THE FISCAL DEFICIT AS AN INSTRUMENT OF STABILIZATION POLICY

2.1 Introduction

The period 1979-80 marks a break in the fiscal situation of the Central government due to the emergence of deficit in the revenue account in its budget. The revenue deficit grew through the eighties and led to the fiscal crisis in the Indian economy (see Chart 2.1). The revenue deficit peaked at 3.47 percent of GDP in 1990-91, and so did the fiscal deficit. The decade of the eighties was characterised by the build up of the inflationary pressures and an improvement of the growth rate. These trends were accompanied by a rise in the public sector borrowing and interest payment (both domestic and abroad). In the external balance, the current account of balance of payment increased from 1.2 percent of GDP in 1980-81 to 2.5 percent in 1989-90 and further to 3.2 in 1990-91. Following the Gulf War, the trade deficit increased and the net inflow of foreign remittances declined so that the foreign exchange reserves dwindled to three weeks of imports—about $1 billion. This affected India’s international credit worthiness and brought India close to default on its international obligations. India had to enter into a Standby Arrangement together with a supplementary loan with the International Monetary Fund (IMF) to the tune of about Rs. 3000 crore.

In conventional macroeconomic theory, stabilization refers to monitoring of inflation and output growth by means of fiscal and monetary policy. Outside the realm of conventional macroeconomic theory, stabilization programme refers to the retrieving of an economy from a critical state, afflicted by high inflation, unsustainable current account deficit and debt, in
particular, external debt. The programme should not merely remain restricted to tide over the crisis, but should address the issue of growth as well (Dornbusch 1990). Fiscal adjustment, in particular, fiscal deficit, is regarded to be the kingpin of a stabilization programme. In 1991, in the aftermath of the economic crisis, India adopted a stabilization programme at the behest of the IMF, which entails a cut in fiscal deficit to restore external account balance as well as to check inflationary tendencies in the economy. Though, formally the Fund package is based on what they call ‘financial programming’, virtually it is an extended and modified version of Polak’s model (1957) which was one of the earliest models on Monetary Approach to Balance of Payments (MABP). The policy prescriptions that follow from such a model emphasise the importance of a programmed reduction in fiscal deficit (FD) to attain a programmed reduction in external deficit or more precisely, the trade deficit (TD). It is the fiscal deficit as normalised by Gross Domestic Product (GDP) that is targeted so as to relate it to the size of the economy. The relationship between FD and TD follows directly from national income accounting identity (NIAI) and the financial programming model of the Fund, in fact, contains such an identity. The impact of fiscal deficit is not merely felt on trade deficit, but it affects a vector of macro variables. This is required for the maintenance of external balance, which must be in tune with the size of the fiscal deficit as well. The relevant macro variables necessary for external balance, the exchange rate, interest rate and inflation, are all argued to be influenced by the magnitude of the fiscal deficit.

In this chapter, we try to situate the Fund stabilization package in the context of the overall development of the literature on fiscal adjustment in macro theory. We proffer an assessment of the Fund package, particularly with respect to the targeting of fiscal deficit and its macro impact. Given this backdrop, we explore empirically the relationship between the fiscal deficit and the external account imbalance in the case of India. This forms the basis of our evaluation of the effectiveness of targeting fiscal deficit in the restoration of external balance.

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The correspondence between fiscal deficit and trade deficit, known as 'the twin deficits' in the literature, is a contentious issue. While general agreement persists that external imbalances are generally associated with large fiscal deficits, yet there is disagreement regarding the soundness of the logic involved in the perceived relationship and desirability of exploiting this relationship for policy purposes. The debate also revolves around whether it is the fiscal deficit of the centre, or, centre and the states combined, or, the public sector as a whole\(^1\) that should be targeted and the mode of achieving the target.

In the next Section, we begin with the national income accounting identity (NIAI) and proceed to discuss the transmission mechanism, i.e., how the impact of the fiscal deficit is transmitted through the economy to affect the external balance, has been envisaged in the literature. We briefly discuss the evolution of the role of fiscal and monetary policy in stabilization as well as to situate the Fund stabilization package in the context of such development to try and understand the underlying assumptions and policy recommendations that follow from such a package.

### 2.2 The Fund stabilization model

The Fund stabilization package is based on a formal model developed by Polak (1957), which underlies the stabilization package and a precursor to the MABP. The policy framework of the Fund and the World Bank combined has been extensively and indiscriminately used by these multilateral agencies for setting instruments of conditionalities for lending to the countries faced with the balance of payments problems. Referring to Polak model, Taylor (1988) has commented,

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\(^1\) Public sector as a whole refers to all the three tiers of government including the public sector enterprises. This may be approximately by the investment saving gap of the economy.

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"certainly in terms of the numbers of countries and people it has affected, Polak’s work is the most important piece of macroeconomics since Keynes".

The ‘financial programming’, comprises the accounting identities for the banking system, balance of payment and Keynesian national income accounting identity. The last one as argued by Bhaduri (1992) is a fifth wheel to the coach of ‘financial programming’. The model can be presented as follows.

From the asset side, money supply can be defined to be equal to international reserves (IR) and domestic credit (DC).

Increase in money supply \( (dM_s) = \) Increase in the liabilities of the financial sector = Increase in the assets of the financial sector.

\[
dM_s = dIR + dDC \tag{2.1}
\]

The increase in international reserves is related to the external trade and payments accounts through the following identity:

\[
dIR = (X - IM) + F \tag{2.2}
\]

A change in international reserve (IR) is the sum of trade surplus \( (X - IM) \) and the net capital inflow \( (F) \).

The third is the famous equation of exchange or the quantity theory of money, which states that demand for money \( (M_d) \) times velocity of circulation is identically equal to nominal output.

\[
M_dV = P.y \tag{2.3}
\]

\[
M_d = k.P.y \tag{2.4}
\]

Where \( k = (1/V) \), \( P \) is the price level and \( y \) is the output level. The money demand function can be expressed as follows in its first order approximation,

\[
dM_d = P.y.dk + k.P.dy + k.y.dP \tag{2.5}
\]
Equating the increase in money supply (2.1) with the increase in money demand (2.5), we get,

\[ dIR + dDC = P.y.dk + k.P.dy + k.y.dP \]  

(2.6)

It may be noted that so far we have dealt only with identities or definitions, the constituents of the model, which leave no scope for any doubt or disagreement with respect to the relevance of the model. In order to derive relationship from this to draw policy conclusions, some special assumptions need to be made.

