionately with the increase in the demand for goods and services, there would not be a general rise in the price level. If output does not increase proportionately, increase in investment will increase income and the price level. But increase in output is possible only if there are unemployed resources in the economy.

When the economy reaches the full employment level, further increase in income will not raises output to the level of increase in aggregate expenditure. But it will to an upward rise in the price levelling the same proportion as the increase in income.

To conclude, it is the inequality in saving and investment that brings about changes in the price level, and changes in the price level are due to changes in income rather than in the quantity of money.

Quantity Theory of Money by Friedman

Friedman in his essay, "The Quantity Theory of Money—A Restatement" published in 1956 beautifully restated the old quantity theory of money. In his restatement he says that "money does matter". For a better understanding and appreciation of Friedman's modern quantity theory, it is necessary to state the major assumptions and beliefs of Friedman.

First of all Friedman says that his quantity theory is a theory of demand for money and not a theory of output, income or prices.

Secondly, Friedman distinguishes between two types of demand for money. In the first type, money is demanded for transaction purposes. It serves as a medium of exchange. This view of money is the same as the old quantity theory. But in the second type, money is demanded because it is considered as an asset. Money is more basic than the medium of exchange. It is a temporary abode of purchasing power and hence an asset or a part of wealth. Friedman treats the demand for money as a part of the wealth theory.

Thirdly, Friedman treats the demand for money just like the demand for any durable consumer good.

The demand for money depends on three factors:

(a) The total wealth to be held in various forms

(b) The price or return from these various assets and

(c) Tastes and preferences of the asset holders.

Friedman considers five different forms in which wealth can be held, namely, money (M), bonds (B), equities (E), physical non-human goods (G) and human capital (H). In a broad sense, total wealth consists of all types of "income". By "income" Friedman means "aggregate nominal permanent income" which is the average expected yield from wealth during its life time.

The wealth holders distribute their total wealth among its various forms so as to maximise utility from them. They distribute the assets in such a way that the rate at which they can substitute one form of wealth for another is equal to the rate at which they are willing to do.

Accordingly the cost of holding various assets except human capital can be measured by the rate of interest on various assets and the expected change in their prices. Thus Friedman says there are four factors which determine the demand for money. They are: price level, real income, rate of interest and rate of increase in the price level.

The demand for money is unitarily elastic. The relationship between the demand for money and real income (output of goods and services) is also direct. But it is not proportional as in the case of price. Thus while changes in the price level cause direct and proportional changes in the demand for money, changes in real income create direct but more than proportional changes in the demand for money.

The rate of interest and the rate of increase in the price level constitute the cost of holding cash balances. If money is kept in the form of cash, it does not earn any income. But if the same money is lent out, it could earn some income in the form of interest to the owner.

The interest is the cost of holding cash. At higher interest rate the demand for money would be less. On the other hand, a lower rate of interest creates an increase in the demand for money. Thus there is an inverse relationship between the rate of interest and the demand for money.

The rate of increase in the price level also influences the demand for money. There is an inverse relationship between the rate of increase in the price level and the demand for money. When the price level increases at a high rate, the cost of holding money will increase.

The people would like to hold smaller cash balances. The demand for money will decline. On the other hand when the price level increases at a low rate, the cost of holding money will decline and the demand for money increases.

Fourthly, Friedman believes that each form of wealth has its own characteristics and a different yield or return. In a broad sense money includes currency, demand deposits and time deposits which yield interest. Money also yields real return in the form of convenience, security etc., to the holder which is measured in terms of price (P). When the price level falls, the rate of return on money is positive because the value of money increases. When the price level rises, the value of money falls and the rate of return is negative. Thus P is an important variable in the demand function of Friedman.

The rate of return on bonds, equities and physical assets consists of currently paid interest rate and changes in their prices. As far as human wealth is concerned it is very difficult to measure the conversion of human into non-human wealth due to institutional constraints. But there is some possibility of substituting human wealth for non-human wealth.

Freidman calls the ratio of non-human wealth to human wealth or ratio of wealth to income as W. According to Friedman, income elasticity of demand for money is greater than unity. Besides, there are certain variables like the tastes and preferences of the wealth holders which also affect the demand functions. These variables are represented by m.

Friedman's Demand Function:

On the basis of the above assumptions and formulations, Friedman has derived a demand function for an individual wealth holder.

It may be symbolically expressed as

$$M = f\left[p, r_b - \frac{1}{r_b}.\frac{dr_b}{dt}; r_e + \frac{1}{p}.\frac{dp}{dt} - \frac{1}{r_e}\frac{dr_e}{dt}; \frac{1}{p}.\frac{dp}{dt}; w; y; m\right] \ldots(1)$$

Where M is the total demand for money, P is the general price level,

r_b is the market interest rate on bonds,

r_e is the market interest rate on equities,

1/p. dp/dt is the nominal return from physical goods,

W is the ratio of non-human to human wealth,

Y is the money income available to the wealth holder,

m is the variables affecting tastes and preferences on the wealth holders.

