CHAPTER 2
DEVALUATION, TRADE BALANCE AND INFLATION

Before analysing the concept and effects of devaluation, a brief review of International monetary systems is given. This will enable us to know how the external payments were adjusted and the revolution of devaluation as an instrument to reduce the imbalances in the external sector of an economy.

2.0. INTERNATIONAL MONETARY SYSTEM

This part traces the evolution and growth of international monetary system. This helps to know how the external trade and payments adjustments occurred. With the expansion of trade among nations, the issue of BOP adjustment problems have been acquiring prominence. The international monetary system had been changing from time to time to address the trade and payments problems.

The historical development of the international monetary system can be divided into the following periods, namely, Gold Standard, Gold Exchange Standard and Managed Exchange Rates with Centrally Created Reserves.

Gold Standard: The basic theoretical model depends on the assumptions that were made in classical economic theory and general equilibrium analysis: viz, the economy operates under
conditions of perfect competition, prices and wages are perfectly flexible, there is always full employment of resources, money is held only for transactions purpose, and money supply consists of entirely gold. The discussion proceeds in terms of two-country world, where there is neither technical change nor economic growth and no autonomous capital movements between the two countries.

Under these conditions, the quantity theory of money holds. This model is used to analyze more often the process of international adjustments under the gold standard. The most prominent sources of disturbances to international equilibrium were natural or man-made catastrophies which reduce the national output during a given period of time. This results in increase in domestic price level, which induces foreigners to reduce their purchases and domestic residents to increase their purchases abroad, leading to a payments deficit and an outflow of gold. As a result of reduced stock of money in the economy, the price level falls and the size of the deficit in the following period is reduced with the national output remaining at its catastrophe reduced level; the deficit, gold losses and the price reductions continue in the subsequent periods until the prices reach a level where the payments imbalance is zero.

This basic model is applicable in modified form to the explanation of adjustments to cause payments disequilibrium other
than natural catastrophes, such as changes in technology, shift of capital, domestic inflation due to excess spending and others. In all cases the resultant deficits are cured by domestic prices reductions, which the gold losses bring about automatically in the manner described.

The principal advantages of the system include: an expectation of long run price stability among all countries, implicit in the analysis of the gold standards financial mechanism is a beneficial flow of real resources, and it functions without any government intervention.

Gold Exchange Standard: It had evolved form the gold standard but differs from it most basically in that under its operation international reserves consist of both gold and convertible national currencies.

The features of this system include world; (a) consists of many countries, one of which is called 'banker' and the rest of which are known as 'others', (b) all countries are assumed to have fixed exchange rates and independent monetary and fiscal systems and thus they have the need to hold international reserves for settlement of payment imbalances. This has not been based on an explicit agreement among nations, but represents the outcome of historic evolution. However, the system was quite successful for a number of years from the point of enconomising...
on gold, due to several shortcomings, and the 1960 Dollar Crisis led to a systematic proposal for the reform of the gold exchange standard.

Managed Exchange Rates with Centrally Created Reserves: With an international agreement at Bretton Woods in July 1944, the IMF was created. The problem of competitive devaluation was tackled by an agreement, that member countries should adhere to the maintenance of parity exchange rates. These rates were declared and registered legally with IMF and every country committed itself to maintain them and changes in parity greater than 10% could be undertaken only with concurrence from the IMF. After the first dollar crisis of 1960, the difficulties inherent in the gold exchange standard, Triffin (1968) developed the theoretical case for enabling the IMF to create centrally owned international reserves (SDR's).

The crucial weakness of the Bretton Woods system was the absence of an efficient BOP adjustment mechanism. Because of continuous changes in the underlying variables determining BOP relations—relative national income, price levels, tastes, technology, interest rates and so on, disequilibrium in the BOP continued to be a normal phenomenon. But for any country, BOP disequilibrium of the deficit variety cannot persist indefinitely. The ability to sustain a deficit is based on the amount of international reserves that the country possesses. The principal types of adjustment mechanisms include (a) changes in
relative national income or price levels, (b) movements in exchange rates and (c) imposition of direct controls over foreign exchange transactions.

The Bretton Woods system, generally, outlaws the employment of direct controls. This leaves only changes in income or prices or interest rate changes as possible methods of adjustment. However, a basic principle of the system was that exchange rates were to be held stable unless a 'fundamental disequilibrium' warranted exchange rate adjustment.

