ECO-03-6

Institute of Distance and Open Learning
Gauhati University

M.A./M.Sc. in Economics
Semester II

Paper VI
Macroeconomic Theory - II

Contents:

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MA/M.Sc. Economics
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COURSE STRUCTURE

A student shall do a total number of sixteen papers in the four Semesters. Each paper will carry 100 marks - 20 marks for internal evaluation during the semester and 80 marks for external evaluation through end semester examination. All the papers in the First, Second and Third Semesters will be compulsory. The paper XIII and XIV of the Fourth Semester will also be compulsory. The remaining two papers for the Fourth Semesters will be chosen by a student from the optional papers. The names and numbers assigned to the papers are as follows.

First Semester

I Microeconomics Theory
II Macroeconomics Theory - I
III Mathematical Methods for Economic Analysis-I
IV Statistical Methods for Economic Analysis

Second Semester

V Advanced Microeconomics
VI Macroeconomic Theory - II
VII Mathematical Methods for Economic Analysis-II
VIII Elementary Econometrics

Third Semester

IX Development Economics-I
X International Economics
XI Issues in Indian Economy
XII Public Finance-I

Fourth Semester

XIII Development Economics-II
XIV Public Finance-II

Papers XV and XVI are optional

A student has to choose any two of the following courses.

(a) Population and Human Resource Development
(b) Econometric Methods
(c) Environmental Economics
(d) Financial System

Detailed Contents of this Paper

Paper - VI
MACROECONOMIC THEORY - II

Unit – 1: Demand for Money & Supply of Money

The Demand Money – The Classical Approach - The Keynesian Approach– Friedman's Contribution – The Approaches of Baumol and Tobin: Inventory Theoretic Approach – The Portfolio Balance Approach.

Unit 2:Theory of Inflation and Economic Stabilization

Classical, Keynesian and Monetarist approaches to inflation; Philips Curve Analysis – Short run and Long run Philips curve– the natural rate of unemployment hypothesis; Adaptive Expectations - Rational Expectations– The New Classical Approach and its Policy Implications – Empirical Evidence.

Unit –3: International Payments

Exchange Rate-Balance of Payments-relationship between the current account and the capital and financial account- Disequilibrium in International Payment, Adjustment Mechanisms under various Exchange Rate Regimes, Devaluation and Exchange Control - The Monetarist Approach to the Balance of Payments.

Unit – 4: Business Cycles

Theories of Kaldor, Samuelson and Hicks - Control of Business Cycles – Relative efficacy of Monetary and Fiscal policies.

* * *

UNIT 1

DEMAND FOR MONEY AND SUPPLY OF MONEY

Structure :

1.0. Introduction :

The reasons for which people demand money is an important issue in macroeconomics. The level of demand for money not only determines the rate of interest but also prices and national income of the economy. Classical economists considered money as a means of payment or medium of exchange. Again J. M. Keynes laid stress on the store of value function of money. Due to the important role played by monetary demand in the determination of the price level, interest and income, the study of demand for money is very much crucial. There are mainly three approaches to the demand for money, namely the Classical approach, the Keynesian approach and the Post Keynesian approach. In this chapter, all these theories of demand for money are discussed.

1.1 Objectives :

This unit aims to provide the learners to develop their knowledge regarding the various theories and approaches to demand for money. It includes the classical approach, Keynesian approach and the post Keynesian approaches. Attempts have been made to discuss the relative superiority of post-Keynesian approaches over the classical and the Keynesian approaches.

Learners are also provided with the relationship between the bond prices and interest rates.

1.2 Demand for money :

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. This individuals and businesses wish to hold money partly in cash and partly in the form of assets. An important point to be noted about people's demand for money is that what people want is not nominal money holdings but real money holdings, i.e. real balances. People are interested in the purchasing power of money holdings. When with the doubling of price level, nominal money holdings are also doubled but their real money balances could remain the same. If people are concerned with nominal money holdings irrespective of the price level, they are said to suffer from money illusion.

1.3 The classical approach :

The classical approach emphasizes the use of money as a medium of exchange enabling people to acquire goods and services. So, the demand for money emerges from the volume of transactions of goods and services to be carried out during a given period. In the classical school, there are two views— (a) the Fisherian view and (b) the Cambridge Economist's view. The former is called the transactions-balance approach and the latter is known as the cash-balance approach.

(a) The Fisherian View— the transactions balance approach :

Prof. Irving Fisher provides a formalistic expression to the theory of demand for money in his equation of exchange, given by

$$MV = PT$$

where, M = Stock of money, V = Velocity of circulation of money P = price level and T = Volume of transactions.

The most important assumption is that the velocity of circulation of money (V) is constant. This is because that velocity of circulation of money (V) is determined by institutional and technological factors, which do not vary much in the short run, Again, according to Fisher, the nominal quantity of money (M) is fixed by the Central Bank of a country and is treated as an exogenous variables, with the assumption of full employment of resources, the volume of transactions (T) is fixed in the short run.

For money market to be in equilibrium, nominal quantity of money supply must be equal to the nominal quantity of money demand, i.e.

$$M_s = M_d = M$$

With the above assumptions, Fisher's equation of exchange can be rewritten as:

$$M_d = \frac{PT}{V} \quad \text{or,} \quad M_d = \frac{1}{V} PT$$

Thus, demand for money depends on the following factors:

(1) The number of transactions (T),

(2) The average price of transactions (P),

(3) The velocity of circulation of money (V).

It implies that at a higher level of prices, the value of output will also be higher and there would be a necessity of larger amounts of money to conduct the same real level of transactions.

In this approach, the demand for money is defined objectively, in a mechanical sense only, No attention is paid to the motives behind the demand for money.

$$M_d = KY \quad \ldots\ldots\ldots (1)$$

where, M_d = amount of money demanded, Y = Money income.

K is a constant.

So, individual's demand for cash-balances i.e. nominal money balances is proportional to the nominal income i.e. money income.

Since Y = Py where P is general prices level and y is real national income, equation (1) becomes

$$M_d = KPy \quad \ldots\ldots\ldots (2)$$

From equation (1), we get

$$K = \frac{M_d}{Y} \quad \ldots\ldots\ldots (3)$$

where K indicates demand for money per unit of income or the proportion of money income that the public desire to hold in case. Money income Y is flow per unit of time say, per year. M_d is a stock.

(b) The Cambridge Economist's View : The cash-balance theory of demand for money or the neo-classical theory of demand for money was put forward by Cambridge economists, Marshall and Pigou. The Cash-balance

theory of demand for money differs from Fisher's transaction approach in that it places emphasis on the function of money as a store of value instead of Fisher's emphasis on the use of money as a medium of exchange.

Marshall and Pigou focused their analysis on the factors which determine individual demand for holding cash balances. Although the current interest rate, wealth owned by the individuals, expectations of future prices and future rate of interest determine the demand for money, they believed that they remain constant or they are proportional to changes in individual's income. In Cambridge Approach, the following demand for money function was hypothesised:—— at a point of time.

Suppose M_d is Rs. 1000 crores and money income is Rs. 4000 crores per year, then

$$K = \frac{1000}{4000} = \frac{1}{4}$$

In implies that on average, the public likes to hold money that is equal to one-fourth of its annual income.

Cambridge Cash-balance approach to demand for money is illustrated in the following figure where on the X-axis we measure nominal national income Y = Py and on the Y-axis the demand for money (M_d). The demand for money (M_d) in this Cambridge Cash-balance approach is a linear function of nominal income. The slope of the function is equal to K i.e. $K = \frac{M_d}{Py}$

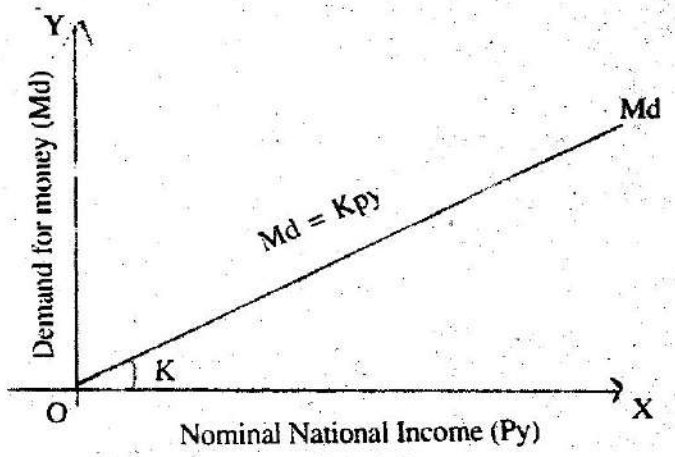


Fig. : 1.1

The Key feature of the Cambridge equation is that it makes the demand for money as function of money income alone. It makes the relation between

demand for money and income in contrast to Fisher's approach in which demand for money was related to total transactions in a mechanical way.

The Cambridge equation also implies that income elasticity of demand for money is unity and price elasticity of demand for money is also equal to unity so that any change in the price level causes equal proportional change in the demand for money.

Criticism :

The major criticism against this theory is that other factors such as rate of interest, wealth, expectations regarding future prices and rate of interest have not been formally introduced into the Cambridge theory of the demand for cash-balances. Another limitation of the theory is that income elasticity of demand for money may be different from unity. They failed to provide any theoretical reason for its being equal to unity.

Despite these limitations, the cash-balance approach is an improvement over Fisherian approach. We don't deny the important relation between the demand for money and the level of income which is also supported by various empirical studies conducted so far.

1.4. Keynesian Approach :

Keynes propounded an important theory to the demand for money. According to Keynes, how much of his income or rescreuces will a person hold in the form of ready cash depends upon 'liquidity preference'. Liquidity preference means the demand for money to hold or the desire of the public to hold cash. Liquidity in an asset refers to the three characters:

(1) It is perfectly marketable.

(2) The value of the asset is stable.

(3) It is licensable in character. Why is money demanded?

Keynes said that money was demanded due to three main motives:

(1) The transactions motive : It gives rise to the transactions demand for money which refers to the demand for cash of the public for making current transactions of all kind.

(2) **The precautionary motive :** It induces the public to hold money to provide for contingencies requiring sudden expenditure and unforeseen opportunities of advantageous purpose.

(3) The speculative motive : The speculative motive gives rise to the speculative demand for money which is the most important contribution of Keynes to the theory of demand for money. It explains why the public may hold surplus cash (over and above that demanded due to other two motives) in the face of interest earning bonds (and other financial assets).

Description of the three motives :

Transactions Motive :

Transactions demand for money depends on :

(a) Level of income/receipts.

(b) Degree of specialization.

(c) Frequency and timings of receipts and expenditure.

(d) Availability of credit.

(a) Level of income/receipts :

Planned level of real expenditure on the community depends on real income. Hence, there is a direct functional relationship between transactions demand for money (M_{dt}) and the level of income or receipts (Y). Symbolically,

$$M_{dt} = f(Y)$$

$$\text{or, } M_{dt} = KY \quad \ldots\ldots\ldots\ldots (1)$$

Let's assume people need to hold Rs. 1 to carry out transactions worth Rs.5. So, $K = \frac{1}{5}$.

Case I :

If income is equal to Rs. 800/-, then $M_{dt} = \frac{1}{5} \times 800$ = Rs. 160. Again, if income increases to Rs. 1000/-, then $M_{dt} = \frac{1}{5} \times 1000$ = Rs. 200.

Case II :

If K decreases to $1/8$,

when Y = Rs. 800/-, $M_{dt} = \frac{1}{8} \times 800$ = Rs. 100/-

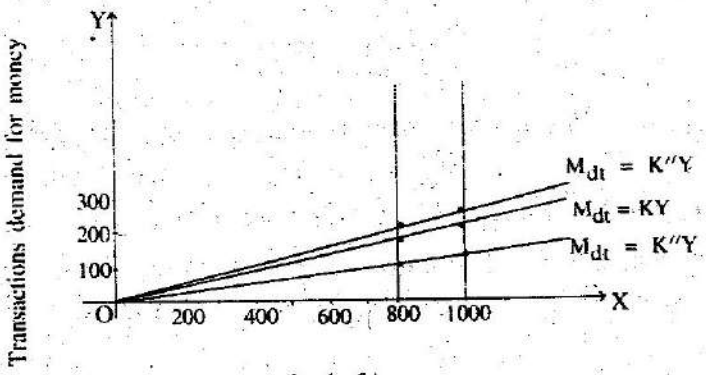
when Y = Rs. 1000/-, $M_{dt} = \frac{1}{8} \times 1000$ = Rs. 125/-

Case III :

If K increases to $\frac{1}{4}$

when Y = Rs. 800/-, $M_{dt} = \frac{1}{4} \times 800$ = Rs. 200/-

when Y = Rs. 1000/-, $M_{dt} = \frac{1}{4} \times 1000$ = Rs. 250/-



land of income
Fig. : 1.2

(b) Degree of specialization :

The transactions demand for money is directly related to the degree of specialization the community achieves in the field of business and industry. Greater the degree of specialization, higher will be demand for money.

(c) Frequency and timings of receipts and expenditure :

Transactions demand for money and frequency and timings are inversely related. If frequency increases, the need to hold money balance decreases. If a person receives income Rs. 6000 and payments are also made on monthly basis, Rs. 6000 will be required as cash balance. But if the payments are to be made in four weekly installments, the transactions balance will be Rs. 1500. The relationship between the period of payment and the transactions demand for money is shown in the following fig.

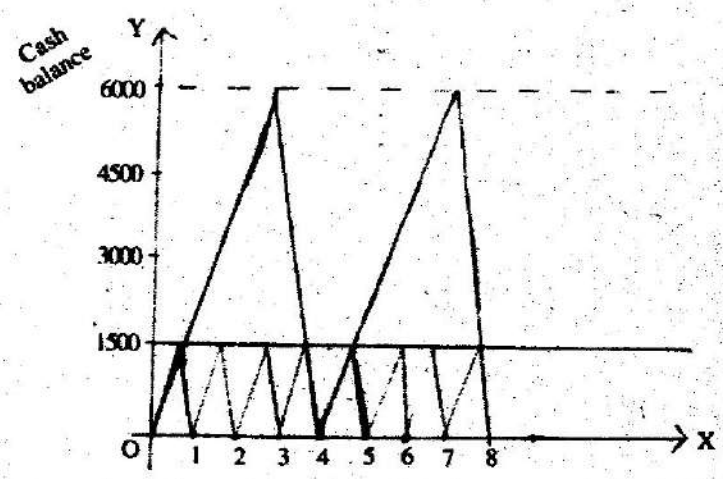


fig. 1.3

The transactions demand for money is also influenced the speed with which the payments are made. The development of modern banking and instruments of credit like cheques, bank drafts, bills of exchange etc. have made a great impact upon the rate at which the payments are made. The shorter the time for carrying out of cash balances for carrying out these transactions and vice-versa.

(d) Availability of credit :

The transactions demand for money is influenced by the extent of availability of credit. If it is possible to conduct transactions to a very large extent on the basis of credit, lesser need will be felt for holding cash. If the transactions have to be made on a cash basis, the need for holding cash will be more. So, there is an inverse relationship between the transactions demand for money and the availability of credit.

Considering an economy as a whole, we have K_t which is the ratio of cash balance to finance expenditure of goods and services to the total amount of expenditure.

$$K_t = \frac{M_{dt}}{X} \qquad \ldots\ldots\ldots\ldots (1)$$

where M_{dt} = transactions demand for money and X = total expenditure.

Assuming equation (1) holds for 'n' individual spending units,

$$M_{dt} = M_{dt_1} + M_{dt_2} + \ldots\ldots + M_{dt_n}$$

$$X = X_1 + X_2 + \ldots\ldots + X_n$$

Now, we have

$$M_{dt} = K.X$$

Hence,

$$M_{dt} = K_{t1}X_1 + K_{t2}X_2 + ...+K_{tn}X_n$$

Substituting M_{dt} in equation (1), we have

$$K_t = \frac{K_{t1}X_1 + K_{t2}X_2 + ...+K_{tn}X_n}{X}$$

$$= K_{t1}\frac{X_1}{X} + K_{t2}\frac{X_2}{X} + ...+K_{tn}\frac{X_n}{X} \quad \rightarrow (2)$$

Now, we define K_y as the ratio of the transactions demand for money to the gross national product (GNP), where

$$K_y = \frac{M_{dt}}{Y} = \frac{M_{dt}}{X}.\frac{X}{Y} = K_t.\frac{X}{Y}$$

Substituting K_t in equation (2), we have

$$K_y = \left[K_{t1}\frac{X_1}{X} + K_{t2}\frac{X_2}{X} + ...+K_{tn}\frac{X_n}{X}\right].\frac{X}{Y} \quad \rightarrow (3)$$

Equation (3) indicates that K_y as ratio of transactions demand for money to gross national product (GNP) depends on

(1) Ratio of cash balance for transaction to expenditures for individual spending units.