The first major assumption is typically a monetarist one. A crucial postulate of the quantity theory of money is that the velocity of money circulation is roughly constant. This implies, in equation (2.3), \( k \approx \text{constant or } dk = 0 \). The other assumption is that the output growth is supply determined\(^2\). This makes growth in output (dy) exogenously determined, and, therefore, assumed to be constant, say equal to g. Therefore, from equation (2.6),

\[ dIR = k.y.dP + k.P.g - dDC \]  

(2.7)

The above expression can enable us to draw policy conclusions in conformity with the recommendations of Fund stabilization policy. The increase in domestic credit over and above what the economy can absorb through price rise, given output growth will spill over to the external sector leading to the depletion of the stock of foreign exchange reserves.

We present the various implications, which follow from the model,

(a) Polak (1997) argued that the advantage of the model lies in its simplicity. There are two reasons behind this. First, the model uses only two sets of generally available macro data, pertaining to the banking sector and the trade sector. This has made the model readily applicable to the member countries of the IMF where there is paucity of data and in general, an absence of econometric models to describe their economies. The second advantage

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\(^2\) The basic assumption is the equilibrium in the labour market associated with the natural rate of unemployment, determines the output level with the help of the production function.

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is that the model focuses only on the key variables that the authorities could control, e.g.,
domestic credit creation.

While the ‘financial programming’ and the underlying simple model continued to be
the basis for Fund’s prescription, the contents of the package have become increasingly
complex over time.

(b) In the recent years, the Fund has found it necessary to go beyond the
imposition of ceilings on bank credit to direct restrictions on the government deficit. That is
why, as argued in the beginning that the Fund package comes in the form of containment of
fiscal deficit normalised by GDP. This is in accordance with the overall thrust of the reform,
which is to encourage the growth of the private sector and curtailment of the public sector
activities. So credit restriction will not unduly constrain the growth of the private sector as
containment of fiscal deficit would make more credit available for the private sector. The
other reason is related to the consequent growth of money supply. The additional credit
extended to the government will boost the stock of high-powered money, which can be used
as the expanded credit base for commercial bank’s additional lending to the private sector.
Therefore,

\[ dIR = k.dP.y + k.P.dy - (1 + z).dDC_p \]  

Where, domestic credit (DC) = credit to the private sector (DC_p) + credit to the
government (DC_g) and \( dDC_p = z.dDC_g \), with \( z > 1 \).

This implies that a reduction in credit to the government will have a magnified impact
in reducing either inflation or trade deficit or a combination of both. This further reinforces
the policy recommendation of the Fund package (Bhaduri 1992).

(c) It is generally argued that public sector investment crowds out private sector
investment. So, reining of fiscal deficit will reduce public investment making space for a
higher level of private sector investment.
(d) The stabilization package often advocates devaluation of the domestic currency to raise the prices of traded goods \textit{vis a vis} the prices of the non traded goods. On the other hand, credit restriction would arrest inflationary tendencies in the economy and to keep the domestic price under control. The real exchange rate, defined as the ratio of traded to non-traded goods prices, will therefore, tend to depreciate. This helps further in restoring balance in the external account (under the assumption that the Marshall-Lerner condition is satisfied).

2.3 An evaluation of the package

Having enunciated the elements of the model, we present below a critical review.

(a') A reduction in credit to the government may not lead to a fall in fiscal deficit. Fiscal deficit is financed by borrowing from the open market and external credit, apart from the Central Bank credit to the government ($DC_g$). If the emphasis is merely on the credit part, there remains the possibility of compensating it by the other two sources.

(b') Availability of credit can be a constraint on growth but not on saving. The Central bank can exercise restrain on credit. But a lower $DC_g$ and a consequent fall in expenditure and saving may reduce the availability of saving to the private sector. This has to be distinguished from the conventional 'crowding out' argument, which stresses on the rise in the interest rate as a result of a rise in public sector investment in the face of a given level of money supply, crowd private sector investment out.

(c') There is a seeming contradiction in the model with respect to the determination of the price level. From the quantity theory of money, the price level is determined, given income velocity of circulation, output growth and money supply. There is no scope left for the cost determination of prices. For a fully open economy, if the price level is determined by the Law of One Price, there arises a contradiction. This apparent inconsistency can be removed if we distinguish between traded and non-traded goods.
Credit restriction to government leads to an improvement in the external account under the assumption of constant output growth and stable income velocity of circulation. The other side of the story is that production is demand determined and output growth depends crucially on expenditure. To leave the possibility of both demand \((y^d)\) and supply determination of output \((y^s)\) open, the output may be constrained either by demand side or by supply side,

\[
y = \min (y^d, y^s)
\]  

This is not unambiguous as a lower domestic credit ratio may be associated with higher inflation and a larger trade surplus or some such combination. The combination is not unique as the equation (2.6) alone cannot solve for three variables. It may well happen that a fall in credit may effect a fall in output and a rise in price level. Depending on the circumstances, the impact on trade balance is therefore, ambiguous. On the right hand side of equation (2.6), a lower DC may be associated with a lower growth and price while trade balance remaining unaffected. There may be more such combinations.

(d') The constancy in output growth is a typical monetarist assumption. Real variables are assumed to be determined by real forces, money does not matter. Money is assumed to determine only the nominal variables like, the price level. This contradicts the basic Keynesian hypothesis that real output depends on effective aggregate demand of which government expenditure is one major constituent. Even if the economy is faced with supply constraint, it is difficult to envisage why credit is unable to soften the supply constraint unless it is entirely directed towards working capital.

(e') The stable income velocity of money circulation is again a construct of the monetarists to advocate the role and importance of monetary policy. Though, this is an empirically testable hypothesis. The ubiquitous black transactions and its proclivity towards speculative activities may accentuate its instability. The true velocity is difficult to estimate which may be unstable rather than the observed stability. To put it differently, the insensitivity of the money demand function to credit restriction is a difficult proposition to accept.
(f') In order to capture the emerging scenarios the world over, some expansions have been suggested. The change in reserves consists of two components, the current account imbalance and the net flows of international capital, which is assumed to be constant. But since international capital flow represents the outflow or the return flow of the domestic flight capital and depends on the interest rate and the exchange rate, this would pose serious challenge for policy-making.

(g') The absence of interest rate in the model has to be viewed in the context of government deficits, which can influence it.

(h') The exchange rate deserves a place in the model as it can affect the trade flows and the inflationary expectations.

(i') Sau (1993) has argued that there are two categories of costs of stabilising the economy, the output loss and the exchange loss. While the former is the often talked about, the latter is relatively unknown. Output loss arises when the government cuts investment and therefore, a future stream of income generation is sacrificed. It has been observed that the developmental programme meant for the poor suffer in the face of a programmed reduction in fiscal deficit because this is the discretionary part of the expenditure. The exchange loss arises when the foreign suppliers increase the price of our importables in the face of an all round reduction in tariff.