Although several exchange rate adjustments were in fact adopted by various members of the IMF prior to the break-down of the system in August 1971, the general tendency was for countries to resist adjusting exchange rates until forced by adverse BOP levels. The exchange rate adjustment problem was further seriously complicated by the inability of the US to change effectively the international value of the dollar. By 1971, following the collapse of the Bretton Woods system, the members of IMF are no longer compelled to state and maintain par values for their currencies. Instead of stable but adjustable exchange rates, a system of floating exchange rates has come into vogue among major trading countries.

Experience with managed floating during 1973-78 has shown that the advent of float rates in 1973 was an unplanned and ad hoc
reaction to the collapse of Bretton Woods system. The result of this new system was wide and frequent fluctuations in exchange rates and excessive instability in the international trade and investment. The structural shock of oil price increase has led to worldwide inflation with divergent rates of inflation among nations followed by deep recession in 1973-75, and large scale capital movements.

The work on reforming the above system began and an agreement on the proposed modifications to the exchange rate regime, the role of gold and SDRs was reached. Accordingly, the member countries of IMF collaborate with the Fund and other members to ensure orderly exchange agreements. Special programs like compensatory financing are devised to support member countries for the purpose of buffer stock financing to stabilize commodity prices through international agreements. Extended and supplementary financing facilities were operated by the Fund to members with BOP problems.

2.1. CONCEPT OF DEVALUATION

Devaluation means a reduction in the exchange rate or value of a country's currency in terms of foreign currency. It is viewed as a method of improving country's competitiveness. It renders domestically produced goods more attractive abroad, while making foreign goods less attractive at home. This shift in the attractiveness of traded goods causes the level of exports to
rise, and the level of imports to fall, thereby leading to an improvement in trade balance.

The necessity of devaluation arises when the currency of a nation continues to be overvalued. Thus, it is used as a corrective action. When the nominal exchange rate is held fixed or adjusted too little in response to overexpansion of domestic money supply, or increases in import or domestic costs, or the domestic inflation outpaces the foreign inflation, devaluation is undertaken sooner or later\(^1\).

The adoption of a new and lower parity of exchange rate occurs when a country has a consistent deficit on trade account, is building-up debits, increase in domestic inflation making exports internationally uncompetitive, industrial inefficiency and improper management of the economy.

A country's foreign exchange system can be used to pursue objectives like clearance of the foreign exchange markets, foster industrialization, improving terms-of-trade and raising revenue for re-distribution of income among broad classes.

International capital flows and foreign trade play a major

\(^1\)See Fisher (1977)
role in all economies, more so, in developing countries; as the problems of industrialization have always been linked to problems of trade. The instruments of trade policy had been used both for purely trade related goals but also as tools of overall development policy.

In the context of flexible exchange rate model, foreign exchange is seen as a resource like any other good and the demand for it always equals to its supply. The exchange rate as a price of foreign exchange clears the demand and supply in foreign exchange market just as commodity prices are allowed to clear commodity markets.

However, in many developing countries the acute shortages of foreign exchange had been a recurring problem. This problem was discussed in development planning literature in the framework of 'two-gap' or 'multi-gap' models. These models assume fixed input-output coefficients and limited possibility of expansion of exports. This results in a foreign exchange shortage which becomes a constraint on growth.

The neo-classical response to the structuralist view is in terms of role of relative prices and in particular exchange rate adjustment as a means of overcoming any foreign exchange shortage. They argue that the foreign exchange gap reflects the over valued real exchange rate and if the exchange rates were
allowed to adjust the foreign exchange market, there would be no foreign exchange gap.

However, the experience of developing countries reveal that it is a difficult task to achieve or restore equilibrium in foreign exchange market by raising the effective exchange rate. As was argued by Kruger (1978), the typical pattern of adjustment policies often involves an unsuccessful devaluation followed by a return to various forms of foreign exchange rationing.

The reasons for a country to face a foreign exchange crisis may stem from fiscal and monetary policies resulting in an inflation above that of world inflation which leads to an appreciation of real exchange rate and excess demand for foreign exchange and ultimately leading to balance of payments problems. A shortage can also occur due to an exogenous change in the country's terms-of-trade. Depending on the intensity of the problem, a variety of measures are adopted like, letting the exchange rate float until the excess demand for foreign exchange disappears, or it may keep the exchange rate fixed and attempt to adjust by borrowing or it can devalue its currency or ration the foreign exchange expenditure.