(2) The ratio of expenditures by individual spending units to total expenditure.

(3) The ratio of aggregate expenditure on goods and services to the GNP.

Given the psychological— institutional complexities and the short-run stability of the frequency and timing of the receipts of income and payments, K_t's of individual spending units, the ratio of spending by individual units to total spending as well as the ratio of total spending to the gross national product remain constant in short period under normal circumstances, the transactions balances are related functionally to the ratio of total expenditure to gross national product.

(2) Precautionary Motive :

The spending units hold some amount of cash in excess of the minimum required to meet the day-to-day transactions. This surplus amount is held in

part to deal with emergencies and unforeseen contingencies like iliness, accidents, unemployment etc. W.W. Haines points out that the precautionary demand for money is influenced by the following factors:

(1) The size of assets.

(2) Availability of insurance.

(3) Expectations of facture income or receipts.

(4) Availability of credit.

(5) The efficiency and safety of financial institutions in making interest-earning assets available.

According to Keynes, the precautionary balances is directly related to the level of income, i.e.

$$M_{D_P} = f(Y)$$

Where M_{D_P} is the demand for money for precautionary motive. The positive relationship between the level of income and the precautionary demand for money is due to two reasons:

(1) Just as the spending units like to spend more on food, clothing and other goods when their incomes rise, they like to purchase more of security and convenience which they can derive from the holding of larger funds for the precautionary motive.

(2) The increased income extends the scale of business operations and increases the financial commitments of the business concerns. Like the transactions demand function the precautionary demand function also slopes upwards from left to right as shown in the following figure.

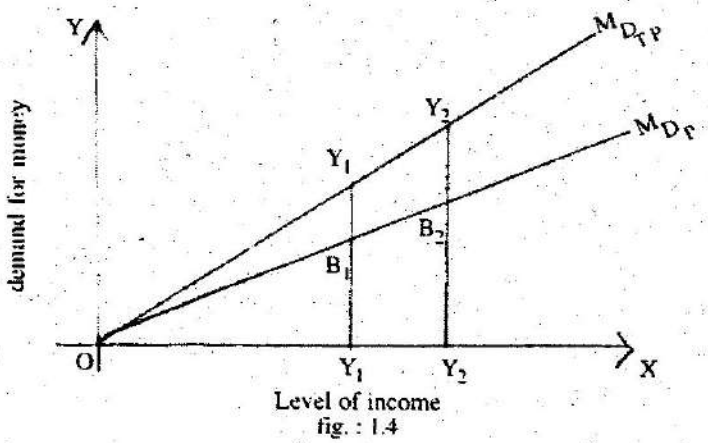


fig. : 1.4

M_{D_T} is the demand for money for the transactions purposes and $M_{D_{TP}}$ of income for the active balances compressing the transactions and precautionary balances. At Y_1 level of income $M_{D_T} = B_1Y_1$ & $M_{D_P} = A_1B_1$. So, $M_{D_{TP}} = B_1Y_1 + A_1B_1 = A_1Y_1$. At a higher level of income Y_2, $M_{D_T} = B_2Y_2$ and $M_{D_P} = A_2B_2$. So, $M_{D_{TP}} = M_{D_T} + M_{D_P}$

$$= B_2Y_2 + A_2B_2$$

$$= A_2Y_2$$

Thus, the transactions balances plus precautionary balances or the active balances $\left(M_{D_P} + M_{D_T}\right)$ are the direct functions of the level of income. They rise or fall with a rise or fall in the level of income.

(3) Speculative Motive :

Speculative demand for money is the function of the rate of interest. The speculative motive for the holding of money relates to the taking advantage of future market movements. The speculative demand for money represents a genuine break from the classical theory.

Speculative demand for money is defined by Keynes as holding money to secure profits from knowing better than the market what the future will bringfouth. Unlike the classical economists, Keynes asserts that people will hold cash-balance over and above the precautionary movements, even when other investments alternatives are available. This arises out of uncertainty and fear of capital losses in future.

Risk and uncertainty involved in the cash and security can be better understood by analyzing the impact of future changes in the rate of interest upon the prices of assets(bonds).

Interest rates and asset prices :

A bond is a contractual debt obligation which may be issued by a business corporation or a governmental unit and there is a promise to make to the holder is a promise to make to the holder certain periodic interest payments and the payments of the principal value at maturity. There is an inverse relationship between the movements in the rate of interest and bond prices, i.e. $r \propto \frac{1}{BP}$

If the principal value of the bond (P) is Rs. 1000 and maturity period is one year, the coupon rate on the bond being 10 percent, the interest payment amounts to Rs. 100 at the end of the year. So, the bond involves the face value of Rs. 1100 (Rs. 1000 as principal + Rs. 100 as interest).

If the current rate of interest (r) falls to 9 percent, the current market value of the bond (V) will be higher.

$$V = \frac{P}{1+r}$$

where, V = market value of bond. P = principal value
r = market rate of interest.

$$\therefore V = \frac{P}{1+r} = \frac{1100}{1+0.09} = \frac{1100}{1.09} = \text{Rs. } 1009.17$$

If, on the other hand, the current market rate of interest increases to 11 percent, the current value of the bond will depreciate.

$$V = \frac{1100}{1+0.11} = \frac{1100}{1.11} = \text{Rs.}990.99$$

In the first case, an investor will have to invest Rs. 1009.17 to earn Rs. 1100 at the end of the maturity period. In the second case, an investment of Rs. 990.99 will ensure the repayment of Rs. 1100 at the end of the year. The former situation represents an appreciation in the market value of the bond worth Rs. 1000 to Rs. 1009.17 and the later situation indicates a depreciation in the value of bond worth Rs. 1000 to Rs. 990.99.

The general formula for determining the price of bond can be stated as follows:

$$V = \left(\frac{CP}{1+r} + \frac{CP}{(1+r)^2} + \ldots\ldots + \frac{CP}{(1+r)^n} \right) + \frac{P}{(1+r)^n}$$

where

V is the market value of the bond.

P is the principal value of the bond.

CP is the coupon rate per interest payment period.

r is the current market rate of interest per interest payment.

n is the number of interest payment periods in the remaining life of the bond.

$$R_a = \left(\frac{CP}{1+r} + \frac{CP}{(1+r)^2} + \ldots\ldots + \frac{CP}{(1+r)^n} \right)$$

where R_n is the sum of the present values of all the interest payments.

From the above formula, we have the following inferences:

(1) A rise in the rate of interest causes a fall in prices of existing bonds and vice-versa. The rate of interest occurs in the denominators and therefore an increase or decrease in its magnitude will have an opposite effect on V.

(2) If the coupon rate of interest (CP) is equal to the current rate of interest (r) i.e. CP = r, the market value of the bond will be equal to the amount of the principal (V = P). Hence bonds sell at par.

(3) If the coupon rate is excess of the current interest rate (CP > r), then the market value of the bond will exceed the principal amount (V > P) i.e. the bond will sell above par.

(4) If the coupon rate falls bellow the current interest rate (CP < r), the market value of the bond will be less than the principal amount (V < P) i.e. will bond will sell below par.

Interest rates and expectations :

Whenever a person purchases a bond or security, he has to anticipate the possibilities of capital gains or losses as a consequence of the expected changes in the rate of interest. If certain bond holders expect the rate of interest to rise and the bond prices to fall, they will like to switch over to the holding of cash from the holding of bonds. The opposite would be the relation of those who anticipate the rates of interest to fall and consequently the bond prices to appreciate.

If the current rate of interest is higher and the expectation is that it will fall down to get closer to the normal level, there will be tendency to substitute bonds for cash, since the prices of bonds are expected to increase in future. If, on the other hand, the current rate of interest is lower than the normal level of interest rate and the bond holders expect a rise in the interest rate towards its normal level, there is a fear of capital losses in future. Then the bond holders will start substituting cash for bonds. If the speculators believe that no fall in the rate of interest can be expected and it may rise instead, there will be a very strong tendency to hold no bonds and substitute cash for them.

If market value of interest is r and expected rate of interest is r', we have the following conclusion.

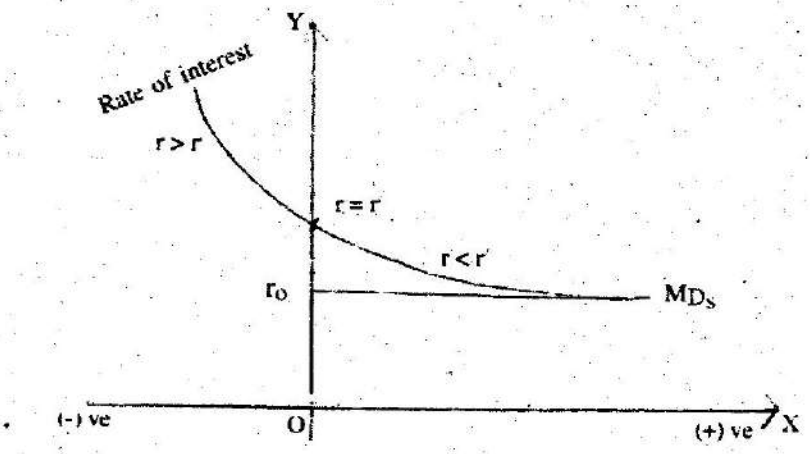
(1) If $r > r'$, there will be capital gains and speculative demand is negative

since the holding of bonds will get more and more strengthened by the optimistic expectations.

(2) If $r < r'$, there will be capital losses and bond holders will like to dispose bonds to have more and more amount of cash.

(3) If $r = r'$, the speculative demand for money is zero, the bond holders will not be inclined to bring abort any change in their asset portfolios.

(4) At a certain minimum rate of interest (r_o), speculative money demand function becomes completely horizontal. Whatever amount of money is available in the system, the people will like to hold it in anticipation of an almost definite rise in the future rate of interest.



speculative balance
fig. : 1.5

The diagram shows that the speculative balances are negative when $r > r'$. These are zero when $r = r'$ and positive when $r < r'$. Rate of interest can not go down that of r_o. After r_o, the demand for money for speculative motive becomes perfectly elastic. This part of speculative money demand function $\left(M_{D_S}\right)$, curve denotes a state of 'liquidity trap'. At this point, the rate of interest is the lowest and bond price is the highest.

Criticism :

Keynes made a significant departure from the classical theory of money demand by introducing speculative demand for money while the classical approach emphasised on transactions demand for money. But Keynesian approach is also criticized on the ground that it visualizes that people hold their

assets in either all cash or all bonds. It seems quite unrealistic because individuals hold their financial assets in some combination of both money and bonds. Again, while according to Keynes' theory, transactions demand for money is insensitive to interest rate, the post-Keynesian approach shows that money held for transaction purposes is interest elastic.

1.5 Post-Keynesian Approach :

For removal of the limitations of Keynesian approach and for expressing the demand function for money in a more generalized manner, a number of studies have been put forward by the writers like Baumol, Tebin, Milton Friedman and many others.

1.6 Friedman's Approach :

Milton Friedman put forward demand for money function which plays an important role in restatement of the quantity theory of money and prices. His approach to demand for money does not consider any motives for holding money, nor does it distinguish between speculative and transactions demand for money. He analyses the various factors that determine the demand for money and from this analysis he derives demand for money function.

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

$$M_d = f\left(W,\ h,\ r_m,\ r_b, r_e,\ P,\ \frac{\Delta P}{P},\ U\right)$$

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

$$\frac{M_d}{P} = f\left(W,\ h,\ r_m,\ r_b,\ r_e,\ \frac{\Delta P}{P},\ U\right)$$

Where M_d stands for nominal devoured for money, W 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, $\frac{\Delta P}{P}$ for the change in price level i.e. rate of inflation and U for the institutional factors.

1. Wealth (W) : The major factor which determines the demand for money is wealth of the individuals (W), both human wealth and non-human

wealth. Human wealth means the value of an individual's present and future earnings. Non-human wealth includes bonds, shares, money etc. Individual's bonds, shares, money etc. Individual's demand for money and his total wealth for money and his total wealth are directly related. The greater the wealth of an individual, the more will be the money demanded for transaction and other purposes. Since human wealth is lesser liquid than non-human wealth, as the proportion of human wealth in total wealth increases, there will be a greater demand for money.

2. Rates of interest (return) : Friedman considers three rates of interest, r_m,r_b and r_e which determine the demand for money. r_m is the own rate of interest on money. Given the other rates of interest, as r_m increases, demand foı money also increases. Money kept in the form of currency and demand deposits doesn't earn any interest, but money held as saving deposits and fixed deposits earns rates of interest and designated by r_m. Again, people held a large part of wealth in the form of bonds, equities and other financial assets. When rates of return on bond (r_b) and equities (r_e) rise, the opportunity cost of holding money will increase. It will reduce the demand for money holdings. Thus, the demeaned for money is negatively related to the rate of interest on bonds, equities and other financial assets.

3. Price level (P) : A higher price level means people will require a large amount of nominal money balances in order to purchase the same amount of goods and services. If income (Y) is used as proxy for wealth (W), then nominal income is given by Y. When the price level increases, the demand for money will rise and on the other hand, when the price level falls, the demand for money will decline.

4. The expected rate of inflation $\left(\frac{\Delta P}{P}\right)$**:** If people expect a higher rate of inflation, they will reduce their demand for money holdings. This is because influence reduces the value of their money balances in terms of its power to purchase goods and services. When people expect a higher rate of inflation or increase in price level, people will convert their money holdings into goods or other assets which are not affected by inflation. Again, if people expect a fall in the price level, their demand for money holdings will increase.

5. Institutional factors (U) : Institutional factors like mode of wage payments and bill payments also affect the demand for money. Several other factors such as over all economic environment in the country also affect the demand for money. If recession or war is anticipated, the demand for money balances will increase. Instability in capital markets also raise the demand for money. If there is political instability in the country, it will raise the demand for money. These institutional factors are represented by U in the demand for money function of Friedman.

Due to the absence of reliable data about the value of wealth (W). permanent income (Y_p) can be used as a proxy variable for wealth. So. Friedman's demand for money function becomes.

$$M_d = \left(Y_p, h, r_m, r_b, r_e, \frac{\Delta P}{P}, U \right)$$

If we assume that there is no price change in future, institutional factors like h and U remain fixed in the short and all the three rates of interest are clubbed into one, Friedman's demand for money function becomes $M_d = f(Y_p r)$

1.7 Baumol's inventory approach :

W. J. Baumol in his inventory approach to the demand for money. concentrated on transactions demand for money. He stressed that transactions demand for money is a function of the rate of interest. Due to cost incurred on holding inventories of goods and service, there is need for keeping optimal inventory of goods to reduce cost. Individuals also incur cost when they hold inventories of money for transactions purposes. They incur cost on these inventories as they have could have earned if they had kept their wealth in saving deposits or fixed deposits or invested in bonds. That is why, according to him, the transactions demand for money is not independent of the rate of interest.

Baumal explains 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. It assumed that an individual is paid salary amounting Rs. 12000 on the first day of each month. He gets it in cash on the very first day and his average money holding in the month will be $\frac{12000}{2} = \text{Rs.}6000$ (before 15th of a month he will be having more than

Rs.6000 and after 15th day he will have less than Rs. 6000). So, the individual is losing interest which he could have earned if he had deposited some fund in interest-bearing saving deposits instead of withdrawing all his salary in cash on the first day.