By assuming rb and re to be stable, Friedman replaces the variables representing the return on bonds and equities

$$\left[r_b, \frac{1}{r_b}.\frac{dr_b}{dt}\right]+\left[r_e+\frac{1}{p}.\frac{dp}{dt}\frac{1}{r_b}.\frac{dr_e}{dt}\right]$$

in equation I by simply r_b and r_e. As a result of this replacement, the demand function can be written as

$$M = f\left(P, r_b; r_e; \frac{1}{P}.\frac{dp}{dt} w; y; \mu\right) \qquad ...(2)$$

Further Friedman says that when there are changes in price and money income, there will be a proportionate change in the demand for money. This means that equation 2 must be regarded as homogenous of the first degree in P and Y, so that equation 2 becomes as :

$$lM = f\left(\lambda P, r_b; r_e; \frac{1}{P}.\frac{dp}{dt} w; \lambda y; \mu\right) \qquad ...(3)$$

putting $\lambda = \frac{1}{P}$

equation 3 can be written as

$$\frac{M}{P} = f\left(r_b; r_e \frac{1}{P}.\frac{dp}{dt}; w\frac{\gamma}{P}; \mu\right) \qquad ...(4)$$

In this form, the equation 4 expresses the demand for real cash balances as a function of “real” variable.

Putting $\lambda = \frac{1}{Y}$ equation 3 can be written as

$$\frac{M}{Y} = f\left(r_b; r_e \frac{1}{P}.\frac{dp}{dt}; w; \frac{P}{y}; \mu\right) \quad ...(5)$$

or

$$M = f\left(r_b; r_e \frac{1}{P}.\frac{dp}{dt}; w; \frac{P}{y}; \mu\right) Y \quad ...(6)$$

In Friedman's modern quantity theory of money, the supply of money is independent of demand for money. Due to the actions of the monetary authorities, the supply of money changes, whereas the demand for money remains more or less stable. It means that the amount of money which people want to have as cash or bank deposits is more or less fixed to their permanent income.

If the central bank purchases securities, people who sell securities to the central bank receive money and this leads to an increase in their cash holdings. The people will spend this excess money partly on consumer goods and partly by purchasing assets. This spending will reduce their cash balances and at the same time there is a rise in the national income.

On the other hand, when the central bank sells securities, the money holding of the people reduces, in relation to their permanent income. Therefore, they will try to increase their cash partly by reducing their consumption and partly by selling their assets. This will reduce national income. Thus in both cases the demand for money remains stable.

If the demand for money is given, it is possible to predict the effects of changes in the supply of money on expenditure and income. If the economy is at less than full employment level, an increase in the supply of money raises the expenditure, output and employment levels. But this is possible only in the short run.

Friedman's quantity theory of money can be explained diagrammatically in the following figure (fig.10):

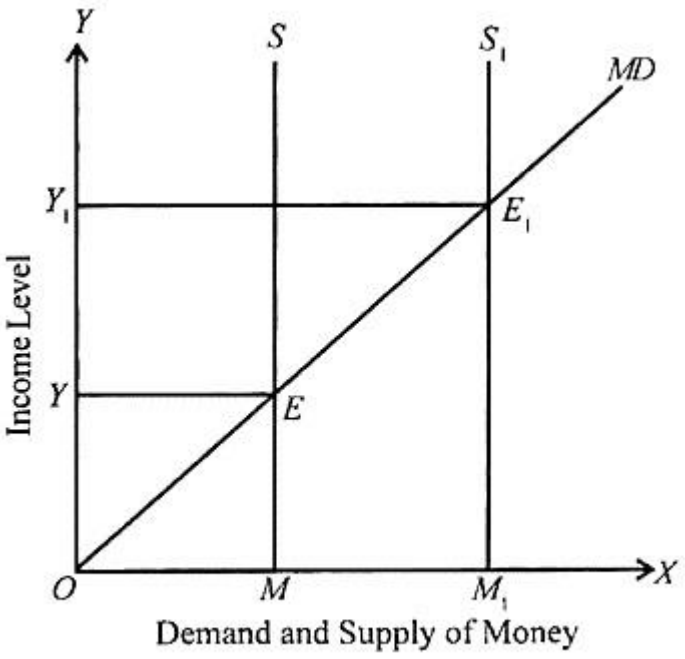

Fig. 10.

In the figure while the X-axis shows the demand and supply of money, Y-axis measures the income level. MD is the demand curve for money which changes along with income. MS is the supply curve for money. These two curves intersect at point E and the equilibrium income level OY is determined. If there is an increase in money supply, the supply curve shifts to M_1S_1. At this level the supply is greater than demand and a new equilibrium is established at E_1. At the new equilibrium level the income increases to OY_1.

REFERENCES:

1. M.C. Vaish, Monetary Theory, Vikas Publishing House, New Delhi, 2014
2. K.P.M .Sundaram, Money, banking and International Trade, Swultan Chand & Co.,
3. G.N. Halm, Monetary Theory, Asia Publish House, 2001.
4. D.M.Mithani, Money, Banking International Trade and Pub;ic Finance, Himalaya Publishing House.
5. M.L.Jhingan, Vrinda Publications (P) LTD, New Delhi.
6. A.W.Stonier and D.C.Hague, A Text book of Economic Theory, 4/e, 1972
7. S.B. Guptha, Monetary Economics, S.Chand Publications.