Historically, the analysis of devaluation was centered around the potential income and employment effects\(^2\). It had been

\(^2\) See Robinson (1947)
seen as a method of improving the country's export competitiveness. During 1930s, nations facing with domestic pressures decided to devalue their currencies in the hope of alleviating domestic pressures. Thus, the theoretical works reflect the pro-employment bias concerning the effects of devaluation (Joan Robinson, 1947).

After the setting-up of IMF, devaluation is encouraged whenever a country's international payments position is in 'fundamental disequilibrium, whether that disequilibrium is brought about by factors outside the country or by indigenous developments. As the measure is politically disfavoured, governments kept it as a last resort after adopting several partial substitutes. There were over 200 devaluations occurred during 1947-70 and many took place in the years of postwar re-adjustment, especially in 1949.

Devaluation in the context of a developing nation is more complex than a simple adjustment of exchange rate. The exact nature of disequilibrium is important in analyzing devaluation and care should be taken to study other adjustments as well that accompany devaluation. Broadly, one can find four types of devaluation packages (see Kueger, 1974):
(a) straight devaluation (discrete change in principal exchange
rate),
(b) devaluation with a stabilization program of contractionary monetary and fiscal policies aimed at reducing the level of aggregate demand or the rate of increase in it,
(c) devaluation accompanied by liberalization whereby import controls are reduced and
d) devaluation accompanied by partial or full unification of exchange rates whereby multiple exchange rates are combined into a single unified or at most two rates.

These categories however, are not mutually exclusive. Some elements of all are often present in devaluations that take place in developing countries.

The usual apprehensions expressed about the consequences of devaluation include:
(i) the presence of elasticity pessimism— it may not lead to an improvement in the balance of payments,
(ii) it may in fact lead to worsening the terms-of-trade,
(iii) by inducing an increase in domestic prices it may set in motion wage-price spiral and lead to an erosion of competitiveness that the devaluation is expected to achieve,
(iv) it may create income distribution problems and finally,
(v) it may be politically disastrous for the government which undertakes it.

The measure of devaluation requires both judgment and
delicacy in handling through the transitional phase. The problem of decline in aggregate demand and price rise should be tackled carefully.

Initially, during 1945–73, countries tried to use devaluation to maintain a stable exchange rate. Most countries had pegged their currencies against the US dollar. Governments were willing to buy and sell foreign exchange at the official exchange rate. The level of reserves was an indicator to maintain constant exchange rates. Outflow of reserves were a sign that the exchange rate might have to be devalued. Though the Bretton Woods system saw a remarkable expansion of world trade, countries started following policies that were incompatible with maintenance of constant exchange rates and consequently the system became crisis prone during 1960's and collapsed in 1973.

Some countries initiated fiscal and monetary policies to prevent devaluations (for example, US in early 1960s and UK during 1964–67). Governments regard devaluation as a sign of failure and were anxious to avoid it. Yet, when the policies needed for an external balance (restrictive monetary policy for instance) clashed with the needs of domestic policy (monetary expansion), devaluation became more attractive. Particularly after an election, devaluation was used to blame the economic misdeeds of the previous governments.

Once it became clear that countries were not willing to run
their macro-economic policies with the main goal of keeping exchange rate stable, the rapid capital movements led to the collapse of Bretton Woods system.

During the flexible exchange rate regime, exchange rate may vary from day to day or even minute to minute. Governments intervention in foreign exchange market takes place in this system too. Usually, governments have some exchange rate target and intervene to attain it. Since exchange rate movements affect trade and domestic inflation, countries are unwilling to initiate domestic policies independent of the exchange rate. They intervene from time-to-time with the hope of moving the exchange rate in appropriate direction.

There were 109 devaluations\(^3\) that were effected during the period 1948-67. Twenty four countries devalued to the extent of 75%, while thirty eight countries devalued their currencies in the range of 40-75%. The distribution of these devaluations across continents reveals that thirty six countries were in Africa, twenty three in Latin America, fourteen in Asia (excluding Japan) and twenty in Europe.

Since Independence, the Indian rupee was devalued thrice.

The first devaluation took place on the 18th September, 1949 to the extent of 30.5%. This was inevitable because 75% of India's export trade was with the countries of Pound Sterling and the U.K. had devalued its currency in 1949 and so India had to follow suit to retain its export trade share. The second devaluation took place in 1966 due to the severe foreign exchange crisis and the need for stepping-up essential imports necessitated due to droughts. Again in 1991 for the third time, rupee was devalued as the country was faced with severe foreign exchange and BOP problems.