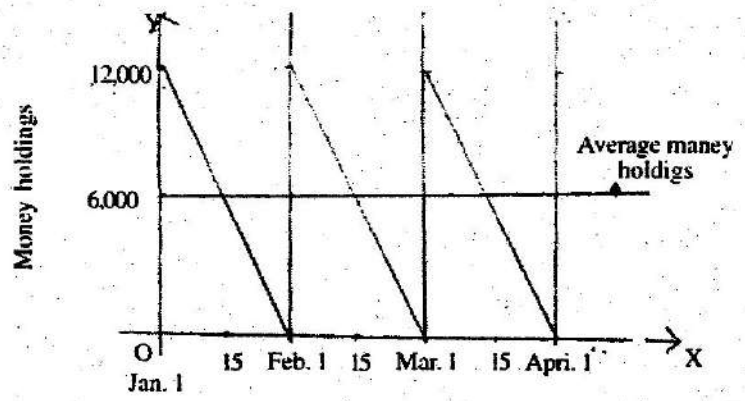


fig. : 1.6

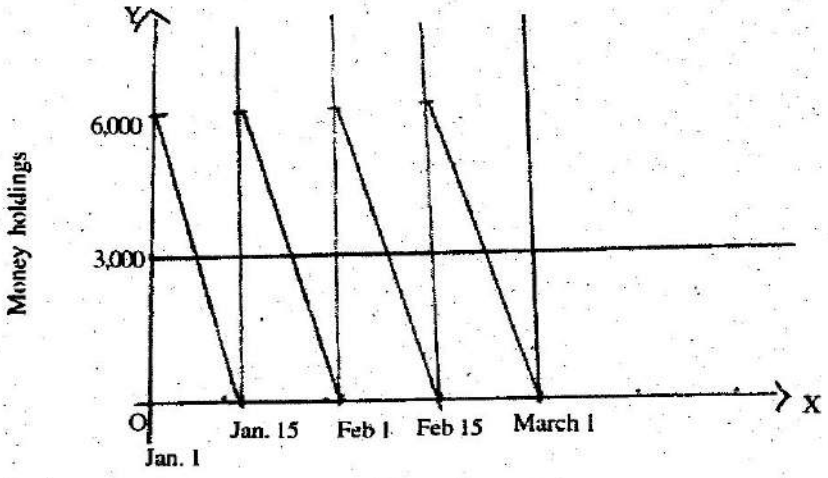


fig. : 1.7

Suppose, instead of withdrawing his entire salary on the first day of a month, he withdraws only half of it i.e. Rs. 6000 in cash and deposits the remaining amount in saving account which gives him interest of 5 percent. This is illustrated in fig. 1.7. So, his money holdings of Rs.6000 will be reduced to zero at the end of the 15th day of each month. Now, he can withdraw Rs.6000 on the morning of 16th of each month and then spends it gradually, at a steady rate of 400 per day for the next 15th days of the month. This is a better

method of managing founds as he will be earning interest on Rs.6000 for 15 days in each month. In this case, average money holdings is $\frac{6000}{2}$ = Rs.3000.

Similarly, the individual may decide to withdraw Rs.4000 ($\frac{1}{3}$ of his salary) on the first day of each month and deposits Rs.8000 in the saving deposits. His Rs. 4,000 will be reduced to zero at the end of the 10th day and on the morning of 11th day of each month he withdraws Rs.4000 to speed on goods and services till the end of the 20th day. Again on 21st day of each month, he withdraws Rs. 4000 to spend steadily till the end of the month. So, average money holdings will be $\frac{4000}{2}$ = Rs.2000. The person will be earning more interest income in this scheme.

Cost on brokerage fee is incurred when one invests in interest bearing bonds and sells them. Even in case of serving deposits, one has to spend on transportation costs for making extra trips to the bank for withdrawing money. Moreover, one has to spend time in the waiting line in the bank during cash withdrawals. So, the greather the number of times an individual makes trips to the bank, the greater the broker's fee he will incur. So, The individual faces a trade-off problem. The greater the amount of pay cheque he withdraws in cash, less the cost on account of broker's fee but the greater the opportunity cost of forgoing interest income. According to Baumol, the optimal amount of money holding is determined by minimizing the cost of interest income forgone and broker's fee.

Let the size of the pay cheque be devoted by Y, the average amount of the cash he withdraws each time the individual goes to the bank by C, the number of times he goes to the bank to withdraw cash by T, broker's fee which he has to bear each time he goes to the bank by b. In cash if the person gets his whole salary in cash on the first day of every month, he has to incur broker's fee only once since he makes only a single trip to the bank, i.e. $T = \frac{Y}{C} = \frac{12000}{12000} = 1$ as C = Y. In the second case of money management $T = \frac{12000}{6000} = 2$ And in the third case $T = \frac{12000}{4000} = 3$.

Interest income lost by holding money is the average amount of money holding multiplied by the interest rate i.e. $r.\frac{C}{2}$. So, interest income lost in the

first case is $\frac{rC}{2} = \frac{5}{100} \times \frac{12000}{2} = \text{Rs.}300$, in the second case, $\frac{5}{100} \times \frac{6000}{2} = \text{Rs.}150$ and in the third case is $\frac{5}{100} \times \frac{4000}{2} = \text{Rs.}100$.

Hence the total cost incurred on broker's fee and interest income forgone is given by

$$\text{Total cost} = bT + \frac{rC}{2}$$

$$\text{Since } T = \frac{Y}{C},$$

$$\text{Total cost} = b.\frac{Y}{C} + \frac{rC}{2}$$

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

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

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 known as square Root Rule.

According to square Root Rule, transactions demand for money varies directly with the income of the individuals. So, at a higher level of income, the transactions demand for money is higher at a given rate of interest. In the figure 1.8.There are three transactions demand curves for money M_d, M_d' and M_d'' for three different income levels $Y_1 Y_2$ are represented. So, transactions demand for money is function of both rate of interest and the level of income i.e. $M_{D_T} = f(r, Y)$

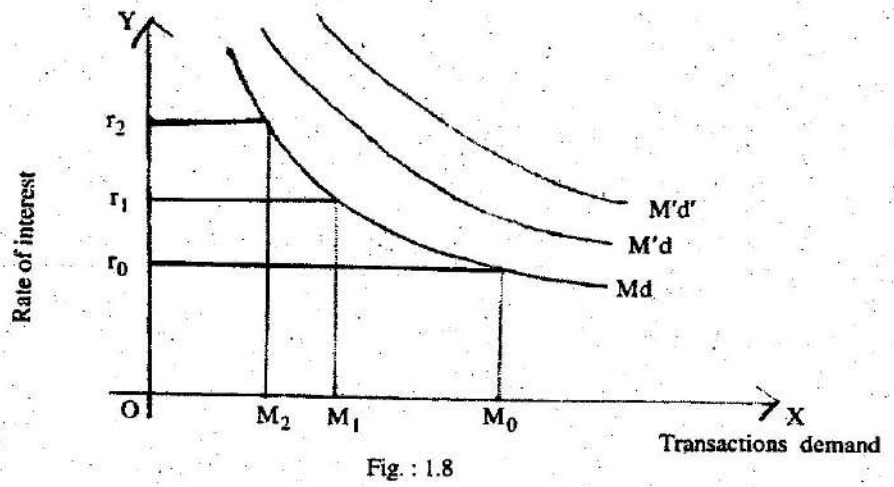


Fig. : 1.8

Superiority of Baumol's approach over Classical and Keynesian approach :

(1) Baumol could successfully integrate the theory of transactions demand for money and capital theory.

(2) The new-classical theorists and Keynes assumed a linear and proportional relation between transaction demand for money and income. But according to Baumol, the relation is less than proportionate.

(3) Keynes showed that the transactions demand for money was interest inelastic but according to Baumol, it was interest elastic.

(4) This theory ramous the dichotomy between transactions and speculative demand for money present in Keynesian approach and there is also absence of money illusion.

1.8 Tobin's Portfolio Balance Approach :

James Tobin in his article 'Liquidity Preference as Behavior towards Risk', rightly explained uncertainty in subjective terms of risk. He transformed Keynes' Liquidity Preference theory from a theory of uncertainty to that of risk. According to him, it is the element of risk that influences strongly the portfolio decisions of the investors. The holding of entire income in the form of cash involves no risk of capital loss. On the other hand, the holding of bonds may entail capital loss i.e. there involves some risk. So, the investment in such assets can be possible only when the risk of capital loss is adequately offset by the return from them. Bonds involve capital appreciation i.e. positive return or capital depreciation or negative return. The tendency towards risk averse makes the investors to decide as to what proportion of their assets to be held in the form of cash and in the form of bonds etc.

Measuring return and risk :

The measure of return is the mean values of interest returns (r) and capital gains(g). When a portfolio consists of a proportion M of cash and B of bonds such that B lies between zero and one and the sum of M and B is equal to unity, the return on the portfolio will be determined as

$$R = B(r + g) \quad \ldots\ldots\ldots (1)$$

M is ignored because there is no return from cash. But as g is a random variable, the expected value of it is zero. Thus, expected mean returns on the portfolio will be

$$E(R) = \mu_r = B_r \quad \ldots\ldots\ldots (2)$$

Again, the risk is measured by the standard deviation of return (R), σ_R. It is the dispersion of actual returns from the mean expected return from the portfolio. The standard half of the figure.

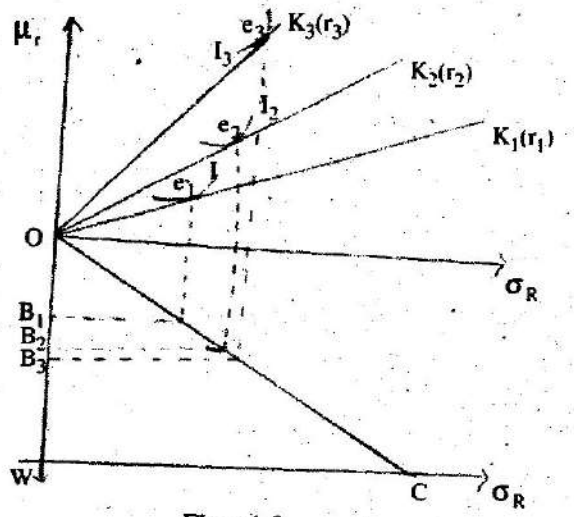


Fig. : 1.9

It presents risk as a proportion to the share of bonds in the portfolio. OB_1 indicates the amount of bonds while B_1W indicates the amount of cash. The ruling rate of interest is r_1. When rate of interest increases from r_1 to r_2 then to r_3, the opportunity line rotates anticlock wise to OK_2 then to OK_3 and demand for cash falls from B_1W to B_2W then to B_3W. Again demand for bonds increases deviation of R depends on the standard deviation of g i.e. σ_g and proportion of funds invested in bonds (B).

$$\sigma_R = B\sigma_g$$

$$\therefore B = \frac{\sigma_R}{\sigma_g} \quad \text{..... (3)}$$

Substituting the value of B in equation (2),

$$\mu_R = \frac{\sigma_R}{\sigma_g} r$$

The trade off between the return and risk can be analysed in the following figure where risk is measured on the berizantal axis and return is an the vertical axis. The relationship between risk and return can be expressed through the opportunity line OK_1. I_1 is the positively sleping indifference curve of risk-averse investors. The slope indicates that at higher levels of risk, the returns from it must be in greater proportion than that of the risk. The relationship

between risk and investment in bonds is shown through line OC in lower from OB_1 to OB_2 and so on.

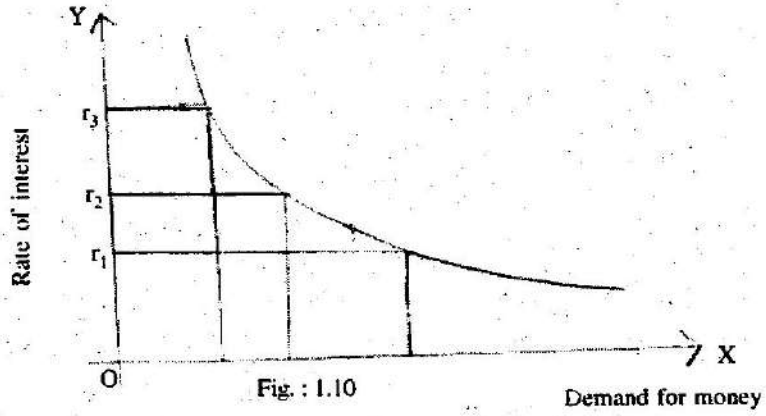


Fig. : 1.10

Based on the above analysis, we come to the conclusion that at a higher rate of interest, a fall in rate of interest will read to less than proportionate increase in demand for money. At a lower rate of interest, fall in the rate of interest will lead to more than proportionate increase in demand for money.

Superiority of Tobin's over Keynes :

(1) The theory establishes relationship between rate of interest and demaned for cash based on the theory of risk instead of uncertainty.

(2) The theory discomets Keynes' contention that the future rate of interest will move in one direction. Tobin states that there is no way of knowing in certain which way the rate interest will move.

(3) It highlights the fact that assets can be kept as a portfolio of cash and bonds. But Keynes said that every investor will hold only one assets either cash or bond.

(4) It removes the dichotomy between transactions demand for money and speculative demand for money.

1.9. Self-assessment questions :

1. Explain Fisher's transactions balance approach to the demand for money.
2. Discuss cash balance theory of demand for money. How is it different from Fisherian approach?

3. What, according to Keynes, are the motives behind the liquidity preference?
4. Discuss Keynesian approach to demand for money.
5. What is the relationship between interest rates and bond prices.
6. How is interest rates and future expectations related?
7. Explain the factors which determine demand for money in the light of Friedman's approach.
8. Explain Baumol's inventory approach to demand for money. How is it superior to classical and Keynesian approach.
9. Explain Tobin's portfolio balance approach to demand for money. How is it an improvement over Keynesian approach?

1.10. Additional Readings :

1. W.H. Branson, Macroeconomics : Theory and Policy.
2. R. Jha, Macroeconomics : Theory and Policy.
3. H. L. Ahuja, Macroeconomics : Theory and Policy.
4. Rana & Verma, Macroeconomic Theory and Policy.
5. Suraj B. Gupta, Monetary Economics.

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UNIT 2

THEORY OF INFLATION AND ECONOMIC STABILIZATION

Structure :

2.0. Introduction

Inflation generally means a substantial rise is general price level, which causes a decline in the purchasing power of money. In this unit, we shall study the Classical, Keynesian and Monetarist Approaches to inflation. We also study the Phillips curve analysis and in this context we analyse the natural rate of unemployment hypothesis, the Adaptive Expectations and the Rational Expectations Model. Also in this unit we analyse the New Classical Approach and its policy implications along with its empirical evidence.

2.1. Objectives

After going through this unit, you will be able to

- Have an idea about Classical, Keynesian and monetarist approach to inflation.
- Know about the Phillips curve analysis.
- Analyse the natural rate of unemployment hypothesis and the adaptive

expectations model.

- Get an idea about the Rational Expectations Analysis.
- Examine the New Classical Approach, its policy implications and empirical evidence.

2.2. Classical, Keynesian and Monetarist Approach to Inflation

In general, inflation means a substantial and rapid increase in the general price level, which carves a decline in the purchasing power of money. Broadly, the phenomenon of inflation has been understood in three ways——

Common View

Inflation has been defined as a (a) Phenomenon of rising prices, or (b) monetary phenomenon. (a) As a phenomenon of rising price— According to Crowther, inflation is a "state in which the value of money is falling i.e. the prices are rising. According to H. G. Johnson, "I define inflation as substantial rise in prices".

(b) As a monetary phenomenon: Economists like Friedman, Coulborn etc define inflation as a monetary phenomenon. According to Friedman, "Inflation is always and everywhere a monetary phenomenon". Coulborn defines inflation as "too much money chasing too few goods"

Keynesian View

Keynes defined inflation as a phenomenon of full employment. According to him, inflation is the result of excess of aggregate demand over the available aggregate supply and true inflation starts only after full employment. So long 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. Keynes also says that prices may rise even before full employment due to the existence of certain bottlenecks in the expansion of output. He turned such a rise as semi-inflation.

Modern View

Modern economists analyse inflation in a comprehensive and unified manner. It can be summarized as—

(I) In general, there are two types of inflation. One is demand pull inflation where inflation and falling unemployment are supposed to go together and the other is cost push inflation where inflation and rising unemployment are supposed to occur simultaneously.

(II) During late 1950's, A.W. Phillips supported the idea that there existed a trade off between the rate of inflation and the rate of unemployment.

(III) In the late 1960's, the monetarists held the view that the tradeoff between inflation and unemployment existed only in the short run and not in the long run. In the long run, when anticipated inflation is equal to actual inflation, inflation and unemployment will simultaneously increase.

(IV) The monetarists, like Friedman, Phelps also combined demand-pull and cost-push inflation as one integrated whole. According to them inflation is a unified phenomenon in which demand and cost elements appear as a part of one integrated cycle and in which expectations of future price level movements play a prominent role.

2.3. Phillips Curve Analysis

The idea of tradeoff between unemployment and inflation became a firmly established concept after the 1958 study of their relationship by A. W. Phillips, an English economist. He said that there existed an inverse relationship between rate of unemployment and rate of inflation. This implies a trade-off and a downward sloping curve is obtained exhibiting the inverse relation between rate of inflation and the rate of unemployment and this curve is named as Phillips curve. This can be shown in the figure 2.1 in the next page.