(j') As noted above, both demand and supply are affected by credit availability. If the responsiveness of demand is greater than that of supply to credit availability, starting from a situation of excess demand, lower availability of credit will reduce demand more and thereby reducing the excess demand gap. Obversely, if supply falls faster than demand, the conventional stabilization policy would fail as restriction of credit may lead to both higher inflation and deterioration of trade balance. Moreover, various instruments of stabilization policy, domestic credit control, trade liberalization, financial liberalization should be well synchronized to ensure success otherwise, it may contribute to destabilization (Bhaduri 1992).

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2.4 The Keynesian approach

Keynes (1936) restricted his macro economic analysis to a closed economy. Foreign trade component as net exports was added to the Keynesian income expenditure identity later. It provided a new perspective to analyse external imbalance in the context of the prevailing dominant elasticity approach.

The role played by balance of payments (BoP) and exchange rate vary depending upon the degree of capital mobility. In the 1950s, the models, as developed by Tinbergen (1952) and Meade (1951), which dominated the literature on open economy macroeconomics, did not incorporate capital account into their model in the context of the extant highly limited capital mobility. Though the models were varied in nature, the underlying broad characteristics were Keynesian\(^3\). We can broadly categorise the models into two, flexible exchange rate and fixed exchange rate.

(a) Flexible exchange rate: With immobility of capital, exchange rate is determined entirely by the trade flows. BoP, which consists of trade account only, is therefore, always in balance. Net exports play no role in determining output. The impact of monetary and fiscal policy is similar to those in a closed economy. Under these conditions the domestic economy remains insulated from any foreign disturbances as the floating exchange rate absorbs the shock. Therefore,

\[
GDP = C + I + G \text{ with } X - IM = 0
\]  

(2.11)

(b) Fixed exchange rate: Under the system of fixed exchange rate, the effects of domestic policy are modified by the interaction with foreign sector. The sensitivity of import to income reduces the efficacy of fiscal and monetary policy as a part of increased demand leaks out of the economy. The domestic economy is no more insulated as the foreign

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\(^3\) The features are fixity in the level of money wage and money supply, the later one is supposed to be controlled by the central bank, sterilization of BoP, only one asset other than money.
disturbances are transmitted to the economy through the disturbances in the trade balances.

In this framework, it can be shown how an expansionary fiscal policy can affect trade balance. The increase in government expenditure (dG) will cause output to rise by $\theta$ (the multiplier) whereas the absorption increases by the extent of government expenditure and the induced increase in consumption.

The NIAI can be written as

$$X - IM = Y - (C + I + G),$$

or, $$(X - IM) = Y - A$$

(2.12)

Where A is absorption which is the sum of all expenditures, such as C, I, G. From (2.12), we get,

$$d(TB) = dY - dA$$

Which means that a country’s TB will improve, if the country’s output of goods and services increases by more than its absorption. To put it differently, the improvement in trade balance will improve if output, Y increases by more than absorption. Assuming investment is autonomously determined,

$$d(TB) = \theta.dG - \{dG + (1-\tau)c\theta.dG\}$$

$$d(TB) = dX - dIM = 0 - m\theta.dG < 0$$

(2.13)

Equation (2.13) is negative. Here, ‘$\tau$’ is the average effective tax rate, ‘c’ is the marginal propensity to consume and ‘m’ is the marginal propensity to import. This outcome can be described in a more conventional Keynesian way: an increase in government expenditure drives up output by the multiplier $\theta$ and sucks in imports of an amount equal to $m.\theta.dG$. The trade balance deteriorates by this amount of import rise, given exports.

A regime of fixed exchange rate gives rise to policy conflict between maintenance of internal balance and external balance in two different situations. These two situations are, one, BOP deficit combined with unemployment and two, BoP surplus combined with full
employment. In either case monetary and fiscal policy have undesirable effects on either internal or external balance. The first case is of greater concern for any country. If, in order to attain full employment, an expansionary fiscal policy is initiated, internal balance will be achieved only at the expense of worsening of BoP. What is required is another instrument for the other objective, in this case external balance. As Johnson (1958) has suggested, an expenditure switching policy may be required for tackling trade deficit and monetary and fiscal policy for the maintenance of internal balance.

Whether devaluation can lead to an improvement in trade balance depends on the fulfilment of Marshall-Lerner condition. This condition is clearly based on partial equilibrium analysis of the trade sector. The absorption approach is more concerned with macroeconomic response to devaluation. The trade balance is said to improve in response to devaluation if the incremental increase in income is greater than the change in absorption.

According to the Keynesians, BoP is not a real phenomenon but dependent on the trade and capital flows. The BoP components approach view the disequilibrium in BoP or same as changes in reserves as the sum of the current account and capital account, which can be written as,

\[ dR = PTB(y, e / P) + F(r) \]  

Which is a Keynesian balance of payments equation. Where \( dR \) = change in reserves measured in domestic currency, \( P \) = price level, \( TB \) = trade balance, \( y \) = real output level, \( e \) = exchange rate (units of domestic currency per unit of foreign currency), \( F \) = net capital inflow (nominal), \( r \) = domestic interest rate.

2.5 Capital mobility and Mundell-Fleming proposition

The study of international economics underwent dramatic change under the influence of Mundell (1963) and Fleming (1962). These studies redirected attention towards capital
account highlighting the importance of capital mobility in the context of the stabilization policies and financial phenomenon in general.

The two studies differ in their assumptions about degree of capital mobility with Mundell assuming perfect capital mobility and Fleming assuming imperfect capital mobility between domestic and foreign countries. Perfect capital mobility renders one of the policies, fiscal or monetary, totally ineffective whereas, under imperfect capital mobility, each policy retains some effectiveness.

In Mundell-Fleming framework, the efficacy of fiscal policy and monetary policy depends crucially on the exchange rate regime. An expansionary fiscal policy puts upward pressure on interest rate and raises income. Higher domestic interest rate facilitates inflow of foreign capital. Under fixed exchange rate, money supply rises as a consequence of a boost in the reserve money on account of the intervention to maintain fixed exchange rate till domestic interest rate falls to the level of the international rate. Trade balance worsens as a rise in income leads to a rise in import. Unlike fiscal policy, monetary policy is ineffective in changing output under fixed exchange rate because capital flows offset a monetary expansion or contraction as the case may be, through a change in reserve money.