2.1.1. GENERAL EFFECTS OF DEVALUATION

(1) Expenditure switching effect: Devaluation pushes-up prices of traded goods. If there is full employment with current account deficit, then the demand would switch from foreign to domestic goods and the problem is solved. But it is a very rare event. So, devaluation causes a two-way effect—both reduces and increases domestic demand. Unless measures are taken to curtail the aggregate demand, it results in domestic excess demand which in turn increases wages and will off-set the initial positive effects of devaluation. Devaluation may be effective unless it translates into real devaluation.

The relative prices of imports also go-up as compared to the prices of non-traded goods. So far as the demand is concerned, there would presumably be a substitution of traded goods by
non-traded goods. Since import substituting industry becomes more profitable, diversion of resources takes place. Exports become more profitable and diversion of resources from non-traded goods sector to traded goods sector may occur.

(2) Expenditure reduction effect: In the context of supply constraint i.e., when output, \( Y \) cannot be increased, expenditure \( E \) must be reduced for the balance of trade to improve \( TB = Y - E \). Devaluation should be accompanied by contractionary monetary and fiscal policies. Otherwise, goods for additional exports or goods for import substitution will not come.

(3) Terms of Trade effect (ToTr): Devaluation leads to an increase in price of imports in terms of the domestic currency. The increase in the price of exports may not be immediate and as a result, the terms of trade, measured as a relative price of exports and imports will tend to worsen. It is of course, expected that additional volume of exports and reduced volume of imports would neutralize this effect, so that the overall impact on TB is positive. But ToTr effect is significant in countries which have an import basket of capital and intermediate goods for which import demand is price inelastic.

(4) Real balance effect: Devaluation increases prices of traded goods and thus contributes to inflation. Accordingly, the value of real wealth falls. Consumption expenditure can therefore be reduced so that additional savings ensure that the value of real
wealth is unchanged. This would have a positive impact on balance of trade which however, may not be very significant.

(5) Investment effect: Due to rise in the prices of traded goods, profitability increases. This induces investment in these sectors leading to capacity creation and multiplier effects will operate in the long-run.

(6) Capital inflow effect: This effect will occur depending on the expectation of future devaluations. If there is no further devaluation, there should be an increase in capital flows into the home country. When devaluation is a part of an overall liberalization package, it may increase foreign direct investment which will have positive effect on balance of trade in the long-run.

(7) Redistributional effect: As there is an increase in prices of traded goods, resources move from the non-traded goods sector to the traded goods sector. Factors of production will be used more intensively in the traded goods sector to its benefit. There may be some redistribution from the private sector to the government sector. Also there will be redistribution from wages to profits. This takes place because money wages do not react immediately to a rise in prices. They either do not react, or react with a lag. The result is that real wages go down.
(8) Monetary effects: Depending on the way the budget deficit is financed, the supply of money will change. The demand for money in any case goes-up because of the higher price level. Higher prices, particularly of imported inputs, leads to greater credit requirements to finance inventory holdings. If money supply is restricted through curbs on bank credit, the additional credit requirement may push-up the interest rate. This reduces investment. To the extent that the real interest rate increases, inflow of capital should fall.

(9) Output and price effects: The fear that the devaluation is inflationary had been expressed several times. But, at least hypothetically, it could also be deflationary. If imports are constrained by exports, to the extent that a devaluation leads to increased export earnings, it permits increased imports. This could lead to a fall in the prices of imported goods. Even if the prices of exported goods go-up, the overall effect on the price level could therefore be deflationary. Output expansion or contraction depends crucially on whether new capacity is created or existing capacity is switched from the domestic sector to export sector. 4

Several empirical works tried to quantify the above effects of devaluation using different models.

4 See Debroy (1991)
2.2. THEORETICAL APPROACHES TO DEVALUATION

The question of an imbalance in balance of payments and its restoration had been analyzed for the past six decades in various ways. The earlier approaches were of partial equilibrium type whereas recently, the focus has shifted to general equilibrium framework; with foreign exchange markets seen as one of the interrelated markets.

In one of the earliest works, Humes' (1752), described the price-specie flow mechanism i.e., the automatic adjustment of balance of payments deficit under the gold standard. The out-flow of gold from a deficit country would reduce its money supply and this leads to a decline in prices and, on the other hand, surplus country will have increased money supply and higher price level. This makes foreign goods more expensive in a deficit country and imports will be more in a surplus country. Because of changed relative prices and real balances, people in deficit country decrease their purchases from abroad and citizens of surplus country increase their imports. This process would continue until the payments balance is restored.