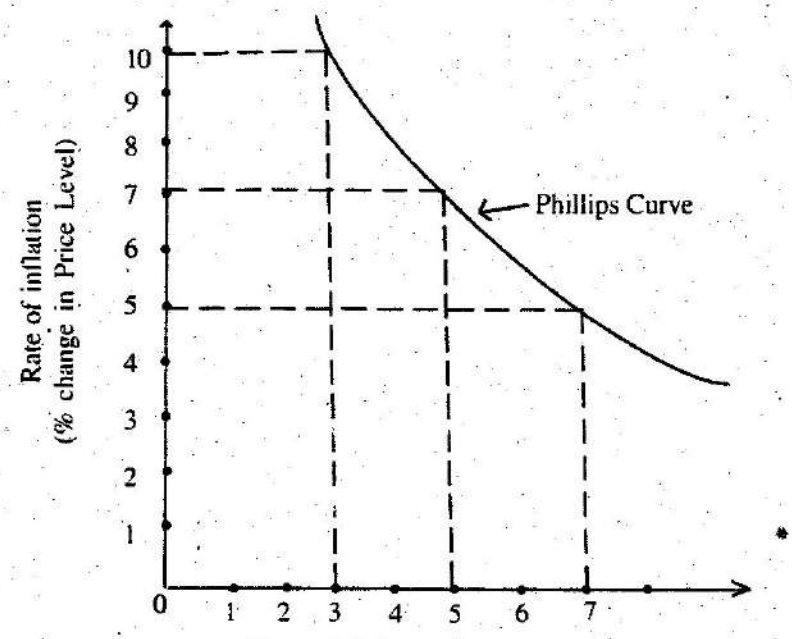


Figure 2.1 Rate of unemployment
(% of Labur Force)

Here, in the horizontal axis rate of unemployment is measured and along the vertical axis the rate of inflation is measured. It is seen that when the rate of inflation is 10 percent, the unemployment rate is 3 percent, and when the inflation rate is reduced to 5 percent per annum, the rate of unemployment increases to 8 percent of labour force. Joining the various combinations, we thus obtain an inverse curve known as the Phillips curve.

2.4. Natural Unemployment Rate Analysis

This analysis was propounded by Friedman. According to him, although there is a trade off between rate of inflation and unemployment in the short run, but it is not stable. He argued that there is no long-run tradeoff between rates of inflation and unemployment. The economy is stable in the long run at the natural rate of unemployment and therefore the long run Phillips curve is a vertical straight line.

According to Friedman, the the natural rate of unemployment is the rate at which in the labour market the current number of unemployed is equal to the number of jobs available. It implies the rate of unemployment at which the economy normally settles because of its structural imperfections. Thus the

natural rate of unemployment is defined as the rate of unemployment at which the actual rate of inflation equals the expected rate of inflation. Thus in the long run, the Phillips curve is a vertical straight line the natural rate of unemployment. This is explained in the following figure 2.2.

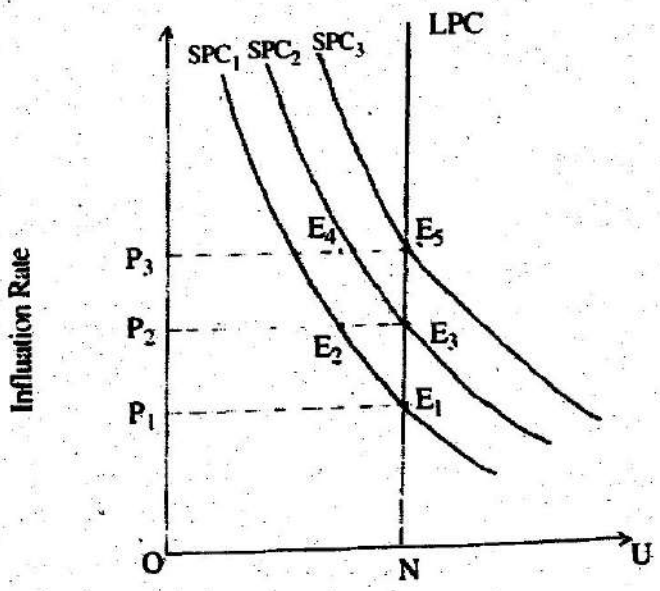


Figure 2.2 Unemplayment Rate

Suppose the economy is experiencing a mild rate of inflation of P_1 with an unemployment rate of N. At point E_1, on the short run Phillips curve SPC_1; people expect this rate of inflation to continue in the future. Now assume that the government adopts a monetary fiscal programme to raise the aggregate demand in order to lower unemployment. This increase in aggregate demand will raise inflation rate from P_1 to P_2 and unemployment will move from E_1 to E_2 along SPC_1. This is achieved because the labours has been deceived. The expected rate of inflation is P_1 and labourers base their wage demands on this rate. But the worklers eventually realize that the actual rate of inflation is P_2, which now becomes their expected rate of inflation. The workers will demand now more money wages to restore real wages formerly held at E_1. The resultant increase in real wages over those prevailing at E_2 moves employment back to E_3 an SPC_2, which is the same level of unemployment which existcal previously (i.e.ON). A subsequent effort to reduce unemployment with further inflation from P_2 to P_3 may again be successful in the short run, causing the rate

of unemployment to destine along SPC_2 to E_4 from E_3. But if labour once again comes to know of it and adjusts their wages over time, employment will again fall from E_4 to E_5 i.e. it will come back to the original rate of unemployment ON. Of points E_1, E_3 and E_5 are connected, they trace out a long run vertical Phillips curve LPC at N, and is taken to be the 'natural' rate of unemployment as determined by normal friction in the labor market.

2.5. Adaptive Expectations

On the LPC curve, there is no trade off between unemployment and inflation. Rather, any one of several rates of inflation at points E_1, E_2 and E_5 is compatible with the natural unemployment rate of N. Any reduction in unemployment rate below N will be associated with an accelerating and ultimately explosive inflation. But this is possible temporarily so long as workers overestimate or underestimate the inflation rate. In the long run, the economy is bound to establish at the natural unemployment rate. This is because inflationary expectations are revised according to what has happened to inflation in the past. Since the workers adapt themselves to the expectations, it is also called the adapting expectations hypothesis. According to this hypothesis, the expected rate of inflation always lags behind the actual rate.

2.6. Rational Expectations

Rational Expectations is the focal point of the modern debate in Economic Theory. From the late 1960's, a new economic phenomenon appeared in the form of both high unemployment and inflation, known as stagflation. This phenomenon of stagflation posed a serious challenge to economists and policy makers because Keynesian theory was silent about it and, out of this crisis a new variant of macro economic theory emerged called rational expectations.

Explanattion of Rational Expectations Hypothesis:

Expectations are forecasts or predictions by an economic agent regarding the uncertain economic variables which are relevant to his/her current decision. Expectations are essentially subjective– the personal judgments of an economic agent. They are based on past trends as well as current information and

experience. "Rational ecpectation (Ratex) is the application of the principle of rational behaviour to the acquisition and processing of information and to the formation of expectations". In other words, if economic agents are rational maximizers, then, it is consistent to consider 'information gathering' and 'expectation formation' as determined by the same procedure. Thus, rational expectations are explicit predictions (forecasts) about the level or rate of change of some economic variables based on the use of the model and all the information available thereof.

The idea of rational expectations was first put forth by John Muth in 1961. Muth proposed that certain expectations were national, in the sense that they were essentially the same as the predictions of the relevant and correct economic theory, thus implying that expectations and the events differ only by a random forecast error. This was originally proposed within the context of the decision making process of the firm, where it remained relatively unnoticed until, picked up by Lucas (1972) and Sargent (1973), who translated into the field of macroeconomics in general and inflation in particular. In this case of 'Ratex' expected inflation can differ from actual inflation by random forecast error.

Thus, the essence of Ratex hypothesis is that economic agents form expectations of the future values of economic variables like prices, incomes, etc. by using all the relevant information available to them. The information includes the relationships governing economic variables, particularly monetary and fiscal policies of the government. According to Muth, information should be considered like any other available resource which is scarce. Further, rational economic agents should use their knowledge of the structure of the economic system in forming their expectations. The Ratex hypothesis does not imply that consumers or firms have "perfect foresight' or that their expectations are always 'correct'. What it does suggest is that economic agents reflect upon past errors and, if necessary, revise their expectation behaviour so as to eliminate regularities in these errors. The Ratex hypothesis, in itself, should to be provocative to economists. It merely brings expectations within the scope of individual maximizing behaviour. It provides a way of incorporating expectations which is consistent with the orthodox economic theorizing.

2.7. The New Classical Approach and its Policy Implications

The New Classical Approach :

The new classical approach is firmly based is the methodology of rational economic man. The characteristic features are—

(a) Economic agents optimize

(b) Markets clear and

(c) Expectations are formed rationally.

Despite these properties, the new classical models are designed to provide an alternative to the Keynesian explanation of the business cycle and shows that non-market clearing is not a necessary condition for the observed cyclical behavior of economies.

An important distinguishing characteristic of the new classical approach is that supply depends on relative prices and not on quantities whereas under Keynesian non-market clearing conditions, aggregate supply depends on the level of effective demand. This is consistent with the results of Walrasian general equilibrium models. So, we can add a fourth feature of new classical models;

(d) Aggregate supply depends on relative prices.

The new classical supply hypothesis has a close affinity to the Phillips relation. The supply hypothesis is that the deviation of unemployment from its natural level depends on the difference between actual prices and expected price, or alternatively between actual and expected inflation.

$$U_t^N - U_t = \beta \left[\left(\frac{\dot{P}}{P} \right) - E \left(\frac{\dot{P}}{P} \right)_t \right]$$

where, U_t^N = natural rate of unemployment

U_t = actual rate of unemployment

$\frac{\dot{P}}{P}$ = actual inflation rate

$E\left(\frac{\dot{P}}{P}\right)$ = expected inflation rate

The above equation states that the actual unemployment rate lies below the natural rate by an amount which depends on the difference between actual and expected inflation. This supply relation can alternatively be expressed in terms of the deviation of actual output from its permanent (long run equilibrium

level) since the deviation in output from trend is directly linked to the deviation in unemployment, $U_t^N - U_t$. The long run equilibrium level of output and the associated natural rate of unemployment depend on the real factors subsumed in the neoclassical labor supply function and production function, in particular the size of the capital stock. The supply relation is now—

$$Y_t - Y_{Pt} = v\left(\frac{\dot{P}}{P} - E\left(\frac{\dot{P}}{P}\right)\right)_t$$

where, Y_t = actual national output and Y_{Pt} = permanent output

Lucas's intertemporal substitution model

The basic premise of Lucas's approach is that one should model the behavior of rational agents whose decisions depend on relative pieces only. Households and firms make decision about what to do in the present period with the future in mind.

If the current real wage exceeds its normal and expected value, then households regard the current real wage as being temporarily above the future real wage. This gives households an incentive to work more in the current period and less in future: they substitute current leisure for future leisure. Because the model presumes this type of behavior, it is known as intertemporal substitution model.

A simplified various of Lucas labor supply function is

$$\frac{L_t}{E(L)_t} = h\left(\frac{W_t}{E(W_t)}\right)$$

Where, L_t = labor house supplied in the current period

$E(L)_t$ = normal, long run supply

W_t = real wage in current period

$E(W_t)$ = normal expected real wage.

Policy Implications:

The new Classical approach has the following implications :

(1) The natural rate hypothesis:

The new classical approach restates the natural rate hypothesis in a stronger form. Output only responds positively to an increase in the current

prices of goods if this increase is not regarded as completely due to a rise in the general price level. If the increase in individual prices is attributed entirely to a rise in the general price-level, then there will be no perceived rise in goods price relative to costs and so, no divergence between actual and expected prices. There is therefore no temporary increase in supply.

(2) The impotency of systematic monetary policy:

The argument underlying the strong form of the natural rate hypothesis leads to the deduction that the government cannot reduce unemployment by operating a systematic monetary policy. A systematic policy is one that private sector can either fully perceive or accurately predict because it is based on some known rule. Only unsystematic, i.e. unanticipated or surprise increase in the money supply can bring about a short-run rise in output.

(3) The significance of the variance in the price-level:

The size of the impact on real output of a rise in prices depends on how much of the rise in individual prices is attributed by traders to an increase in the general level of prices rather than to a rise in related prices. The new classical approach therefore predicts that the more a country tries to secure output in excess of the permanent level and so permits higher and higher inflation rates, the smaller becomes the trade off between further inflation and output.

(4) The importance of structural policy parameters:

The new classical approach highlights the significance of structural policy parameters for determining the effect of macroeconomic policy. The argument that it is fallacious to suppose that structured parameters remain invariant with respect to policy changes stems directly from the assumption of rational expectations.

The policy implications of the new classical approach, if correct, completely undermine the Keynesian case for government macroeconomic policy, since it is deduced that the government cannot improve the salability of the economy. The best the government can do is not to make the economy more unstable by its actions.

Empirical evidence:

The new classical approach has also started to develop an empirical literature. The main hypothesis that requires testing is that it is unanticipated changes in prices that cause output fluctuations and that these price changes are largely due to unanticipated monetary changes.

The new classical work suggests that anticipated changes in the money stock have a quite rapid impact on price while the effects of unanticipated monetary movements operate with quite long lags.

We still lack conclusive evidence on the central issue of whether markets approximate more closely to continuous clearing than they do to non-clearing. The debate between the Keynesian and classical approaches is therefore bound to continue unabated and views as to which is more plausible will remain much influenced by political attitudes.

2.8. Summary

Inflation is a process of rising price level with decreasing purchasing power of money. In this unit, me have come across the classical, Keynesian and Monetarist approaches to inflation. Again the Phillips curve analysis showed a trade off between the rate of inflation and the rate of unemployment. Also we come across the natural rate of unemployment hypotheses, where Friedman say that in the short run there is a tradeoff between rates of inflation and unemployment but in the long run the Phillips curve is a vertical straight line at the natural rate of unemployment. Also we have the adaptive expectations model. Again, similarly we have a new variant of macroeconomic theory popularly known as the rational expectations. Lastly we have the New Classical Approach whose basic characteristics were economic agents optimize, markets clear and expectations are formed rationally. We also come across Lucas Intertemporal substitution model. At last, we have the New Classical Approach's various policy implications and its empirical evidence.

2.9. Additional Readings

1. Branson, W.H, "Macroeconomics Theory and Policy"
2. Harris, I., "Monetary Theory"
3. Jha, R., "Macroeconomics Theory and Policy"
4. Dornbuesch, R and Fisher, S., "Macroeconomics"

2.10. Self Assessment Test

1. Briefly explain the classical, Keynesian and monetarist approach to inflation.
2. What do you mean by Phillips curve?
3. Explain the natural rate of unemployment hypothesis and adaptive expectations.
4. What do you understand by rational Expectations?
5. Analyses the New Classical Approach. Also point out it policy implications and empirical evidence.

●●●

UNIT-3

INTERNATIONAL PAYMENTS

3.1. Introduction :

In a close economy, the working of rest of world is not taken into consideration. This is done to keep the economic models simple and explain the basic macroeconomic mechanisms. In reality, most modern economics are open. Therefore Interaction with other economies of the world is necessary.

An open economic is one that trades with other nations in goods and services and most often, also in financial assets.

When goods move across national borders, money must move in the opposite direction. At the international level, there is no single currency that is issued by a central authority. Foreign economic agents will accept a national currency only if they are convinced that the currency will maintain a stable purchasing power. Without this confidence, a currency will not be used as an international medium of exchange and unit of account since there is no there is no international authority with the power to force the use of a particular currency in international transactions. In this unit, the balance of payment (BOP) structure, disequilibrium and ways to overcome the disequilibrium have been discussed. Moreover, the monetarist approach to the BOP has also been included.

3.2. Objective :

On reading this unit, you should be in a position to:

- To understand the structure of Balance of payment and adjustment mechanism under various exchange rate regimes.
- To understand the link between exchange rates and balance of payments.
- To distinguish between an appreciation and depreciation in the value of a currency.
- To understand the effect of exchange rate movements on competitiveness and world trade.
- To understand the monetarist approach to the balance of payments.

3.3. Exchange Rate :

(i) Meaning : All countries have their own currencies, which are readily acceptable within their respective territories. For example, Indian rupee in India, US. Dollar in America etc. However, currency of one country is generally not accepted in other countries. Therefore in international payment system, currency of one country should be converted into the currency of another country. An exchange rate is the current market price for which one currency can be exchanged for another.

> For example; if one U.S. dollar exchanges for 49.03 Indian rupees, then the rate of exchange is \$ 1 = ₹ 49.03 or ₹1 $= \frac{1}{49.03} = 0.0203$ dollars. It means that what \$ 1 can purchase in America, ₹ 49.03 can purchase in India. Thus, the rate of exchange expresses the external purchasing power of a home currency.

The exchange rate can fluctuate from year to year or even day-to-day. Like many other price, exchange rate is determined by the forces of demand and supply.

(ii) Types of Exchange Rate :

The three main types of exchange rate systems are—

(a) Fixed Exchange Rate System (or pegged Exchange Rate System).

(b) Flexible Exchange Rate System (or Floating Exchange Rate System)

(c) Managed Floating Rate System.