An expansionary fiscal policy leads to inflow of capital as the domestic interest rate rises. Under flexible rate, inflow of capital puts incipient downward pressure on exchange rate. The exchange rate appreciates and adversely affects the trade balance. This reverts the IS curve back to its original position. On the contrary, monetary policy is effective as depreciation of the exchange rate in case of loose monetary policy (leading to a fall in the rate of interest), which shifts the LM curve as the trade balance improves, reinforcing the change in income.
2.6 The Fiscal approach to the balance of payment

An increase in fiscal deficit would find its complete reflection in trade deficit under the assumption of exogeneity (neutrality) of the private sector saving-investment balance. In fact, the relative stability of the private sector has been assumed in the fiscal approach to the balance of payments pioneered by the Cambridge Economic Policy Group (CEPG) in the mid-sixties. However, neutrality of the private sector behaviour, in the face of government intervention, was formally argued by Barro (1974), resuscitating the Ricardian Equivalence proposition that a bond financed government deficit would have no impact on aggregate demand. Since causality cannot be ascertained from an identity, the fiscal approach incorporates behavioural relationships into the model and thus establishes a relationship between the fiscal deficit and the trade deficit. The novelty of this approach lies in its ability to explain the interdependence or lack of it between the fiscal deficit and the trade deficit. The pivotal functional relationship about the private sector is that this sector should not be assumed to accumulate financial assets indefinitely. This is in sharp contrast with the simple Keynesian models where the underlying assumption is the unlimited ‘residual’ asset accumulation of the private sector (McCallum and Vines 1980). The NIAI can be written as follows,

\[ (IM - X) = (G - T) - S + I \]  

(2.15)

Where the notations are with usual significance as explained above. Saving can be disposed off as the demand for the new securities by the private sector \(B^p\) and demand for money \(L\). So saving can be written as,

\[ S = \Delta B^p + \Delta L \]  

(2.16)

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4 This proposition is taken up later. In case of money financed deficit, the private sector would correctly anticipate the price rise because are formed ‘rationally’ as workers bargain for a hike in nominal wage to neutralize the anticipated price rise. In effect, the real wage remains unchanged and so the impact on employment and output. 

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Where, $\Delta B^P$ and $\Delta L$ are assumed to be functions of a fraction of the discrepancy between actual and the desired stocks.

\[(IM - X) = (G - T) - \Delta B^P - \Delta L + I\]  \hspace{1cm} (2.17)

So asset accumulation (or, decumulation) is a phase in the process of stock equilibrium rather than an equilibrium flow. In the case of stock equilibrium ($\Delta B^P$ and $\Delta L$ are zero), fiscal deficit equals the current account deficit, which in the words of Fetherston and Godley (1978), 'quintessentially New Cambridge result' as investment can also be assumed to be a function of actual and desired stock of capital. From (2.17), under the assumption of stock equilibrium we get,

\[(IM - X) = (G - T)\]  \hspace{1cm} (2.18)

This may be interpreted as follows- virtually the entire disposable income of the private sector is spent on goods and services with a fairly short lag. The econometric finding of the CEPG was that total private expenditure as the dependent variable on total private income, the coefficients on current and one year lagged nominal private disposable income sum to nearly unity. It means that the chief determinant of net acquisition of financial assets is the change in disposable income in absence of capital gains. This explicit hypothesis derived from a relationship existing between stocks and flows is then brought into a relationship between flows in the way described above. Whereas, in a traditional Keynesian model, the existence of a functional dependence of private expenditure on disposable income is derived from a relationship directly and originally existing between flows.

The model shows the inter-relationships among the three gaps. One to one correspondence (or, a lack of it) between the trade deficit and the fiscal deficit is established only under the assumption of no change (or, a change) in the saving-investment gap of the private sector.
2.7 Reconciliation between the fiscal and the monetary approach

Under certain conditions, the fiscal and the monetary approaches can be considered to be mirror images of one another. In their simplest version, private expenditure depends solely on asset stock disequilibrium with only one financial asset. The MABP or the Fund package concentrates on the official settlement balance and lumps everything else as items above the line. On the other hand, the fiscal approach focuses on the current account and lumps everything else as 'items below the line'. The matrix below depicts the interrelationship between the items of the two approaches.

<table>
<thead>
<tr>
<th>Foreign Sector</th>
<th>Government</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Approach</td>
<td>(X - IM) = (T - G) + (S - I)</td>
<td>(2.19)</td>
</tr>
<tr>
<td>Monetary Approach</td>
<td>ΔIR = (-)ΔDC + ΔM₄</td>
<td>(2.20)</td>
</tr>
</tbody>
</table>

The sum of each column equals zero in the absence of capital movement. The matrix shows the equivalence between the two approaches under certain assumptions. The two approaches view the functioning of the economy in substantially different ways with regard to price output flexibility and labour market. Output is assumed to be at full employment level in the monetary approach as it is supply determined, whereas the fiscal approach assumes output and employment to be flexible and determined by effective demand. Crowding out is ruled out as rate of interest rate is determined from abroad because of the assumption of perfectly open financial market as well as the assumption of marginal private propensity to spend (consumption and investment together) is equal to one.

Accordingly, the policy recommendations of the two approaches for achieving equilibrium in the external balance are different. In fact, more than one version of the Fiscal approach is discernible in the literature (McCallum and Vines 1980). According to one version, public sector deficit should be targeted as in stock equilibrium, public sector deficit equals the current account imbalance. According to the other version, import restriction
should be adopted to offset high fiscal deficit instead of reducing the deficit, as it is important to ensure a high level of demand in the economy. The monetary approach advocates putting a ceiling on domestic credit creation and especially, the government deficit to curb excessive growth of money supply. Their preoccupation with targeting money supply is rooted in their conviction that BoP is after all a monetary phenomenon.

Moreover, the policy recommendations also rest on the understanding regarding the response of exports to changes in domestic prices and prices to domestic demand. The responsiveness of price in the monetary approach is high enough because of the assumption of full employment level of output whereas in the fiscal approach, output responds more to a change in demand and price response is small. The sensitivity of prices to a change in the exchange rate is assumed to be equal to infinity by both approaches, as money illusion is assumed away.

We have just noted that the two approaches are mirror images of one another under the assumption of no capital movements. Moreover, if we examine the approaches more closely, we see that fiscal deficit equals changes in domestic credit, \((G - T) = \Delta DC\) and, private sector saving investment gap equals changes in money demand, \((S - I) = \Delta M_d\). So, one to one correspondence between the fiscal deficit and the trade deficit is ensured under the neutrality of the saving-investment balance. In the monetary approach, a rise in domestic credit will lead to a commensurate fall in foreign exchange reserves under the assumption of a stable money demand function.