The analysis emphasizes the need for price adjustments (elasticities approach of Robinson (1947)) through exchange rate adjustment. The foreign trade multiplier model tries to analyze the effects of exchange rate changes on terms-of-trade and the
conditions under which devaluation improves the trade balance (Metzler, 1949).

The conditions under which exchange rate depreciation improves the payments balance is a partial equilibrium analysis, where all other exogenous variables except exchange rate are assumed constant i.e., 'ceteris paribus' clause, and consequently the impacts defined were 'partial' in nature. Infact, the change in the payments balance directly determined by the exchange-rate variation influences, among other things, national income and the stock of money. The rate of changes in money stock and domestic prices are ignored in the partial equilibrium analysis. The elasticities approach suffers from the assumption that the incomes and prices of all other goods remain constant.

There were some attempts to introduce the possibility of income or price changes into the elasticities approach (Clament, Pfister and Rothwell, 1967). This approach could not be used as a guide by policy makers because there are computational difficulties with it.

Haberger (1950) derived an expression for the change in trade balance following a devaluation in a Keynesian framework. However, this analysis also has difficulty in the empirical estimation of the parameters.
Alexander (1952) tried to look at the macro-economic aspects of the problem with the help of Keynesian model. His contribution, known as the 'absorption approach' was the major development to analyze the effects of devaluation. Starting with an accounting identity, that a payments deficit is nothing but the difference between country's income and expenditure, he highlighted the role of macro-economic factors on analysis of devaluation and analyzed the effect of devaluation on levels of absorption and income.

According to him, devaluation would lead to an increase in exports, and real income would increase via the foreign trade multiplier. Expenditure would rise with income. Thus, if devaluation leads to a smaller increase in real expenditure than in real income, there will be an improvement in trade balance. This line of argument raised the efficiency of exchange rate policy (i.e. Monetary and fiscal policies can be used to correct the trade deficits).

Absorption approach was criticised by Machlup (1955, 1956). In Alexander's formulation, all quantities are in real terms while from a balance of payments point of view, they ought to be in money terms. Since it is clearly possible for the 'real' and 'money' balances to move in opposite directions, an analysis based on real values may well be misleading from a policy
makers' point of view. The neglect of relative price effect was also pointed out.

However, Alexander's contribution was his analysis of effects of devaluation under differing cases of full employment and unemployment, and varying supply and demand conditions. Alexander (1959) tried to synthesize the elasticities and absorption approaches. The initial effects or impact and secondary effects of devaluation were analysed.

There were some other attempts to reconcile the two approaches Brens (1957) and Michealy (1960). Brens using the Leontiff input-output framework tried to analyze the effects of devaluation. His conclusion was that the efficiency of devaluation depends on income and substitution effects under the stated assumptions.

Michealy (1960) felt that under conditions of unemployment in a developing country, the possibility of employment and output increases leads to an improvement in the trade balance. He highlighted the importance of cash balance effect. A change in relative prices leads to a decline in real cash balances and, therefore, decreases the absorption. The role of money and monetary policy in the analysis of devaluation was suggested. in particular, he argued that Keynesian neutral monetary policy (fixing interest rates) will nullify the effect, while the
orthodox neutral policy (fixing nominal money supply) will make it a success.

The debate on the synthesis of the two approaches led to the recognition of role of money. Meade (1951) in an eleven equation model tried to include monetary variables. Noting that Meade's analysis is somewhat restrictive, Tsiang (1961) tried to see the role of money supply in cases such as (a) Internal balance being assumed, (b) Keynesian neutral monetary policy and (c) Orthodox neutral monetary policy are assumed. Further, the fact that money income, real income and real output are different in an open economy was explicitly taken into account.

The attempts to introduce money into the analysis of the balance of payments using general equilibrium models was started with the significant contribution of Hahn (1959). The standard two-country, two-goods model was used into which two fiat currencies were introduced. It was demonstrated that in the model without money, there were two alternative sufficient conditions for the BOP to improve when the terms-of-trade deteriorates. These are: (1) the sum of marginal propensity to spend on imports should exceed unity and (2) the two goods should be gross substitutes in the world market.

After the introduction of money into the analysis, the
result obtained was: "Assuming that the goods market to be in equilibrium both before and after a change in the exchange rate, the balance of payments of country-1 will change in the same direction as the price of currency-2 in terms of currency-1 changes provided all goods and currencies are gross substitutes" (Hahn 1959, p.117). As a special case, if a small country devalues its currency so that its bilateral terms-of-trade cannot change, then devaluation necessarily improves trade balance regardless of whether or not goods are gross substitutes.