(a) Fixed Exchange Rate System :

Fixed exchange rate system is a system where the rate of exchange between two or more countries does not vary or varies only within narrow limits. In other words, fixed exchange rate system refers to a system in which exchange rate for a currency is fixed by the Government.

The main objectives of adopting this system is to ensure stability in foreign trade and capital movements. Foreign central banks hold reserves to intervene in the foreign exchange market. To achieve stability, government undertakes to buy foreign currency when the exchange rate depreciates and sell foreign currency when the exchange rate appreciates.

(b) Flexible Exchange Rates :

The flexible exchange rate system refers to a system in which exchange rate is determined by forces of demand and supply of different currencies in the foreign exchange market. Under flexible exchange rate system, the rate of exchange is allowed to vary to suit the economic policies of the government. There are no restrictions on the buying and selling of the foreign currencies by the monetary authority and the exchange rates are free to change according to the changes in the demand and supply of foreign exchange. Flexible exchange rate is also known as "Floating Exchange Rate."

(c) Managed Floating :

Traditionally, International monetary economists focus their attention on the framework of either fixed or a flexible exchange rate system, which is known as managed floating exchange rate system. Managed floating rate system refers to a system in which foreign exchange rate is determined by market forces and central bank is key participant to stabilize the currency in case of extreme appreciation or depreciation. In is also known as "Dirty Floating." In this system, the central intervenes in the foreign exchange market to restrict the fluctuations in the exchange rates within certain limits.

Example of Managed Floating Rate System :

Suppose, India has a managed floating rate system and Indian central Bank (RBI) wants to keep value of the rupee close to ₹ 49 U.S. Dollar. Further, assume that RBI is ready to tolerate small fluctuations in the exchange rate, say from ₹ 48.75 to ₹ 49.25. Now, if due to excess demand for rupees, the value of rupees falls below the level of ₹ 48.75 dollar, then RBI will start increasing the supply of rupees by selling rupees for dollars and acquiring holdings of dollars. Similarly, in case of excess supply of rupees, any depreciation above ₹ 49.25/ dollar will induce RBI to increase the demand for rupees and running down its holdings of dollars.

(iii) The Exchange Rate in the long Run :

For a period of time, a government or central bank can peg the value of its currency, that is, fix the exchange rate. But, in the long run, the exchange rate between a pair f countries is determined by the relative purchasing power of currency within each currency. This is also called the theory of purchasing power parity. According to the theory, as long as there are no barriers to trade like tariffs any quotas, exchange rates should eventually adjust so that the same product costs the same whether measured at home or abroad. The relative purchasing power of two currencies can be measured by the real exchange rate. It is the ratio of foreign to domestic price, measured in the same currency. It measures a country's competitiveness in international trade. The real exchange rate, R is defined as

$$R = \frac{ePf}{P} \quad \ldots\ldots\ldots\ldots \text{(i)}$$

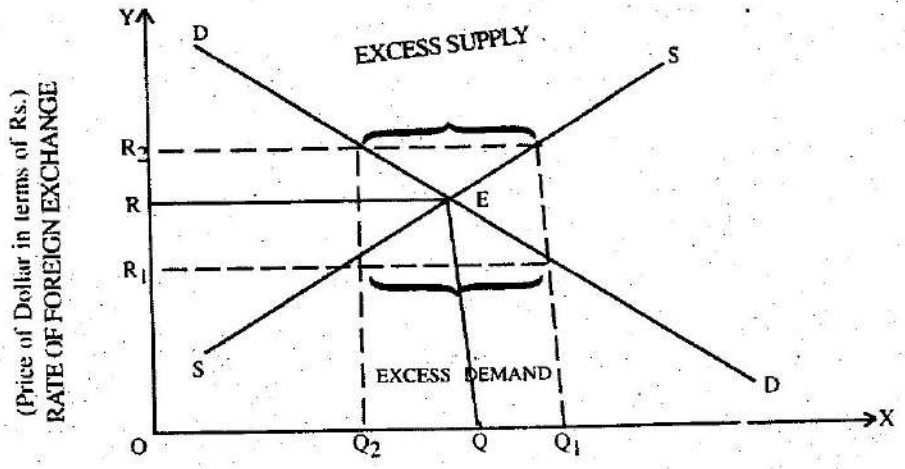
where P and Pf are the price levels here and abroad respectively and e is the dollar price of foreign exchange. If the real exchange rate rises above 1, that means that goods abroad are more expensive than goods in home country. Other things equal, this imply that people both from home country and abroad are likely to switch some of their spending to goods produced in home country.

Example :

If a shirt costs $ 8 in the U.S and ₹ 400 in India, the rupee-dollar exchange rate should be equal to ₹ 50. At any rate higher than ₹ 50, say ₹ 60, it costs ₹ 480 per shirt in the U.S. but only ₹ 400 in India. In that case, all foreign consumers should busy shirts from India. In that case, all foreign consumers would buy shirts from India. Similarly, any exchange rate below ₹ 50 per dollar will send all the shirt business to the U.S. Suppose, there is increase in the price of shirts by 20 percent in India and 50 percent in the U.S. Indian shirts would cost ₹ 480 per shirt after this increase and American shirts would cost $ 12 per unit. For these prices to be equivalent, $ 12 must be worth ₹ 480.

(iv) Determination of Exchange Rate :

Flexible exchange rate is determined by the interaction of the forces of demand and supply. The equilibrium exchange rate is determined at a level where the demand for foreign exchange is equal to the supply of foreign exchange. This is shown in the following Figure. 3.1.



DEMAND & SUPPLY OF FOREIGN EXCHANGE (IN DOLLARS)

Figure 3.1

As shown in the diagram, demand and supply of foreign exchange are measured on the X-axis and rate of foreign exchange on the Y-axis. DD is the downward sloping demand curve of foreign exchange and SS is the upward sloping supply curve of foreign exchange.

(a) Demand for foreign exchange :

Foreign exchange is demanded (i) by the domestic residents to import goods and services from abroad; (ii) by the domestic residents investing and lending abroad; (iii) by the foreign residents to repatriate funds previously invested in the home country: (iv) for sending gifts to foreign countries. The demand schedule shows the functional relationship between different rates of exchange and the corresponding amounts of foreign exchange demanded. It slops dowmard to the right indicating that greater amounts of foreign currency are demanded at lower rates of exchange.

(b) Supply of Foreign Exchange :

The supply of foreign exchange comes from (i) the domestic exporters who receive payments of foreign currency: (ii) the foreigners who invest and lend in the home country; (iii) domestic residents who repatriate capital funds previously sent abroad. It shows the functional relationship between different rates of exchange and the corresponding amounts of foreign exchange supplied. The supply curve slopes upward to the right indicating that at higher exchange rates, larger amounts of foreign exchange are offered for sale.

Equilibrium of the Exchange Rate :

The demand curve and supply curves of foreign exchange intersect each other at point E. The equilibrium exchange rate is determined at OR and equilibrium quantity is determined at OQ.

In the figure 3.1, it is seen that if the exchange rate rises to OR_2, then demand for foreign exchange will fall to OQ_2 and supply will rise to OQ_1. It will be a situation of excess supply. As a result, exchange rate will fall till it again reaches the equilibrium level of OR. Contrary to it, if exchange rate falls to OR_1, then demand will rise to OQ_1 and supply will fall to OQ_2. There is a case of excess demand. It will push up the exchange rate till it reaches OR.

3.4: Balance of Payments :

(i) Meaning: The Balance of Payments (BOP) is the systematic record of all transactions that take place between the country and the rest of the world during a specified period of time.

The balance of payment record is maintained in a standard double entry book-keeping method. International transactions enter into the record as credit or debit. The payments received from foreign countries enter as credit and payments made to other countries as debit.

IMF Definition :

BOP is a statistical statement that summarizes transactions between residents and non-residents during a period.

(ii) Structure of Balance of Payments :

Balance of payment is a record pertaining to a period of time; usually it is all annual statement. All the transactions entering the balance of payments can be grouped under three broad accounts;

(a) Current Account, (b) Capital Account; (c) Financial Account.

(a) Current Account : Current Account is a goods and services account. It also includes transfer payments. Services include freight, royalty payments, and interest payments. It abo include net investment income, the interest and profits on home country's assets abroad etc. Transfer payments consist of remittances, gifts and grants. The current account is in surplus if exports exceed imports plus net transfers to foreigners.

Current Account

= (Balance of trade) + (Net factor income from abroad) + (Net Unilateral transfers from abroad.)

(b) Capital Account :

The capital account records all international purchases and sales of assets, such as stocks, bonds and land. Any transaction resulting in a payment to foreigners is entered as a "debit" and is given a negative sign. Any transaction resulting in a receipt from foreigners is entered as a credit and is given a positive sign.

(c) Financial Account :

Financial Account involves transactions which include financial assets and liabilities. It also includes foreign exchange reserves.

Financial Account

= (FDI) + (Portfolio Investment) + (Other Investment)

Foreign Exchange Reserves :

This is official international reserve hold by government established central bank. This include official gold reserves, foreign currencies, IMF special drawing right (SDR) and other foreign carets.

3.5. Relationship Between Current Account, Capital Account and Financial Account :

Financial Account:

The current account, the capital account and the financial account make up a country's Balance of Payments (BOP). Together these three accounts show the state of an economy; its economic outlook and its categories for achieving its derived goals.

If deficit is indicated by the current account, it is financed through activities recorded on the capital and financial account. The deficit on the current account must be exactly offset by the surplus on the capital and financial account. This means that the sum of the current account and the capital and financial account is equal to zero.

Current Account + Capital Account + Financial Account = 0 ... (2)

Thus, the current account on one side and the capital and financial account on the other should balance each other out. When an economy has positive capital and financial accounts (a net financial inflow), the country's debits are more than its credits; it is usually parallel to the current account deficit.

3.6: Disequilibrium in the International Payment (BOP) :

There is little possibility for the International Payment System or BOP to be in equilibrium during a grin period of time. Disequilibrium in BOP of a country may be either in the form of deficit or as a surplus.

Balance of Payment account is in surplus when a country's receipts are more than the payments. On the other hand, BOP is in deficit when country's receipts are less than payments.

Disequilibriam in the BOP is particularly related to the current account of balance of payments statement; the capital account is used to settle the imbalance in the current account through changes in the financial flows of funds.

A surplus in the Balance of Payment does not make much of a problem. However, a deficit in the BOP create problem for the particular economy.

(i) Types Of Disequilibrium :

The main types of Disequilibrium in the Balance Payments are given below—

(a) Structural Disequilibrium :

It takes place due to structural changes in the economy affecting demand and supply relations in commodity and factor market. Structural Disequilibrium in balance of payments persists for relatively longer periods; as it is not easy to remove structural imbalances in the economy.

Some of the important causes of structural Disequilibrium are as follows—

(i) If the foreign demand for a country's products decline due to the discovery of cheaper substitutes abroad, then country's export will decline causing a deficit.

(ii) If the supply position of a country is affected due factors live crop failure, shortage of raw materials, strikes, political instability etc, then there would be deficit in the BOP.

(iii) Change in the international capital movements may also cause structural Disequilibrium.

(b) Cyclical Disequilibrium :

Cyclical Disequilibrium in the BOP arises trade cycles like depression, prosperity, boom, recession etc. may disturb terms of trade and cause Disequilibrium in the BOP.

For instance, during boom period, imports may increase considerably due to increase in demand for imported goods. During recession and depression, imports may be reduced due to fall in demand on account of reduced income. During boom period, a country may face deficit in its BOP position on account of increase in imports. However, during recession its exports may increase, and such BOP position may show surplus.

(c) Secular or long term disequilibrium :

Secular or long tern Disequilibrium in balance of payments occurs because of long seated and deep rooted changes in the economy while moving from one stage of growth to another.

The IMF terms such disequilibrium as "Fundamental Disequilibrium." Long run or fundamental disequilibrium refers to a persistent deficit or a surplus in the balance of payments of a country. When there is a continuous increase in the stock of gold and foreign exchange reserves, there is a persistant surplus and vice-versa. Permanent changes in the conditions of demand and supply of exports and imports cause fundamental disequilibrium.

Moreover, when there is a various of short run disequilibrium in a country's balance of payments, ultimately it would lead to fundamental disequilibrium.

(iii) Causes Of Disequilibrium :

(a) Population Growth :

Most countries experience an increase in the population and in some like India and China; the population is not only large but increase at a faster rate. To meet their needs, imports become essential and the quantity of imports may increase as population increase.

(b) Development Programme :

Developing countries which have embarked upon planned development programmes require to import capital goods, some raw materials which are not available at home and highly skilled and specialized manpower. Since development is a continuous process, imports of these items continue for the longtime lending these countries in a balance of payment deficit.

(c) Demonstration Effect :

When the people in the less developed countries initiate the consumption

pattern of the people in the developed countries, their import will increase. Their export may remain constant or decline causing disequilibrium the balance of payments.

(d) Changes in Foreign Exchange Rates :

Changes in the rate of exchange is another cause of disequilibrium in the balance of payments. An increase in the external value of money makes imports fall and balance of payments become unfavorable. Similarly, a reduction in the external value of money leads to a reduction in exports and an increase in imports.

(e) Cyclical fluctuations :

Business fluctuations introduced by the operations of the trade cycles may abo cause disequilibrium in the country's balance of payments. For example, if there occurs a business recession in foreign countries; it may easily cause a fall in the exports and exchange earning of the country concerned, resulting in a disequilibrium in the balance of payments.

(f) Inflation :

An increase in income and price level owing to rapid economic development in developing countries, will increase imports and reduce exports causing a defiet in the balance of payments.

3.7 : Adjustment Mechanisms under Various Exchange Rate Regimes:

According to the classical economists, under free market conditions, the market mechanism would automatically solve the disequilibrium in BOP. This approach is known as "automatic approach." The adjustment mechanism for correcting BOP disequilibrium can be explained under both fixed and flexible exchange rate system.

(a) Fixed Exchange Rate System :

The Balance of Payment adjustment under fixed exchange rate can be illustrated with the help of the fig: 3.2

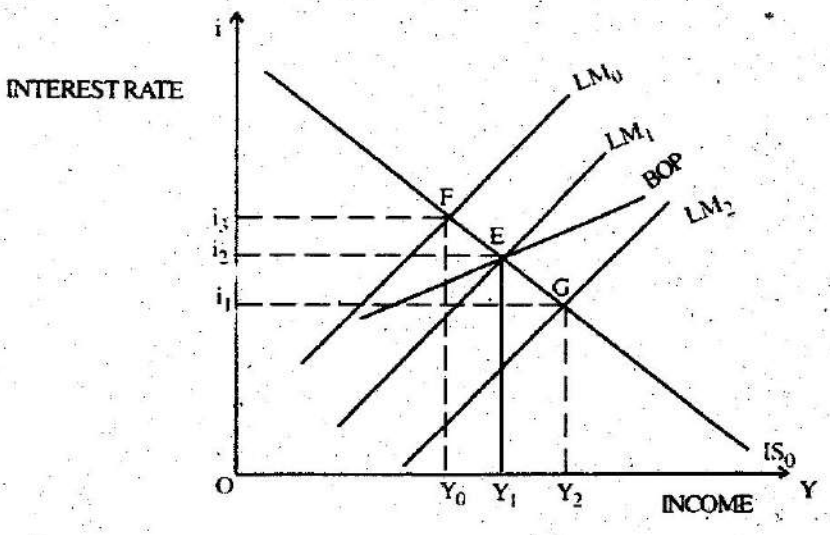


Figure 3.2

Suppose the initial IS and LM curves are given IS_0 And LM_0 curves and the BOP function has been represented by the schedule marked BOP. From the figure 3.2; it can be seen that IS_0 And LM_0 curves intersect at point F determining equilibrium level of income at Y_0 and interest rate at i_3 But the BOP function intersects the IS_0 Schedule at point E. Since point F is placed above and left to point E, it shows BOP surplus.

A surplus in the Bop shows a rise in foreign exchange reserves. It implies that the supply of foreign exchange in the domestic market exceeds the demand for it. As a result, foreign currency will depreciate and domestic currency will appreciate. The appreciation of the currency may upset the export-import balance of the country by making its exports costlier and imports cheaper. In order to prevent this situation, the government would either increase the money supply to match the surplus foreign exchange or sell surplus foreign currency in the international market. This will shift the LM_0 Schedule rightwards to the position of LM_1. Here, LM_1, IS_0 and BOP schedules intersect at point E. At E, therefore both internal and external sectors are simultaneously in equilibrium at a higher income level Y_1 and at a lower interest rate i_2. The BOP surplus is eliminated.