The government places a significant amount of domestic liabilities outside the banking system. The borrowing from the public is significant in case of India. The impact of borrowing on the domestic activity has been dealt with earlier and we concluded that most likely it has got an expansionary effect with money supply responding to an increased level of economic activity as interest rate remains stable.

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With the introduction of government bonds as a mode of financing the fiscal deficit, it becomes necessary to specify the way deficits are financed. The non transitory output effects of money financed and bond financed increases in government spending would remain the same, provided the interest rate is fixed and interest payment on government debt is ignored. The different components of the BoP would of course depend upon the mode of financing the fiscal deficit.

There may be two non-transitory effects of government interest payment discussed in the literature. Blinder and Solow (1973) have shown that the multiplier is larger because of the negative leakage arising from interest payment accruing to the private sector.

Even if we assume (S - I) can be disposed off in various assets, as long as stock equilibrium prevails and a particular ratio of asset to nominal income is maintained, we get the result that a change in fiscal deficit equals the current account imbalance. But people may, in fact, invest on assets, which are not always captured in national income accounting. Even, there may be a leakage of saving from the economy. This tendency to asset accumulation weakens the relationship between the public sector deficit and current account imbalance.

The applicability of MABP has been tested widely in Indian case as well as for other countries. After presenting a critical evaluation of the monetarist and the fiscal approach, in the next section we briefly review the neo classical approach to the three gaps and its inter-relationships amongst the gaps.

2.8 The New view

Corden (1991) has challenged the 'old view' we have been discussing so far which traces the current account deficit (CAD) to the public sector deficit. The 'old view' is that CAD does matter and require policy action, if current account imbalances are unsustainable. According to the 'new view', current account does not matter from a policy point of view, even though the determinants of it are relevant for policy making. According to Corden,
current account deficit is equal to the investment saving gap of the private and the public sector, thus comprising four variables. In fact, distinguishing between private and public sector gloss over the fact that,

"there are many kinds of investment and many different agents who may save, so it is not just a matter of four variables." (Corden 1991).

Corresponding to the optimal decisions regarding investment saving decisions of the private and the public sector, there exists an optimal current account deficit. Nevertheless, this optimal current account cannot be targeted as it may result from various desirable or undesirable combinations of saving and investment. A current account deficit may be caused by a private sector investment saving gap with a balanced public sector gap rather than the other way, as traditionally assumed. Corden (1991) further argues that private sector can determine the optimal saving investment decisions, which should be left to themselves and should not be a matter of public policy and instead the public sector gap should be balanced.

The 'new view' takes cognizance of the rapidly growing capital inflows in financing CAD. So CAD need not be in balance as long as capital inflow in the form of foreign direct investment can outweigh the CAD and the rate of interest is less than the productivity of the investment. So under these circumstances, the sustainable deficit is greater than zero.

However, some qualifications are warranted at this stage to clarify the stance of the 'new view' vis a vis the 'old view'. They are the following,

The current balance is worth monitoring as a signal of problems emanating from private investment and saving decision, in case, there are 'distortions or signs of foolish decision making'.

There may be 'contamination effects' owing to country risk, arising out of high external debt, which becomes relevant for policy making.

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Since real exchange rate stability is a matter of concern and is influenced by current account stability, so that it becomes a matter of trade off.

2.9 Fundamental relationship

The link between internal balance and external balance is established through the Keynesian NIAI for an open economy as discussed above. Following a simple Keynesian analysis we can show, how an expansionary fiscal policy can lead to a deterioration in the external imbalance.

From the NIAI, \( GDP = C + I + G + X - IM \),

(2.22)

Since, \( GNP = GDP \pm FI \)

\( GNP = C + I + G + CA \) \hspace{1cm} (2.23)

Where \( FI = \) net factor income from abroad and \( CA = \) current account. From the income expenditure identity, we can rewrite the NIAI in the following way,

\[ (IM - X) \pm FI = I - S \] \hspace{1cm} (2.24)

Where \( I = \) Gross national investment and \( S = \) gross national saving, \( X = \) exports of goods and non-factor services. \( IM = \) Imports of goods and non-factor services.

The right hand side as well as the left hand side of equation (2.24) can be split into the private and the government sector components as follows (Kelly 1982).

\[ CAD = (I_p - S_p) + (I_g - S_g) \] \hspace{1cm} (2.25)

Where subscripts p and g refer to private and public sectors respectively. The first term on the right hand side of equation (2.25) is the private sector resource gap (surplus or deficit). The second term is the government sector resource gap or more specifically, the overall government surplus or fiscal deficit. This shows that the investment saving gap of the government sector is the appropriate fiscal target and so also the income deficit of the private sector.
This framework can be used to show relationship between fiscal variables and the overall balance of payments. If we subtract net inflow of official capital (including grants) and private capital from both sides of the equation we get,

$$CAD - F_p - F_g = (I_p - S_p - F_p) + (I_g - S_g - F_g)$$  \hspace{1cm} (2.26)

Where $F_p = \text{net private capital inflows}$ and $F_g = \text{net official capital inflow}$.

The above expression shows that the change in reserve or the overall balance of payment outcome is equal to net domestic financing of the government and the private sectors. It shows that domestically financed government deficit is the appropriate macro economic fiscal target in considering policies that influence the stock of foreign exchange reserve.

Equations (2.25) and (2.26) are ex-post accounting identities and conditions for equilibrium in the ex ante sense. At the end of the period, the identity holds good. However, it does not specify how the economy moves from one point to another.

The identities can be used to check the internal consistency of the financial programming. The relative contributions of the two gaps, the public sector deficit (or surplus) and the private sector deficit (or surplus) in restoring balance in the current account deficit can be assessed. Quantification of the relative contributions entail functional specification of the various key macro economic variables and their estimation.

Policies that target the two gaps separately can, in fact, restore balance in the external account. However, policies cannot target these two gaps independently of one another. Fiscal policy instruments like subsidies, tax rates and changes in the government expenditure would also ultimately affect the private sector. The obverse is also true. In addition, as argued by Kelly (1982), purely exogenous factors such as terms of trade or foreign demand can affect the gaps. So, the ex post measure of a change in fiscal deficit would reflect both endogenous as well as exogenous changes.

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In fact, targeting fiscal deficit is a difficult proposition because revenue collection to a large extent, depends on the level of economic activity in the economy. The level of economic activity (or GDP growth) is influenced by government expenditure. The endogeneity of revenue collection would, therefore, render the task of targeting fiscal deficit a challenging one. How the expenditure compression is brought about would also affect the growth and restoration of macroeconomic balance.