Kemp (1962) obtained similar results as that of Hahn, with an addition of role of real balance effect in the actual adjustment and mechanics of the process. In small country case, the balance of trade always improves with devaluation. The direction of movement of terms-of-trade was found to be independent of the result on the balance of payments. This implies that gross substitutability is sufficient to have a successful devaluation regardless of terms-of-trade.

Pearce (1961) introduced the role of non-traded goods in the adjustment process of balance of payments theories. Devaluation will cause the price of home goods to fall relative to traded goods and this results in a shift in production away from home goods to traded goods. In full-employment, with no change in output, this requires a cut in real expenditure. For a devaluation to improve trade balance, the following conditions
are required:
1. "A cut in money spending equal to
   a. the trade balance improvement plus
   b. the money equivalent of the real gain or loss due to the change in the terms-of-trade
   c. the money equivalent of any change in tariff revenue due to the change in terms-of-trade.
2. A fall in the price of non-traded goods relative to that of traded goods.
3. Some change in the real terms-of-trade which may be positive or negative. This will be small relative to the effect in 2".

   Kruger (1974) had shown that the change in relative prices implies a drop in real income at full-employment and therefore a decline in real consumption.

   The introduction of non-traded goods makes the model complete and its working much clearer and did not alter the basic result obtained by Hahn (1959) viz, the balance of trade improves with a devaluation if all goods and money are gross substitutes.

   The general consensus on the elasticities-absorption debate was that it led to a rediscovery of the role of monetary factors in balance of payments adjustment process. As a result of the works of Hahn (1959), Johnson (1958), Michealy (1960), Mundell (1968), Tsai (1961), another major and new approach in the
2.3. MONETARY APPROACH TO DEVALUATION

The succession of approaches (summarized in Johnson 1976b, 1977b) to the theory of balance of payments adjustment process led to the emergence of monetary approach during 1970s as an alternative to the elasticities, absorption and other Keynesian approaches.

The role of money in the adjustment process originated in the works of Polak (1957) and his associates at the IMF and also in the works of Mundell (1968, 71), and Johnson (1972). The analyses of Branson (1975a, 1975b), Frankel and Johnson (1975, 1976a, 1976b, 1977a, 1977b, 1977c), Romberg and Heller (1977), Whiteman (1975), Dornbusch (1973, 1974, 1975), Mussa (1976a), Rodrigeiz (1976) and Swobade (1973) refer to fixed or adjustably pegged exchange rate regime. For floating exchange rate regime, the studies include Myhorman (1976), Isard (1978), Dornbusch (1976), Frankel (1976b) Humphrey (1977) and Mussa (1976b).

The historical development of balance of payments theory (described in detail in Johnson 1977) compares the Humes price-specie flow mechanism and monetary approach. Describing the other approaches in sequential manner, it explains the monetary approach in detail. The basic proposition is that balance of payments disequilibrium involves an inflow or outflow.
of international money and hence must be treated as a monetary phenomenon and requires application of tools and concepts of monetary theory (Frankel and Johnson eds 1976).

Monetary approach in the context of fixed exchange rates can be summarized as follows: According to monetary approach, the relationship between the demand for and supply of money is a crucial determinant of balance of payments. It is treated as a stock (and not flow) over a given time period. The approach rests on the basic principle that for any country over the long run, there exists a stable demand function for money as a stock, i.e., demand for money is a stable, linearly homogeneous function of real income.

Supply of nominal money is the product of money multiplier \( m \) and the monetary base (high-powered money). The multiplier, which represents the extent of multiple credit creation is sometimes assumed to be either constant or does not systematically change in response to changes in monetary base. The monetary base has two components—domestic credit \( D \) and international reserves \( R \). The latter is domestic currency value of international reserves of the government and central bank. This \( R \) can be increased or decreased by any inflow or outflow of reserves when the balance of payments is in a surplus or a deficit. It can also change with exchange rate variation.

In line with these concepts, \( M_1 \) is used as the money concept.
(though some use broader definition of the money supply). The money market equilibrium is described as $M^d = m(D+R)$.

The crucial thing in monetary approach is that it identifies balance of payments disequilibrium with adjustments in money market. The relationship between demand for and supply of money is important in this analysis. They postulate that there is always a tendency towards the stock equilibrium in the money market.

For simplicity, assuming constant multiplier ($m$), changes in money demand ($M^d$) and domestic credit ($D$) are the active variables that can pull the money market out of equilibrium. Therefore, changes in $R$, international component of monetary base, that restore or maintain money market equilibrium under fixed exchange rates. Such changes in $R$ constitute balance of payments deficits or surpluses.