The same reasoning can be used to explain how a BOP deficit is eliminated under a fixed exchange rate system. Suppose the limit LM curve is LM_2 interesting IS_0 at point G. Since point G is below the BOP function, it shows the BOP deficit. A deficit in BOP means a shortage of foreign exchange. The deficit may therefore result in depreciation of the home currency and

appreciation of the foreign currency in domestic market. In order to prevent the depreciation of the home currency, the central bank will have to buy foreign exchange in the international market.

This will reduce the money supply. As a result, LM cover will shift leftward to the position of LM_1 Again, IS_0, LM_1 And BOP intersect at point E and BOP deficit is eliminated.

(b) Flexible Exchange Rate System: In case of BOP Deficit :

The automatic adjustment of the BOP disequilibrium of deficit nature can be explained with the help of the figure: 3.3

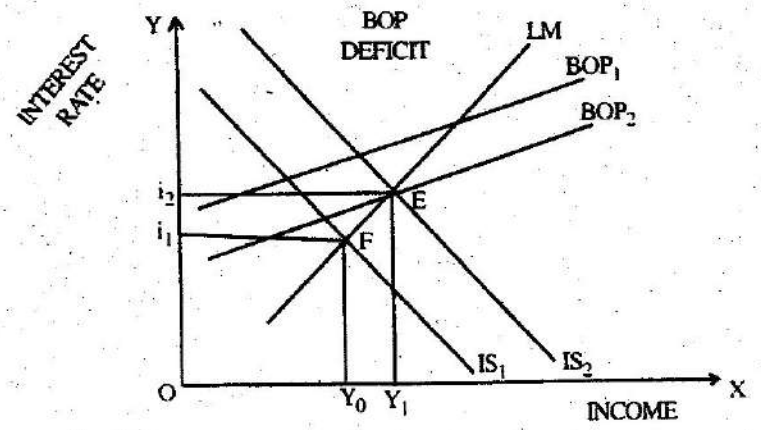


Figure: 3.3

Suppose that the initial IS and LM curves and BOP function are given as IS_1, LM and BOP_1 respectively. The curves IS_1 and LM intersect at point F. Since point F is below the BOP function, it implies a BOP deficit. A deficit in BOP means that the foreign exchange rate stable at equilibrium. This will result in depreciation of the home currency. Depreciation of home currency will make exports cheaper and imports dearer. As a result, export will increase and imports will decrease causing BOP surplus overtime. Increase in exports and decrease in imports causes the IS_1 curve to shift rightward to IS_2 and function BOP_1 to BOP_2. These curves intersect at point E on the LM curve. Point E, is therefore, the point of general equilibrium. Here, both internal and external sectors are simultaneously in equilibrium and BOP deficit

is copied out. Income level increase from Y_1 to Y_2 and interest rate increases from i_1 to i_2.

In Case of BOP Surplus :

The automatic adjustment of the BOP disequilibrium of surplus nature can be illustrated in figure 3.4.

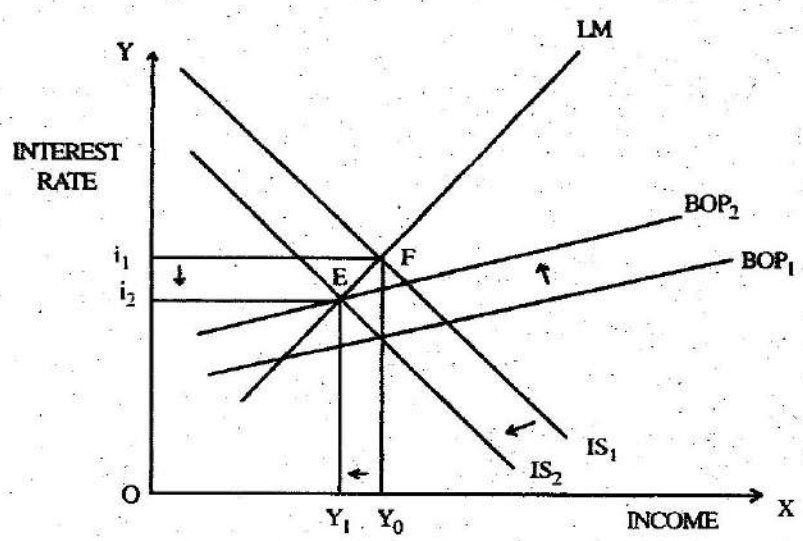


Figure 3.4.

Suppose that the initial IS and LM curves and BOP function are given as IS_1, LM and BOP_1 respectively. As shown in the figure 3.4, the IS and LM curves intersect at point F which is above the BOP function representing BOP surplus. A surplus BOP means that the foreign exchange reserves are higher than the required rate to keep the BOP in disequilibrium position. This will appreciate the home currency. Appreciation of home currency, will make the imports cheaper and exports dearer. Increase in imports and decrease in imports will shift the IS curve from IS_1 to IS_2 and BOP function from BOP_1 to BOP_2. These curves interest at point E on LM curve where general equilibrium is attained. Here, both internal and external sectors are simultaneously at equilibrium and BOP surplus is also corrected. Moreover, income level decreases from Y_0 to Y_1 and interest rate from i_1 to i_2.

3.8 : Devaluation and Exchange Control :

Persistant disequilibrium in the Balance of Payments can be corrected with the help of devaluation and exchange control.

(a) Devaluation :

Devaluation refers to the official reduction of the external values of a currency. Devaluation is distinct from exchange depreciation in that the latter involves the reduction in the exchange value of home currency on account of the free working of market forces. Devaluation, on the contrary, is the result of deliberate government decision for the achievement of balance of payment equilibrium.

As devaluation is undertaken, the home currency because cheaper relative to the foreign currency. Therefore, foreigner direct their demand for the home market and the devaluing country finds opportunities to expand its exports. As the same time, the importers of the devaluing country start feeling that the foreign market has become relatively costlier. This leads to a reduction in the demand for foreign products. The consumers start switching their demand to the home-produced goods. This encourages the substitution of home produced goods in place of foreign products. Thus, devaluation leads to a reduction in the balance of payments deficit.

The success of the method of devaluation depends upon the following conditions:

(i) The elasticity of demand for the country's exports should be greater than unity.

(ii) The elasticity of demand for the imports should be greater than unity.

(iii) The exports of the country should be non-traditional and the increasingly demanded from other countries.

(iv) The domestic price should not rise and should remain stable after devaluation.

(v) Other countries should not retaliated by resorting to corresponding devaluation. Such a retaliatory measure will offset each other's gain.

Devaluation also suffers from certain defects :

(i) Devaluation is a clear reflection on the country's economic weakness.

(ii) It reduces the confidence of the people in country's currency and this may lead to speculative outflow of capital.

(iii) It increases the burden of foreign debt.

(iv) It is a temporary device and does not provide a permanent remedy to correct adverse balance of payments.

(b) Exchange Control:

Exchange control is the most widely used method for correcting disequilibrium in the balance of payments. Exchange control refers to the control over the use of foreign exchange by the central bank. Under this method, all the exporters are directed by the central bank to surrender their foreign exchange earnings. Foreign exchange is rationed among the licensed importers. Only essential imports are permitted.

Exchange control is the most direct method of restricting a country's imports. A full fledged system of exchange controls establishes a completely government control over the foreign exchange market of the country. Foreign exchange earned from exports and other sources must be surrendered to the government authorities. The available supply of foreign exchange is then allocated among the various importers according to the criterion of national needs and established priorities.

The major drawback of this method is that it deals with the BOP deficit only, and not its causes. Rather it may aggravate these causes and thus may create a more basic disequilibrium.

3.9 : The Monetarist Approach to the Balance of Payments :

The monetary approach to the balance of payment rejects separate analysis of the current and capital accounts. It is a theory of the overall balance of payments.

According to them, disequilibrium in the balance of payments is reflection of monetary disequilibrium and therefore can always be corrected by adjustment in money stock.

(a) Monetary Approach : Adjustment with a Fixed Exchange Rate :

Monetary approach relies on adjustments in money supply and prices to restore external balance if it is disturbed by certain shocks to the economy. Monetary approach to balance of payments can be explained with the help of Aggregate Demands (AD)— Aggregate supply (AS) morel,

In the figure 3.5, aggregate demand curve is drawn for a given foreign price level and a given nominal money supply in the economy. An increase in money supply causes an upward shift in the aggregate demand curve. In the

figure, the short-run aggregate supply curve AS_0 is also drawn assuming given wages and costs. Given, aggregate demand curve AD_0 and aggregate supply curve AS_0 are in equilibrium at point E corresponding to Y^* level of income which is a full employment level of income Y^*.

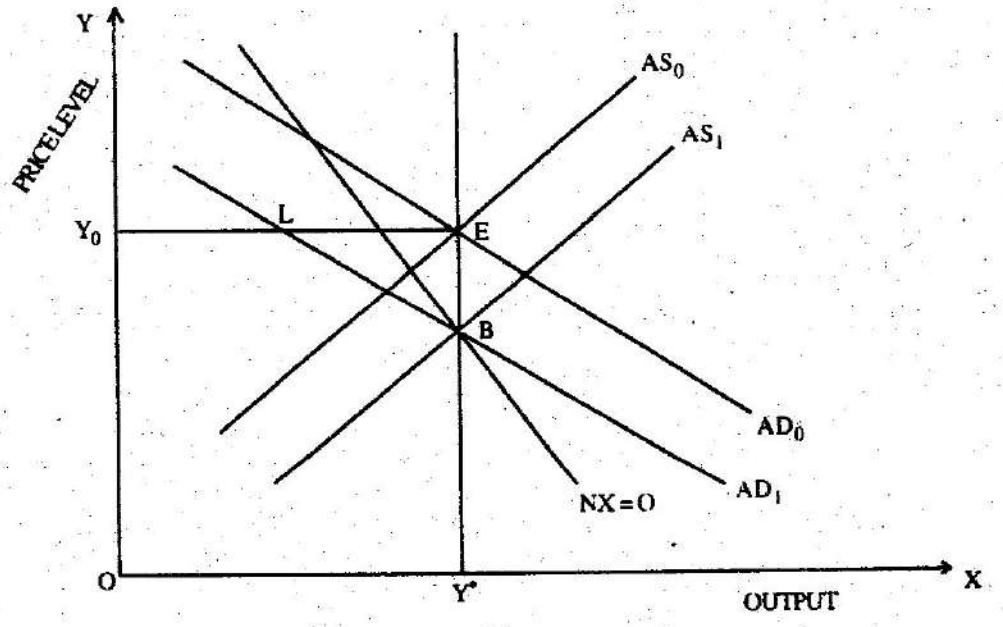


Fig : 3.5 : BOP adjustment with a fixed exchange rate

In the figure, 3.5, trade balance equilibrium curve NX = 0 has also been drawn which is sloping downward. Initially, macro equilibrium is at point E where aggregate demand curve AD_0 intersects the short-run aggregate supply AS_0 at full employment level of income Y^*. At point E, aggregate demand which incorporates net exports (NX or X-M) exceeds the trade balance (NX = 0) by the amount LE. That is, the country is running a deficit in its trade balance. According to monetary approach, this deficit in trade balance is due to aggregate demand curve lying at a higher level. According to the approach, it is due to the excessive expansion in money supply. Expansion in money supply leads to more spending which causes more imports and less exports. This causes the deficit in the balance of payments. Therefore, according to monetarist approach, a sufficient contraction of money supply by the Central Bank will restore equilibrium in the balance of payments, This is because, contraction in money supply will lead to decrease in aggregate spending. The aggregate demands curve shifts to AD_1 which will tend to lower price level. The fall in price level will raise real wages to workers which will cause the short-

run aggregate supply cover, shift to the right, say AS_1. Which intersects the aggregate demand curve AD_1 at point B from where trade balance curve NX = 0 is also passing through, Thus, sufficient contraction of money supply restores the internal balance.

On the other hand, if a country has a surplus has a surplus in balance of payments, to restore internal balance, it will increase the supply of high powered money by buying foreign exchange from the market. With this money supply in the economy will increase. The excess of money supply (M) relative to the demand for it will lead to the increase in aggregate spending or aggregate demand. The adjustment in this way will help in eliminating the surplus and restoring equilibrium in the balance of payments.

(b) The Monetary Approach Under Flexible Exchange Rate :

Under a flexible exchange rate system and perfect capital mobility, how a monetary expansion will effect exchange rate, price level, aggregate income, money supply and balance of payments can be illustrated in figure 3.6.

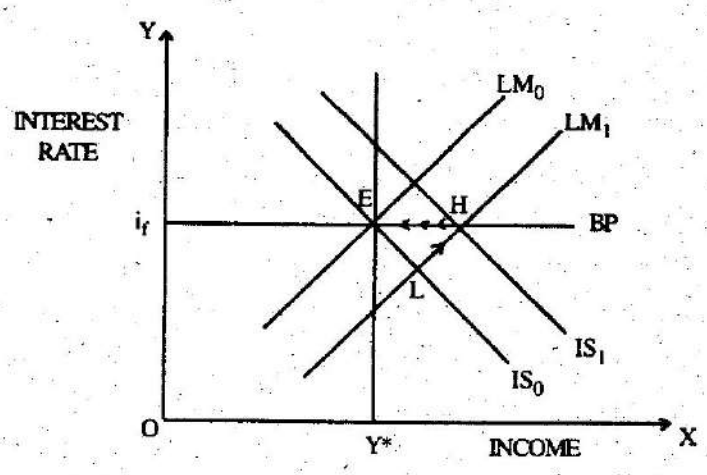


Figure 3.6.

Suppose initially the economy is in equilibrium at point E at balance of payments line BP corresponding to full-employment level of income Y*. Since at point E, IS_0 and LM_0 curves intersect, it implies that there is equilibrium in the goods market as well as in money market and therefore at point E demand

for and supply of money are equal. Now suppose that the Central Bank of the country expands, the money supply in the economy. This monetary expansion will shift the LM curve to the right, to LM_1. The new LM curve "LM_1" cuts the original IS_0 curve at point L at which new goods and money market equilibrium will be reached and rate of interest falls below the foreign interest rate i_f As a result of this, there will capital outflow from domestic economy.

Capital outflow will cause depreciation of domestic currency and increase competiturness. Exports will increase and imports decrease which will shift the IS curve to IS..

The new IS_1 curve interest LM_1 curve at the new equilibrium point H. Through, the domestic interest rate has risen to the level of foreign interest rate, the level of income or output has increased, exchange rate has depreciated and as a result exports have risen, imports have declined and balance of payments equilibrium has been restored. But, at point H, output or income is larger than full employment level Y*. As a result, price level will rise and there is decrease in the real monetary balance $\left(\frac{M}{P}\right)$. LM curve will start shifting to the left, interest rate will be tending to rise and capital inflows will tend to occur which will result in appreciations of domestic currency. The appreciation of domestic currency will cause exports to decline and imports to increase ultimately, net exports will decline causing a leftward shift in the IS curve back toward the initial equilibrium point E. This adjustment point will continue until point E is reached once again.

3.10 : Summary

International payment is related with the open economy. It is the record of transaction in goods, services and assets between residents of a country with the rest of the world for a specified period. Although there should be always equilibrium in the international payment system, in reality, sometimes it is appreciating or depreciating. There are methods like devaluation, exchange control through which this disequilibrium in the balance of payments can be corrected. Moreover, the monetary theorists have also stressed on automatic adjustment mechanism for the balance of payment (BOP) disequilibrium.

3.11 : Additional Readings :

1. Jha, R : Contemporary Macroeconomic Theory and Policy (1991).
2. Ahuja, H.L : Advanced Economic Theory (2001),
3. Paul, R.R; Monetary Economics (1999).

3.12: Self-Assessment Test :

1. Distinguish between balance of trade and balance of payments. Indicate various items in the balance of payments of a country.

2. Balance of Payments is always in balance—— Comment.

3. Explain how and why monetary policy retains its effectiveness when there is perfect mobility of capital.

4. What do you understand by disequilibrium in the balance of payments? What are the causes of such disequilibrium?

●●●

UNIT-4

BUSINESS CYCLES

Structure :

4.1. Introduction :

Business cycles are the recurring and fluctuating levels of economic activity that an economy experiences over a long period of time. There are five stages of business cycles. These are—

(a) Growth (expansion)

(b) Peak

(c) recession (contraction)

(d) trough

(e) recovery.

At one time, business cycles were thought to be extremely regular, with predictable durations, but to day, they are widely believed to be irregular, varying in frequency, magnitude and duration. The unit will mainly cover the theories of business cycle and steps undertaken for controlling the business cycles. Moreover, relative efficacy of monetary and fiscal policies will also be discussed.

4.2 : Objectives :

After reading the unit, you should be able to:

- Understand the theories of business cycle.