2.10 The impact of fiscal deficit on trade deficit

In fact, any change in the public sector gap may eventually influence the private sector saving investment gap and thus the degree of correspondence between the fiscal deficit and the trade deficit becomes weak. Changes in policy instruments (for example tax rates, government expenditures, subsidies) that change the fiscal deficit may change the private sector deficit or surplus. Similarly, policies that change the private sector balance (for example, interest rate, credit policy, exchange rate, tax incentives for saving and investment) may also affect the fiscal deficit. Moreover, exogenous factors such as changes in the terms of trade and in foreign demand may also affect the deficit. Thus the ex-post measure of the change in the fiscal deficits is not a measure of the impact of fiscal policy on the BoP but rather a measure of the effect of all policies (including fiscal policies) as well as endogenous and exogenous factors.

2.11 A review of the literature on ‘twin deficit’

In the previous sections, we have briefly reviewed the literature on macro economic policy in an open economy with particular reference to the fiscal policy under two broad paradigms, the monetarism and the Keynesianism. Several broad issues emerge from the discussion, which are crucial for an understanding of the macro functioning of the economy and building up of a model.
2.11.1 The issue of causation

An analysis of any macro economic policy, entails a clear indication towards the direction of causation. We deal with the New Classical Macroeconomics, the Monetarism and the Keynesian macroeconomics to throw light on the issue of causation in the context of the macroeconomic policy.

The concern with the fiscal deficit in the conventional stabilization policy is at odds with the evolution of the macroeconomic theory. Barro (1974) in his seminal paper showed that government intervention will be neutralised by the private sector behaviour. This argument revived the ‘Ricardian Equivalence’ that the bond financed deficit will have no impact on aggregate demand as the private sector will save an equivalent amount in anticipation of future taxes to be levied by the government to repay the borrowing. There are strong assumptions to be fulfilled in order to establish Barro’s proposition, like perfect capital markets, absence of liquidity constraints, inter-generational sympathy, infinite horizons, etc. The interesting point is that the same neutrality of the private sector is invoked to establish the interdependence between the fiscal deficit and the trade deficit. The excess demand effected by the rise in fiscal deficit, over and above what the economy can absorb, spills over to the external account and hence the need for fiscal correction.

In the monetarist’s macro framework, with money supply being assumed to be exogeneously determined by the monetary authority, the causality is clearly stated to run from money to the other nominal variables. This essentially denies the argument that money supply is endogenously determined as credit, the asset side of the balance sheet, which is argued to be mainly demand driven. Though credit can be controlled by the banking authority, exercise of restraint may not be desirable under pressure of demand from the private sector. In the face of demand, IOUs can also surface as substitutes for money. This is particularly so under a regime where credit finances the public sector deficit which is determined by the entire gamut of

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government policy decisions, particularly fiscal policy. Moreover, the central bank can only control the stock of high-powered money, a part of which is foreign reserves. The overall level of money supply can be controlled only when the money multiplier is stable which again depends on the behavioural decisions of the public with respect to cash and deposits and the banking system remains fully loaned up. Real variables, like output and employment, are to be determined by the real forces. Credit may have a real impact as it finances the expansion of productive capacity and can ease supply constraint of the relevant sectors.

For the Keynesianism, the causality runs from expenditure (or investment) to income (or, saving). Mere production does not guarantee income generation. Income is generated only when expenditure is incurred. So, income (or, saving) at any point of time is determined by the expenditure (or, investment) incurred.

### 2.11.2 The distinction between short run and the long run

The distinction between the short and the long run, which underlies the formulation of the functional form, is not often stressed. The distinction is important as the functioning of the economy as envisaged by the model depends on the functional form, which if not clearly specified keeping in mind the difference between the short and the long run, would freely switch from the short to the long run in an unwarranted fashion as if it matters little.

The monetarists recognise the distinction between short and the long run. Before the emergence of the rational expectations, Friedman (1956, 1968) argued that monetary policy may have some impact on the real output by creating a deviation between expected real wage and the actual wage rate as actual inflation deviates from the expected inflation. In the long run, as the workers begin to realise that the actual inflation is more than anticipated, they revise their inflationary expectations upwards, the difference between the actual and the expected inflation eventually disappears and the economy reverts back to the original configuration. Therefore, the increase in money supply gets fully reflected in the price level. With the advent of rational expectation school, even this short run deviation is assumed away.
as the workers correctly anticipate the expected inflation, ruling out the possibility of a change in the real output even in the short run. The question remains whether the workers can be expected to form their expectations in a rational way taking into consideration all the relevant information of the economy particularly in an underdeveloped country where the majority of the workers are in the unorganised sector with their wages not being indexed and a complete knowledge about the economy and its functioning is a remote possibility.

The treatment of the multiplier in Keynes (1936) deserves attention in this context. Investment finances itself as it leads to a series of income generation and generates equivalent amount of saving. The multiplier, therefore, works itself out over several periods, which are subsumed under one period. Several aspects of the economy, which are assumed to be given to begin with, remain no more so in the long run, for example, the income distribution. In general, how the investment function would behave in the long run, its lag structure, is not known. The lag structure may be complicated enough. Moreover there is a time lag between the decision to invest and the investment expenditure actually incurred (Kalecki 1971). Keynes (1936) argued, that investment being a function of expectations, may best be treated to be given as it is difficult to model expectations.

As series of income generation takes place, tax collection changes and so in effect the government expenditure or deficit may also change. In the derivation of the conventional multiplier, this is not at all recognised. The distinction between the marginal propensity to consume (mpc) of wage earner and the profit earner is not made and therefore application of a single mpc becomes questionable for the entire economy consisting of different classes.

Therefore, if we choose to restrict ourselves to the short run, the transmission mechanism has to be explicitly shown. If we recognise that wages and profits are the two sources of income, expenditure generates income primarily for the profit earners as wage earners consume whatever they earn (Kalecki 1971).
2.11.3 The inter-linkages among the gaps

In order to establish the linkages among the gaps, specification of the behavioural function and hence causality needs to be established. The Fiscal Approach to the BoP, shows that a change in fiscal deficit may be fully reflected in the external account gap, under the assumption of neutrality of the private sector. The result is obtained under specific assumptions about the behaviour of the private sector. Unless the government expenditure is directed towards importables the trade deficit will not be affected immediately. To the extent, government expenditure is directed towards importables, given export, trade deficit would deteriorate. Otherwise, in the short run it is profit (or, income), which will be affected. Feldstein (1992) raised a crucial question with regard to the efficacy of trimming the fiscal deficit to restore balance in the current account. Any change in fiscal deficit amounts to a change in national saving, which would necessitate adjustment not merely in trade balance but also in investment. This is because equality between saving and investment is a crucial long run macro economic relationship. This alternative view can be interpreted in the national income identity expressed as follows,

\[ S - (G - T) = I + TB \]  

(2.26A)

The extent of change in investment depends on the interest elasticity of investment and responsiveness of net exports to the exchange rate. The rise in inflation resulting from a rise in fiscal deficit would cause exchange rate overvaluation. This, in turn, would worsen net exports. The concept of ‘twin deficit’ probably relies on a direct relationship.