Depending on the role of money i.e., whether treated as asset or wealth, the monetary approach models can be grouped into two categories, viz., Monetarist literature and Portfolio balance literature.

In the monetarist literature, the analytical techniques include both macro-economic growth models (Dornbusch (1971), Frankel (1971), Frankel and Rodriguez (1975), Johnson (1972) and
Purvis (1972)) and Hahn type Walrasian comparative static models of which Dornbusch (1973a, 1973b) are the most representative.

The usefulness of Hahn type Walrasian model lies in the fact that it enables the investigation of the direction of changes in the terms-of-trade that accompany a devaluation and the role of non-traded goods in the adjustment process. Dornbusch (1973b) analyses the impact of a change in a control variable and the long-run effects of such changes focusing on balance of trade rather than on the overall balance of payments.

The major conclusions of these two types of models in the monetary approach seem to be identical. They include (i) in the long-run, devaluation has no lasting impact on the balance of payments, (ii) in the short-run, Kemp (1970), Kruger (1974) found that equi-proportional devaluations and decreases in the nominal money supply have equal impacts on the balance of payments, (iii) devaluation improves trade balance and overall balance of payments in the short-run, (iv) Frankel and Rodriguez (1975) showed that devaluation leads to a short-run surplus in the capital account and a deterioration in the debt service account, (v) introducing non-traded goods into the model, Dornbusch (1973b) confirmed the results of Kemp and Kruger that the relative price of the home goods declines in the developing country in the short-run, thus leading to a shift in production.
away from home goods to traded goods.

John Kyle (1976), tried to reconcile the elasticity and absorption approaches to payments analysis using an open economy model. Traditional method of extending macro-economic model to deal with trade problems was considered inadequate. A more complete macro-economic model which included production and monetary sectors along with real variables was specified. This model was then used to analyze the short-run impact of exchange rate changes on output, employment and balance of payments. It was shown that under Keynesian unemployment, a devaluation might lower the level of employment and output even if it succeeds in improving trade balance, whereas under the Classical full-employment situation, a devaluation would always lower the level of output and employment.

Connolly and Taylor (1979) analyzed the application of monetary approach to developed and developing countries. They compared the results for 17 developing and 10 developed countries that had changed their exchange rate regimes during 1959-70. The relationship between foreign reserves and domestic credit was also examined. Relative and absolute changes before and after devaluation were analyzed.

Sunderajan and Bhole (1988,89) have tried to test the monetary approach to devaluation in the Indian context. The
relationship between BOP and foreign prices, exchange rates, real income and domestic assets was examined. The effects of domestic assets on the BOP and vice-versa were also analyzed. Following Connolly and Taylor (1976), the above relationships are estimated in three functional forms for the period 1960-61 to 1984-85 on annual data. The broad conclusion is that the performance of the monetary model is not satisfactory and the changes in BOP cannot be explained solely with a monetary model in India.

2.3.1. RELEVANCE OF MONETARY APPROACH TO DEVELOPING COUNTRIES

Role of demand for and supply of money has been an implicit feature in most attempts to analyze BOP over the past five decades with traditional tools of value theory. Demand and supply schedules and their elasticities occupied center stage during 1920s and 1930s.

In developing countries where inflation rates widely differ, to examine the causality between devaluation and inflation, given the domestic credit level, all other things being equal, requires fixed exchange rate adjustment through devaluation over time. The process has an impact on balance of payments.

See Edwards (1987)
Balance of payments is viewed essentially as a monetary phenomenon and the monetary planners' responsibility lies in the orderly growth of money supply. Monetary approach provides simple empirical framework for policy evaluation. It aggregates current and capital account and focuses on demand and supply of money and their consequent influence on reserves position. It argues further that a developing country can maintain a negative current account balance, yet promote balance of payments stability by attracting capital inflows. This hypothesis has a special relevance in the sense that, through appropriate monetary management, it is possible to create a stable climate to attract foreign exchange and utilize it for development programmes. The reserves accrued to capital account may be utilized to off-set current account imports. The policy prescriptions of this approach are simple and credit control can be used as an instrument of monetary management. The measurement of equilibrium adjustment values of prices, output and foreign reserves to a policy change in credit will become much simpler.