- Certaining the trend of the economy on a target path.
- To understand how aggregate economic variables behave in response to change in the economic environment.
- Reducing sectoral imbalance within the aggregate investment achieved with a sectoral boom and offset by depression in other sectors is likely to reduce the potential growth rate of the system. To understand the role of monetary and fiscal policy's regarding business cycle.

4.3 : Theories of Kaldor of business cycle :

Kaldor's theory of the cycle which appeared in 1940 is a comparatively simple and very neat theory built directly on Keynes' saving-investment analysis. Kaldor's theory emerges essentially from the substitution of his particular non-linear saving and investment function for the linear function used by keynes in his income model and from his intelligent tracing of the implications that follow from the quite different saving and investment relationships given by the non-linear function.

Suppose that the higher the level of income, the better the prospects of business and hence greater the investment, ie.

$$I = I(Y,k), \quad \frac{dI}{dY} > 0,$$

where I : Investment,

Y : level of income and k is capital stock.

Kaldor, in his trade cycle does not make use of the acceleration principle in rigid from. He further assumes a Keynesian saving function.

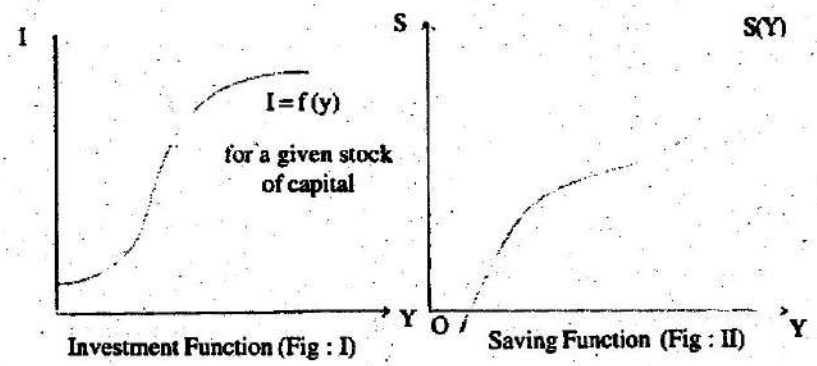
$$S = S(y), \quad \frac{ds}{dy} > 0,$$

where S = savings

According to Kaldor, there is a 'normal' level of investment propensity $\frac{dI}{dy}$, somewhere in the mid-range of income $\frac{dI}{dy}$ is assumed to be relatively small at high as well as low levels of income. The decreasing slope of the investment function for low levels of economic activity is explained by missed

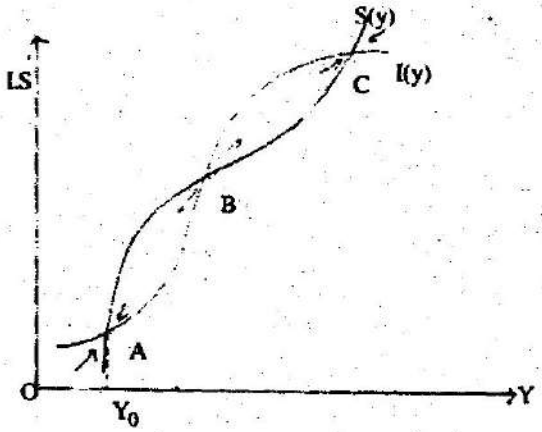
profit opportunities in terms of low economic activity. When income is relatively high, decreasing economics of scale as well as rising financial costs on part of the investors will also result in the small value for $\frac{dI}{dy}$.

Kaldor further assumes that an inverse relation exists between the capital stock and investment. If investment is high, capital stock increases. An increasing capital stock lowers the marginal efficiency of capital, implying that investment is lower for each income level. Hence, with a rise in the capital, the investment schedule as shown in figure (1), will shift down. Conversely, if the capital stock was to fall, the Investment schedule will shift upward.



Koldors' saving function also has an odd shape, showing fig (II). To justify it, Kaldor argues as follows: suppose there is a normal level for the propensity to save $\frac{ds}{dy}$. If income is high, relative to the normal level, profits will also be higher. Since capitalists save more then wornness, saving propensity will rise. If income falls below its normal level, profits will fall and hence there will be large depletion of savings and may even be negative. When income increases slightly as expansion starts, $\frac{ds}{dy}$ is expected to be relatively high. During the middle range, savings will increase normally. It is because of this reason, Kaldor argues that the slope of the saving function will be different at different ranges of income, relatively high at low and upper level and normal in the mid range. The marginal Propensity to save (MPS) at the low levels of income is high.

Now, equilibrium national income requires the equality of savings and investment. With Kaldors' saving and investment functions, as many as three equilibria are logically possible (for any given value of capital stock). The three possible equilibria are labelled A, B and C in the fig: III



(Fig : III)

Here, Kaldor has used the basic Keynesian assumption that investment increases when I>S and investment falls whenever I<S. Now, it is apparent that points A and C are locally asymptotically stable, ie. if the economy happens to be at A (or C), a small displacement would (say, makes the income fall below Y_o, to the left of A, we see that I>S, and as a result, income will rise to Y_o) change Y such that equilibrium A (or C) will be retained. Point B, however, represents an unstable equilibrium. If the economy is dislodged from B, there will be forces to take the economy further away from B. To the right of B, we have I>S, so that Y will rise. To the left of B, we have I<S so that Y will fall.

Suppose, the economy is at equilibrium at point C and enjoying high employment and output. Both investment and saving are high at C. As capital accumulates, the I schedule shifts downward soon, point C considers with point B as shown in figure IV.

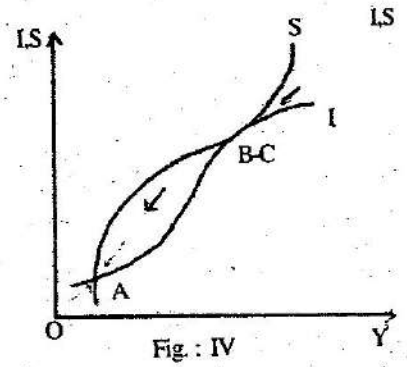


Fig. : IV

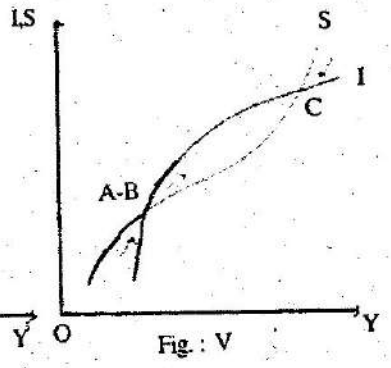


Fig. : V

At the point B–C in fig: IV, the equilibrium is unstable. As capital accumulates investment (I) and savings (S) part company and since B is unstable, the economy will now experience a charp fall in output and employment and crash to A.

At point A, income is low. There is zero gross investment, even depreciation allowances are not made. As capital stock starts depleting, the Investment schedule shifts up. Now, after a while, points A and B coin side as in figure V. With further depletion of capital, I and S will, once again, part company and the economy now experiences a strong boom. It makes point C. Here, after sometimes, the cycle starts again.

4.4 : Theory of Samuelson and Hicks :

Multiplier-Accelerator Interaction Model by Hicks-Samuelson

The multiplier-acceleratur model was adopted by Hicks, Samuelson and Frisch. In this model, the process of expansion is explained in terms of multiplier and accelerator which operates with a time lag. Thus, this model assumes a lag analysis. A simple form is considered to explain its properties. Suppose, consumption depends not on the income of current period but some earlier period.

$$C_t = \alpha Y_{t-1} \quad \text{..... (1)}$$

where, C : Consumption in time period t.

Y_{t-1} : income in the previous period.

α : MPC

In this model, a distinction is made between autonomous investment and induced investment. Autonomous investment consists of certain basic or infrastructural investment that is made in an economy and is unrelated to the operation of the market mechansion, rate of interest and price level. Autonomous investment is determined by the rate and structure of long term population growth, technical progress and the like. Autonomous component is assumed to increase at a fixed geometric rate ie.

$$I^a_t = I_o^{\ a} (1+y)^t \quad \ldots\ldots (2)$$

where "I_0^a" is the autonomous investment in period 0 and 'r' Is the fixed rate of growth of autonomous investment.

Induced investment, on the other hand, is responsive to market forces. It is assumed that induced investment is subject to accelerator type force. The greater the lag in incomes, the greater is the induced investment. In other words,

$$I^i_t = \beta (Y_{t-1} - Y_{t-2}); \quad \beta > 0 \quad \ldots\ldots (3)$$

where I_t^i is the induced investment.

In the simplest models of the multiplier-accelerator interaction, there is no government and the consumption and investment functions specified above are sufficient to guarantee cyclical fluctuatious.

We have,

$$\begin{aligned} Y_t &= C_t + I_t^{\ a} + I_t^{\ i} \\ &= \alpha Y_{t-1} + I_0 (1+Y)^t + \beta (Y_{t-1} - Y_{t-2}) \\ &= \alpha Y_{t-1} + I_0 (1+Y)^t + \beta (Y_{t-1}) - \beta(Y_{t-2}) \end{aligned}$$

$$\text{or} \quad Y_t (\alpha+\beta) Y_{t-1} + \beta\left(Y_{t-2}\right)$$

$$= I_0 (1+Y)^t \quad \ldots\ldots\ldots\ldots (4)$$

Equation (4) is a non homogenous difference equation of the second order. The solution of this difference equation consists of two parts—

Complementary solution and particular integral.

To find the particular integral, let us assume a solution of

$$= Y_t - \hat{Y}(1+r)^t \quad \ldots\ldots\ldots (5)$$

where $\hat{Y}$ is the initial which is growing at the rate Y.

Putting (5) in (4);

$$\hat{Y}(1+r)^t - (\alpha+\beta)\hat{Y}(1+r)^{t-1} + \beta\hat{Y}(1+r)^{t-2} = I_0(1+r)^t$$

$$\text{or } \hat{Y}(1+r)^{t-2}\left[(1+r)^{t-2} - (\alpha+\beta)(1+r)+\beta\right] = I_0(1+r)^t$$

$$\text{or } \hat{Y} = \frac{I_0(1+r)^t}{(1+r)^{t-2}\left[(1+r)^2 - (\alpha+\beta)(1+r)+\beta\right]}$$

$$\text{or } \hat{Y} = \frac{I_0(1+\gamma)^2}{(1+r)^2 - (\alpha+\beta)(1+r)+\beta} \quad \ldots\ldots(6)$$

To find out the complementary solution, let us take the homogmous part of the non-homogmous difference equation. The equation (4) then becomes—

$$= Y_t - (\alpha+\beta)Y_{t-1} + \beta Y_{t-2} = 0$$

Let, $-(\alpha+\beta) = \alpha_1$ and $\beta = \alpha_2$ then

$$Y_t + \alpha_1 Y_{t-1} + \alpha_2 Y_{t-2} = 0 \quad \ldots\ldots\ldots (7)$$

Let, $Y_t = \lambda^t$

Equation (7) becomes,

$$\lambda^t + \alpha_1\lambda^{t-1} + \alpha_2\lambda^{t-2} = 0$$

$$\text{or } \lambda^{t-2}\left[\lambda^2 + \alpha_1\lambda + \alpha_2\right] = 0$$

Now, either $\lambda^{t-2} = 0$ or $\lambda^2 + \alpha_1\lambda + \alpha_2 = 0$

But, λ being solution $\lambda^{t-2} \neq 0$

Hence, $\lambda^2 + \alpha_1\lambda + \alpha_2 = 0$

$$\text{or } \lambda = \frac{-\alpha_1 \pm \sqrt{\alpha_1^2 - 4\alpha_2}}{2}$$

$$\text{So that } \lambda_1 = \frac{-\alpha_1 + \sqrt{\alpha_1^2 - 4\alpha_2}}{2} \text{ and}$$

$$\lambda_2 = \frac{-\alpha_1 - \sqrt{\alpha_1^2 - 4\alpha_2}}{2}$$

Now, whether the economy suffers from fluctuation or not depends upon the factor $\alpha_1^2 - 4\alpha_2$. There are three distinct possibilities—

(a) The roots can be distinct and real $\alpha_1^2 - 4\alpha_2 > 0$.

(b) The roots are real and repeated $\alpha_1^2 - 4\alpha_2 = 0$.

(c) The roots are complex $\alpha_1^2 - 4\alpha_2 < 0$.

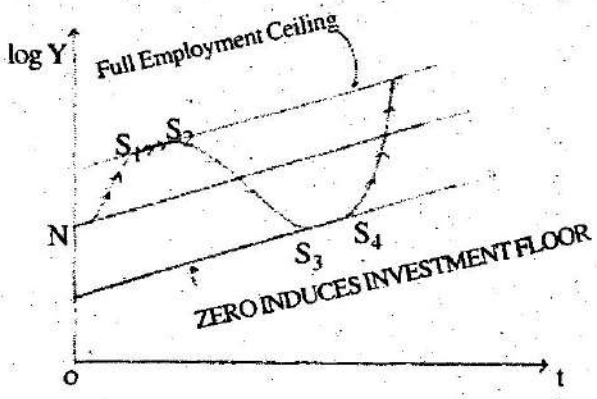
When we arrive at the complex roots, this gives cyclical fluctuation. Thus, complete solution of Y_t is the sum of the particular integral and the complementary solution as derived earlier.

$$Y_t = Y_c + Y_p$$

$$= \frac{I_o + (1+r)^2}{(1+r)^2 - (\alpha+\beta)(1+r) + \beta} + \frac{-\alpha \pm \sqrt{\alpha_1^2 - 4\alpha_2}}{2}; \quad \alpha_1^2 < 4\alpha_2$$

If me get the difference between α_1^2 and $4\alpha_2$ in decimal, this will imply that the cyclical fluctuation will subsidies. Moreover, if the difference between α_1^2 and $4\alpha_2$ gives a longer value, then stability of the economy cannot be easily reached. The mathematical solution helps to know the dynamic properties of equation (4).

Diagramatic representation of multiplier-accelerator Model :



If figure, we plot time on the x-axis and log Y, income on the Y-axis. At any point of time, there is minimum output consistent with zero induced investment. Output cannot fall below this because autonomous investment goes

on continuously. This is the zero induced investment floor for output which grows at the rate r (say).

Similarly, at any point of time maximum output is given by full employment. The full employment output is assumed to grow also at the rate r. Therefore, the full employment ceiling line and the zero induced investment floor line are parallel to each other.

We start with the point N, where there is only autonomous investment. There is rise in output. As soon as this happens, induced investment becomes positive via the accelerator effect. As investment rises, output rises even more by the multiplier effect. This induces further investment which increases output still further. The economy experience a strong boom and soon hit the full employment ceiling. Output can now rise very slowly at a rate of growth of autonomous investment; hence, induced investment drops via the accelerator effect. This reduces income via the multiplier effect. This further reduces investment. The economy moves down a deep recession and hits the zero induced investment floor. Output cannot fall below this floor. Now, autonomous investment grows at the rate r. So output will increase. This will make induced investment positive which will further increase income. The economy is in upswing again.

NS_1 is the phase when the economy experience boom condition. The economy crawls along the full employment ceiling from S_1 to S_2. S_2 to S_3 shows recession. From S_3 to S_4, the economy moves along the zero induced investment floor. At S_4, there is another recovery. As the process of expansion hits against the full employment ceiling and turns down, in some cases when the interaction of the multiplier accelerator is not strong enough, the downswing starts even before the ceiling is touched. Hicks has expresses the opinion that while the upswing is the result of interaction between the multiplier and accelerator, the downswing is largely the product of the multiplier. (The accelerator remaining uncooperative for the most part).

4.5 Control Of Business Cycles :

To control the business cycles, basically monetary and fiscal policies are undertaken.

(1) There are four major tools or instruments of monetary policy which can be used to achieve economic and price stability by influencing aggregate demand or spending in the economy. They are—

(a) Open market operations,

(b) Changing the bank rate,

(c) Changing the cash reserve ratio and

(d) undertaken selective credit controls.

(2) Fiscal policy is an important instrument to stabilize the economy, to overcome recession and control inflation in the economy. Fiscal policy is of two kinds: Discretionary fiscal policy and Non-discretionary fiscal policy of automatic stabilizers. By discretionary policy, deliberate change in the Government expenditure and taxes to influence the level of national prices and output are undertaken.

On the other hand, non-discretionary fiscal policy of automatic stabilizers is a built in tax or expenditure mechanism that automatically increase aggregate demand when recession occurs and reduces aggregate demand when there is inflation in the economy without any special deliberate actions on the part of the Government.