The claim of the monetarist that excess supply of money leaks out of the system does not recognise how the true mechanism of money supply works and expenditure generates income first. So, there is a process, which works out in the long run.
2.12 A review of empirical studies

Immediately after the crisis, as stabilization policy was introduced, Rakshit (1991) made an attempt to study the empirical relationship between the gaps. He observed no relationship between either between fiscal deficit and rate of inflation, or, between fiscal deficit and the trade deficit. Though the technique used was very elementary, even a cursory look at the data and the plot suggest absence of any relationship between the said pair of variables. The public sector borrowing requirement and the import-export gap seem to be negatively related, a counterintuitive result. Similar counterintuitive results were obtained for export and import separately. With respect to current account deficit the results showed an improvement. During the nineties, the trajectory of the fiscal deficit bears little relationship with the current account deficit. Balakrishnan (1997) raised a fundamental issue regarding the interpretation and validity of the ‘twin deficit’ argument. Since the ‘twin deficits’ argument is based on an accounting identity, the annual changes in fiscal deficit should be reflected in the annual changes of the external account deficit contemporaneously, if the relation were valid. The absence of any behavioural relationship does not leave any scope for lags.
The two charts (2.1 and 2.2) show how the different measures of public sector deficits have moved over time. The ups and downs in the primary deficit follow closely that of fiscal deficit though the difference between them has risen over time. The revenue deficit appears to be a major determinant of the movement behind the fiscal deficit. Chart 2.2 shows the correspondence between two measures of public sector deficit. While the fiscal deficit of the centre is the targeted one, the investment saving gap of the public sector is the relevant concept for stabilization policy.
Mohanty and Joshi (1992) examined the nature and extent of linkage between fiscal deficit and trade deficit in India. The paper shows that a programmed reduction in fiscal deficit would lead to a fall in trade deficit in the medium run at the expense of recession. The paper argues that there is a strong enough reason to believe that excess of monetary expansion over and above what is absorbed in the economy tends to spill over to the external account. As follows from the NIAI, they argue that the relevant fiscal deficit is the public sector deficit including Centre, State, UTs and PSUs. Simple causality tests such as Sim’s test, Granger’s test were carried out to establish that “fiscal deficits do indeed cause trade imbalances”.

Bahmani-Oskooee (1992) used cointegration technique to determine which policy tool has a long-run relation with the current account and the trade balance of the United States. While full-employment budget was found to have a long run relationship with CAD and the

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trade deficit, the broad measure of money supply (M2) was marginally cointegrated with trade deficit.

Anoruo and Ramchander (1998) also studied the relationship between the fiscal deficit and trade deficit for India for the period 1965-93. The main focus of the paper is on the validity of the concept of 'twin deficit' in a multi-variate framework, rather than in a bivariate one, as omission of relevant variables, they argue, often distort the causality inferences. Simple correlation analysis and inferences drawn from Vector Auto Regression (VAR) indicate that fiscal deficits are not causally prior to trade deficits but trade deficits are causally prior to fiscal deficit. This is contrary to most findings in the literature, particularly for United States and the other developing countries. They argue that the widening of trade deficit worsens the economic situation, as government expenditure is raised to overcome the crisis. On the basis of this, they argue that fiscal deficit cannot be treated as a fully controlled policy variable. The study also reveals that real output and the exchange rate jointly cause the fiscal and the trade deficit. Monitoring the two variables may be desirable to tackle the problem of twin deficit.

Rao (1999) has attempted to develop a merged model by integrating the financial programming model of the Fund with the financial requirements approach of the World Bank so as to remove the existing dichotomies between the real and the financial sectors of the economy. He has highlighted the need for sound financial policies to support the growth oriented adjustment programmes in order to create an atmosphere of confidence in the future as well as its management of the economy. The macro economic impact of interest rate and the exchange rate on the key macro variables like growth, saving, investment, and the BoP need to be understood.

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2.13 Empirical results

Policy analysis is based on the relationship and the direction of causation amongst the variables. In order to find out in which direction the causality runs, we must first establish that the variables are related in the long run, i.e., they are cointegrated. If they deviate from one another in the long run then it is not meaningful to undertake an exercise to find out the direction of causality. Given the non-stationarity of the major macro variables, we first have to study the order of integration of these variables, i.e., the number of times a variable needs to be differenced in order to make it a stationary series. The prerequisite for undertaking a study on whether two variables are cointegrated, is to ensure that they are of the same order of integration.

In order to find out whether fiscal deficit affects external account deficit, we need to establish the existence of a long-run relationship between them. External account deficit may be given by the trade deficit and current account deficit. As discussed earlier, we have argued that though the gross fiscal deficit of the centre is the targeted one, primary deficit and investment saving gap of the public sector (including all tiers of government as given by CSO) are also the relevant measures.

The first step is to study the stationary properties of these five variables, three measures of public sector deficits, the fiscal deficit and the primary deficit of the centre and the investment saving gap of the public sector for the period 1970-71 to 1996-97. We consider the variables as percentages of GDP as fiscal deficit as a percentage of GDP is the targeted one. If the variables are expressed as percentages of GDP, the element of non-stationarity is partly eliminated.

If $y_t$ is the variable, we consider the following regression equation to test for the null hypothesis that $y_t$ is non-stationary (or it contains a unit root, $H_0:\gamma - 1 = 0$) against the alternative, $H_1: \gamma < 1$.

$$\Delta y_t = \alpha_0 + \gamma y_{t-1} + \alpha_1 t + \epsilon_t$$  \hspace{1cm} (2.27)
There can be two more regressions with (a) \( a_2 \) and \( \gamma \) equal to zero and (b) \( a_2 \) equals zero. In order to allow for lags, we include the auto-regressive processes.

\[
\Delta y_t = a_0 + \gamma y_{t-1} + a_2 t + \sum_{i=2}^{p} \beta_i \Delta y_{t-i-1} + \epsilon_t
\]

(2.28)

All the variables are I(1). In none of the regression, either any lag or any trend is significant. The share of current account deficit (CADS) in GDP is stationary at level, i.e., integrated of order zero, i.e., I(0) at 10% level of significance.