2.4. LINKAGE OF TRADE AND MONETARY SECTORS

Various approaches to devaluation tried to examine the effects of devaluation on trade balance and balance of payments. The elasticities approach concentrates on trade elasticities and the absorption approach tries to explain the effectiveness of devaluation in terms of total expenditure and income, while the
monetary approach, on the other hand, analyses the role of monetary factors in the analysis of devaluation.

While the elasticities approach postulates the Marshall-Lerner condition for an improvement in the trade balance to occur, the absorption approach highlights the need for cutting down the aggregate demand. The monetary approach believes that devaluation will only have a transitory effect. Synthesis of the first two approaches has led to the monetary approach. However, the inter-linkages between the trade and monetary sectors had not been clearly established. The influence of monetary variables i.e., the supply of and demand for money on trade variables could be analyzed with the help of an integrated model. Such a model can incorporate an additional link between trade and monetary sectors through a new variable called the 'monetary disequilibrium variable' derived from the estimated money demand function. This variable is used in exports and imports functions to capture the effect of monetary variables on trade variables.

The policy of devaluation has a multi-faceted effect. It not only influences the trade flows but also affects the monetary sector. It affects imports, exports, price level, money supply, output etc. One can analyse its influence in detail.

2.4.1. DEVALUATION AND TRADE BALANCE
The question as to whether devaluation improves trade balance (TB) or not has been debated for the past four decades. The level of trade balance after devaluation could be traced with the help of a J-curve, i.e., the TB may deteriorate first and an improvement may come about later. This proposition is based on the empirical observation that trade flows require some time-lags to adjust to a change in the exchange rate.

In other words, at the time of devaluation, the economy (TB) is at the left most point on the J-curve. Soon after devaluation, current account may worsen as the economy travels to the bottom of the J-curve. This may occur because imports had been contracted and need to be paid in foreign currency. The value of imports rise in domestic currency as foreign currency becomes more expensive due to devaluation. The increase in the value of exports will be slow. As the value of imports decreases and that of exports increases, overtime, the current account will improve.

Empirical studies pertaining to both developed and developing countries have, however, thrown-up mixed evidence. On the occurrence of J-curve phenomenon, in the short-run, the existence of J-curve implies that the foreign exchange market may be unstable in the absence of capital mobility. The nature of the capital account need to be considered for the analysis of effects of exchange rate changes.
2.4.2. DEVALUATION AND INFLATION

Devaluations are generally feared and postponed for long periods. It is undertaken usually as a last resort. The potential inflationary effects of a devaluation are widely debated and analyzed empirically. Monetarists argue that inflation is basically caused by excess demand from the monetary expansion while the structuralists contend that inflation is caused by the structural and supply rigidities in the economy.

The relation between devaluation and inflation is based on the relative price and trade effects of devaluation. Devaluation raises the relative prices and production shifts in favour of traded goods sector and, therefore, raises the relative domestic price of traded goods. To the extent that traded goods form the component of workers budget, devaluation reduces their consumption, forcing a reduction in real wages. If higher money wages are demanded by the workers, this creates a spiral of high prices, further wage demands and so on. Therefore, nominal devaluation may result in price rise and reducing the effective rate of devaluation.

The implications of monetary approach to balance of payments are viewed as self correcting and as such no policies are required, and may even be ineffective except in the short-run.
The only possible long-run remedy to a BOP deficit is reduction in the rate of credit creation.

It is viewed that devaluation can have an impact only through possible effects on the demand for and supply of money. This effect must come through the increase in domestic prices caused by the downward adjustment in the exchange rate. The change in the relative prices of traded and non-traded goods leads to an increase in the domestic general price level. This increases the demand for nominal money balances which is a stable function of money income. If that stock demand is not satisfied from domestic credit expansion, an inflow of money from abroad will take place, producing a balance of payments surplus and, therefore, a gain in international reserves. The real domestic balances will be reduced because of devaluation and residents will be forced to restore them through international credit or commodity markets. However, the resulting balance of payments surplus continues only until the stock money market equilibrium is restored. That means the effects of devaluation are strictly transitory.

In the long-run, devaluation has no effect on real economic variables and it merely raises the price level. The only condition postulated is that a reduction in real cash balances (caused by devaluation) would produce a reduction in real expenditures or absorption, out of a given real income.
This real balance effect is supplemented by an increase in the domestic currency prices of traded goods relative to those of non-traded goods. A resource shift from non-traded to traded goods industries may occur. Inflationary expectations are incorporated into the floating exchange rate determination whereas it is omitted in the analysis of fixed exchange rate case (except to the extent that inflationary expectations affect the demand for money).