Monetary Policy :

Monetary Policy during depression :

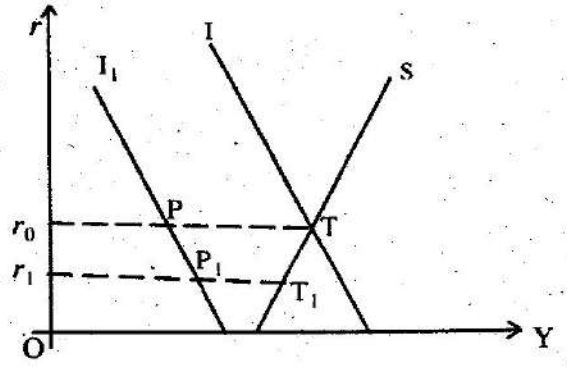
Monetary policies refer to policies designed to influence the cost and availability of money for the purpose of influencing the working of economy.

Depression is characterized by a low marginal efficiency to consume (MEC) on account of failing prices, incomes, output and employment and the resulting uncertainties. The aims of monetary policy during depression is to offset the decline in velocity of money, to satisfy demands for precautionary and speculative motive, to strengthen the cash position of bank and non-bank groups, bring down the interest rates so as to econourage investments etc.

It has been argued by some that monetary policy during depression has little scope; for it fails to pull the economy out of depression. The rate of interests are already lower during depression and cannot be depressed further. Injections of cash and other liquid assets are absorbed by firms, banks and

individuals in strengthening their liquidity position. They chose to invest in less risky and more liquid assets on account of a general wave of pessimism and uncertainty with which future is reset. But during depression, what is necessary is the investment in more productive and risky assets so as to expend the economic activities. Under these circumstances, lowering interest rates cannot econourage productive investments. Moreover, there is a minimum level beyond which rate of interest cannot be lowered by increased supply. Thus, monetary policy pursued during depression is rendered almost ineffective and helpless.

Even if the Central Bank is able to fellow the cheap money policy; but it has hardly any significant effect on the aggregate spending.



The gap between S and I instead of being bridged is widened because the fall in investment continuous on account of adverse business expectation.

In the diagram, there is a shift in investment curve from I to I_1. on account of deflationary conditions. At r_0, interest rate S exceeds I by PT. A decline in the rate of interest from r_0, to r_1, raises I and reduce S, but the deflationary gap still continues, though it is reduced to P_1 T_1 from PT.at the interest rate r_1. Moreover it is not possible to reduce the interest rate below a certain level (say or$_1$) on account of the abstackle played by liquidity trap.

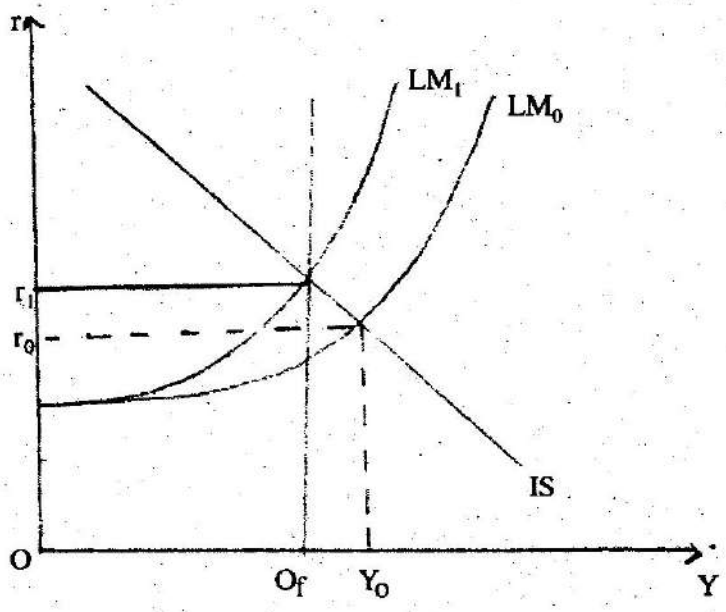
Thus, this brings forth services limitations of monetary policy as an anti-depression measure.

Monetary Policy during inflation :

Inflation is characterized by high marginal efficiency to consume on account of rising price, incomes, output and employment. The business activities expand rapidly as such more cash is released by banks making additions to consumers' income and outlay. There exists increased demand for credit. The aims of monetary policy are to reduce the rate of expension of money, to reduce the volume of liqued assets, reduce consumption and spendings by means of higher interest rates.

The effectiveness of monetary policy during inflation is much greater. The interest rates can be raised as high as the monetary authorities. This is followed by open market operations, to curtail the liquidity of banks and non-bank groups, thereby further reducing lending and investment. The cash-reserve ratio can be raised to prevent further expansion of bank credit. Thus, monetary policy can be fairly effective, if applied quickly and continuously in preventing booms from developing into inflation.

The basic problem during inflationary times is one of an overly rapid expansion of aggregate demand. An anti-inflationary monetary poliry stressed upon reduced supply and increased interest rate structure. A combination of tight money and credit measures may keep the system in equilibrium at full employment without inflation. This is shown with the help of diagram.



Given Is and LM_0, the original equilibrium Y_0 exceeds the full employment income Y_f and Y_0Y_f denotes the inflationary gap. A tight money supply will shift the LM_0 to LM_1 so that the equilibrium gets determined at the full employment level Y_f and interest rate rules higher from r_0 to r_1.

(b) Fiscal Policy :

Fiscal Policy to cure recession :

There are two fiscal methods to get the economy out of recession.

(i) Increase in Government Expenditure

(ii) Reduction in Taxes

(i) Increase in Government Expenditure :

For a discretionary fiscal policy to cure depression, the increase in Government expenditure is an important tool. The impact of increase in Government expenditure in a recessionary condition is illustrated in the figure 4.7

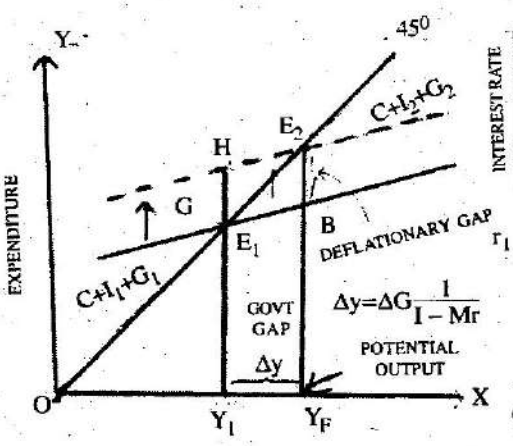


Fig. : INCREASE IN GOVERNMENT EXPENDITURE

$$\Delta y = \Delta G \frac{1}{I - Mr}$$

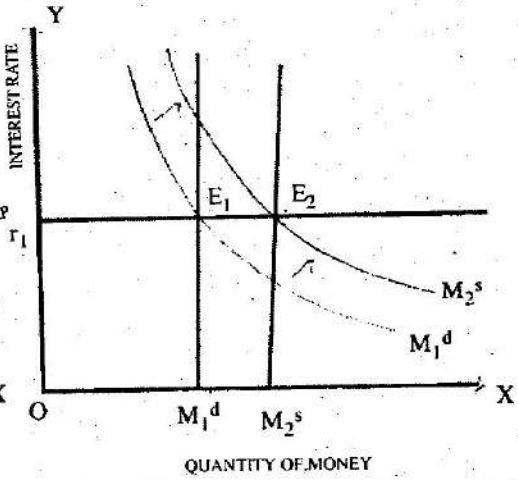


Fig. : EXPANSION IN MONY SUPPLY TO KEEP THE RATE OF INTEREST UNCHANGED

Suppose, the economy is operating at full employment or potential level of output Y_f with aggregate demand curve $C + I_2 + G_2$ intersecting 45^0 line at point E_2. Now, if investors expectatious of making profits from investment projects falls; it reduces investment. With the decline in investment, equal to

E_2B, aggregate demand curve will shift down to the new position $C_0 + I_1 + G_1$ which will bring the economy to the new equilibrium position at point E_1 and thereby determine Y_1 level of output or incomes. To overcome recession if Government increases its expenditure by E_14, the aggregate demand curve will shift upward to original position $C + I_2 + G_2$ and the equilibrium level of income will increase to the full-employment Y_f and the economy will be lifted output depression.

With the increase in Government expenditure and resultant increase in output and employment demand for money for transactions purposes is likely to increase as shown in figure 4.8 where demand for money curve shifts to right from M_1^d to M_2^d as a result of increase in transactions demand for money, rate of interest will increase and adversely affects the private investment. The decline in private investment will tend to offset the expansionary effect of rise in Government expenditure.

(3) Reduction in Taxes to overcome recession :

Alternative fiscal policy measure to overcome recession and to achieve expansion in output and employment is reduction of taxes. The reduction in taxes increases the disposable income of the society and carves the increase in consumption spending by the people. Thus reduction in taxes will cause an upward shift in the consumption function. This will shift the aggregate demand curve $C + I + G$ upward and the economy will be lifted out of recession.

Fiscal Policy to control Inflation :

Fiscal policy measures to control inflation are—

(i) Reducing Government expenditure and

(2) increasing taxes.

The reduction in Government expenditure will help in checking inflation is shown in the figure 4.9

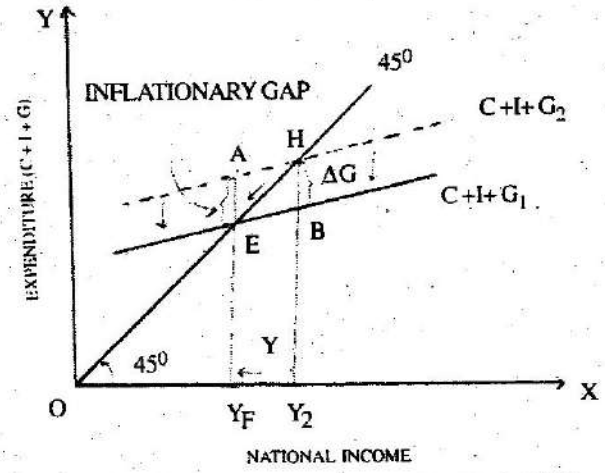


FIG. : 4.9 : REDUCING EXPLNDITURE TO CHECK INFLATION

In the figure, it is seen that an aggregate demand curve $C + I + G_1$ intersects 45^0 line at point E and determines equilibrium national income at full-employment level of income Y_f. However, if due to excessive Government expenditure and a large budget deficit, the aggregate demand curve shifts upward to $C + I + G_2$, this will determine Y_2 level of income which is greater than full employment level; causing inflationary gap. The task of fiscal policy is to close the inflationary gap by reducing Government expenditure or making taxes. With equilibrium at point H and nominal income equal to Y_2, if Government expenditure equal to HB is reduced, aggregate demand curve will shift downward to $C + I + G_1$ which will restore the equilibrium at the fall employment level Y_f. The reduction in Government expenditure by HB has led to a much bigger decline in output by Y_2Y_f.

Raising Taxes to Control Inflation:

As an alternative to reductions in Government expenditure, the taxes can be increased to reduce aggregate demand. For this purpose, personal direct taxes, such as income tax, wealth tax, corporate tax can be raised. The hike in taxes reduces the disposable incomes of the people and thereby force them to reduce their consumption demand. As a result of hike in personal taxes, it is the decrease in consumption demand (c) component which will cause the aggregate demand curve $C + I + G_2$ to shift downward. The tax revenue will be raised by a greater amount to achieve contraction in national income Y_2Y_f.

4.6 : Relative Efficacy of Monetary and Fiscal Policies :

Effecturness of Monetary policy in general :

The effectiveness of monetory policy depends on a good number of factors— specially on the nature of lags involved and the activities of non-financial intermediaries in recent times. Absence of time lag i.e, no time should be lost between the need for action and the "action taken". Similarly, there should be no time gap between the "need" for taking action and the "recognition" of the need for taking action. But the effects of monetary policy or actions taken are not instantaneous but are subject to time lags. These loges are— primarily recognition lag, inside lag, outside lag etc.

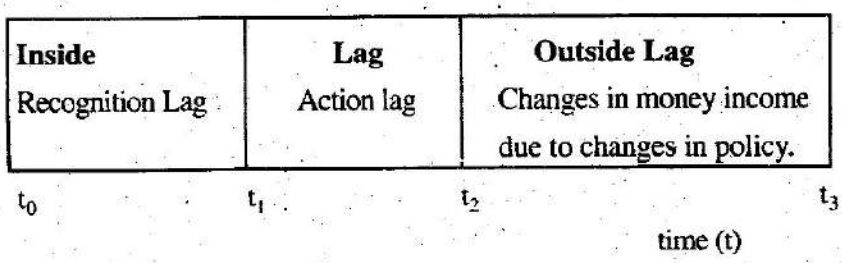
Recognition lag : It implies the time to recognize that the economy has changed in such a way as to require a change in the existing policy.

Action lag : Once the need of a policy change is recognized some time must collapse before there are suitable adjustments or alternatives in the policy. This may depend on a number of factors—decision of the policy maker, administration deffeciencies, political pressure etc.

Inside lag : The sum of the recognition lag and the action lag is called the inside lag.

Inside lag is influenced by policy trade offs and priorities, speed of data collection and analysis, administrative factors and other such factors.

Outside lag : Once policy is changed, some additional time must elapse before these changes work their way through the system and affect aggregate spending and income.



For instance, if the economy which is in equilibrium is disturbed in time

t_1, its recognition takes place in time t_2, but the effect of action take time to work themselves.

In times of recession or depression, expansionary monetary policy is adopted, but it is unoperative in controlling the depression phase of the economy without the help of fiscal policy.

On the other hand, in times of inflation, the Effecturness of monetary policy is much greater.

Effectivess of fiscal policy :

In the Keynesian theory, it is asserted that when Government increases its expenditure without raising taxes or when it reduces taxes without changing expenditure, it will have a large expansionary effect on national income. However, it has been pointed out that the effect of expansionary fiscal policy of budget deficit on private investment. It has been argued that increase in Government Expenditure or budget deficit adversely affects private investment which offsets to a good extent the expansionary effect of budget deficit. This adverse effect comes about as increase in Government expenditure or reduction in taxes causes rate of interest to go up. Thuse are two ways in which rise in rate of interest is explained. First, within the frameork of Keynesian theory, increase in Government expenditure leads to the rise in national output which rises the transactions demand for money. Given the supply of money in the economy, the increase in transactions demand for money will cause the rate of interest to go up. Secondly, in order to finance its budget deficit. Government will borrow funds from the market. This will raise the demand for loadable funds which wul bring about rise in the rate of interest. The mechanism of budget deficit or increase in government expenditure to achieve expension in national income and output will cause the rate of interest to go up. The rise in the rate of interest will discourage private investment. Thus, increase in Government expenditure or fiscal policy of budget dificit crowds out private investment. This fall in private investment as a result of the rise in rate of interest will offset or cancel out a part of the expansionary effect of increase in Government expenditure. The magnitude of this crowding out defs ends on the elasticity of the investment demand. If investment demand is more elastic, the

decrease in private investment consequent to the rise in rate of interest will be quite substantial and will greatly offset the expansionary effect of the increase in Government expenditures. On the contrary, if investment demands is relatively inelastic, the rise in the rate of interest will lead to only a small decline in private investment and therefore crowding out effect will be relatively small.

4.7 : Summary

The economic history of the free market capitalist countries has shown that the period of economic prosperity or expansion alternates with the period of contraction or recession. These alternating periods of expansion and contraction in economic activity has been called trade cycles. J.M. Keynes, write, "A trade cycle is composed of periods of good trade characterized by rising prices and low unemployment percentages with periods of bad trade characterized by falling prices and high unemployment percentages." These are various reasons for which cyclical fluctuations occur in a particular economy. The reasons are explained by many economists in their theories of trade cycles. Moreover there are basically monetary and fiscal policies through which government can correct the economy from a recessionary or an inflationary period. In the unit, all these prospects have been discussed.

4.8 : ADDITIONAL READINGS :

1. Ahuja, H.L, "Macroeconomics- Theory and Policy". (2008).

2. Jha, R, (1991) : Contemporary Macroeconomic Theory and Policy."

3. Rana, K.C and Verma, K.N : Macro Economic Analysis (1998).

4.9 : SELF ASSESSMENT TEST :

1. Explain Keynes's Contribution to business cycle theory. Is his theory a sufficient explanation of business cycles ?

2. What is accelerator? What role does it play in explaining business cycles in the economy?

3. Explain how the interaction of multiplier and accelerator explain cyclical fluctuations in the economy.

4. Critically examine Hicks' model of trade cycles. What determines floor and ceiling in his model?

5. Explain the role of fiscal policy in overcoming recession and in achieving economic stability at full-employment level.

6. Explain fiscal policy measures to control inflatation. How far do you think they can be effective?

7. What are the factors that determine the effectiveness of monetary policy in reviving the economy. How does expansionary monetary policy work? How does Keynesiam view in this regard differ the monetarist view?

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