**Table 2.1: The Estimated ADF test statistics for levels and first differences**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>First difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDS</td>
<td>-1.911 (0)</td>
<td>-5.477 *** (0)</td>
</tr>
<tr>
<td>PDS</td>
<td>-1.761 (0)</td>
<td>-6.443*** (0)</td>
</tr>
<tr>
<td>ISGS</td>
<td>-2.018 (0)</td>
<td>-5.757*** (0)</td>
</tr>
<tr>
<td>TDS</td>
<td>-2.054 (0)</td>
<td>-5.558*** (0)</td>
</tr>
<tr>
<td>CADS</td>
<td>-2.932 *(0)</td>
<td>-8.001*** (0)</td>
</tr>
</tbody>
</table>

Note: The numbers in the parenthesis indicate the number of lags.

* 10 percent level of significance, ** 5 percent level of significance, *** 1 percent level of significance.

Since the variables are all integrated of the same order, i.e., I(1) we can now examine the existence of any long run equilibrium relationship. The trade deficit and current account deficit can be argued to be affected by the three measures of public sector deficit.

We follow Engle and Granger two-step procedure (Granger 1987; Enders 1994) to find out whether they are cointegrated. This involves running OLS on the variables and testing for the existence of the unit root of the estimated residuals. If the estimated residual contains unit root, or is non-stationary, then it can be inferred that the variables do not move together in the long run but deviate from one another. If \( \{y_t\} \) and \( \{z_t\} \) are I(1), the next step is to estimate by OLS the following long run equilibrium relationship.

\[
y_t = \beta_0 + \beta_z z_t + \epsilon_t
\]

(2.29)
If \( \{y_t\} \) and \( \{z_t\} \) are cointegrated, the actual residual sequence from this equation \( \{e_t\} \) is estimated. We consider the autoregression of the residuals,

\[
\Delta e_t = a_1 e_{t-1} + \varepsilon_t
\]  

(2.30)

If the standard DF or ADF test suggest \( \{e_t\} \) is stationary, we can argue that \( \{y_t\} \) and \( \{z_t\} \) are related to each other and therefore are cointegrated.

In the table below we furnish the ADF estimated of the residuals of the Cointegrating Equations.

<table>
<thead>
<tr>
<th>Hypothesised Relationships</th>
<th>ADF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TDS, FDS)</td>
<td>-2.55 (0)</td>
</tr>
<tr>
<td>(TDS, PDS)</td>
<td>-2.51 (0)</td>
</tr>
<tr>
<td>(TDS, ISGS)</td>
<td>-2.32 (0)</td>
</tr>
<tr>
<td>(CADS, FDS)</td>
<td>-4.64***(0)</td>
</tr>
<tr>
<td>(CADS, PDS)</td>
<td>-5.14***(0)</td>
</tr>
<tr>
<td>(CADS, ISGS)</td>
<td>-4.89***(0)</td>
</tr>
</tbody>
</table>

Note: The numbers in the paranthesis indicate the number of lags.

* 10 percent level of significance, ** 5 percent level of significance, *** 1 percent level of significance.

It is clear that the null hypothesis of no-cointegration is rejected for all the measures of deficits pertaining to CADS only. So current account deficit can be argued to be related in the long run with the three measures of deficit.

In order to ascertain the direction of causation, we resort to the Error Correction Mechanism (ECM). If the variables are cointegrated, then there exists an error correction mechanism, which brings any variable back to the equilibrium path, if it deviates from the long run equilibrium. This requires the error of the last period to be statistically significant.
If the variables are cointegrated, the residuals from the equilibrium relationship can be used to estimate the error correction model. If \{y_t\} and \{z_t\} are CI(1,1), the variables have the error correction form:

\[
\Delta y_t = \alpha_1 + \alpha_y \hat{e}_{t-1} + \sum_{i=1}^{\alpha_{11}} \alpha_{11}(i) \Delta y_{t-i} + \sum_{i=1}^{\alpha_{12}} \alpha_{12}(i) \Delta z_{t-i} + \varepsilon_{y t} \quad (2.31)
\]

\[
\Delta z_t = \alpha_{21} + \alpha_z \hat{e}_{t-1} + \sum_{i=1}^{\alpha_{21}} \alpha_{21}(i) \Delta y_{t-i} + \sum_{i=1}^{\alpha_{22}} \alpha_{22}(i) \Delta z_{t-i} + \varepsilon_{z t} \quad (2.32)
\]

Where \(\alpha_y\) and \(\alpha_z\) are speeds of adjustment. One of them needs to be different from zero so that \(y_t\) and \(z_t\) remain together. If \(\alpha_y\) is zero, then \(y_t\) does not respond to the equilibrium error and if \(\alpha_{12} = 0\) statistically then \(z_t\) is said not to Granger-cause \(y_t\).

The focus of the Error Correction Mechanism is on the lagged error term. As explained earlier, the lagged error term is the residual estimated from the previously estimated cointegrating equations. The lag term provides an explanation of short-term deviations from the long-run equilibrium of the test equations. We obtained three cointegrating equations between CADS and all three measures of deficit.

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Chart 2.3 shows the extent of congruence between the fiscal deficit and the trade deficit, though we have not obtained any statistically significant relationship between them. Despite a relatively high fiscal deficit, trade deficit could be brought under control in the nineties. It shows that the issue of ‘twin deficit’ is hard to accept in case of India during 1970-71 to 1996-97.

In the table below we report the results of ECM with respect to CADS with FDS and PDS only. The results clearly indicate that CADS responds to short-term deviation as well as one period lag value of FDS and PDS. The significance of error term in the equation when CADS is the explanatory variable shows that deficits (fiscal and primary deficit) causes CADS and not the other round.
Table 2.3: Error Correction Estimation: Current account deficit and Fiscal deficit

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Explanatory Variables</th>
<th>Coefficient</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCADS</td>
<td>Constant</td>
<td>-0.057</td>
<td>0.738</td>
</tr>
<tr>
<td></td>
<td>error (-1)</td>
<td>-1.442</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>dFDS(-1)</td>
<td>-0.826</td>
<td>0.000***</td>
</tr>
<tr>
<td></td>
<td>dFDS(-2)</td>
<td>-0.147</td>
<td>0.498</td>
</tr>
<tr>
<td></td>
<td>dCADS(-1)</td>
<td>0.491</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td>dCADS(-2)</td>
<td>0.344</td>
<td>0.090</td>
</tr>
<tr>
<td>DFDS</td>
<td>Constant</td>
<td>0.013</td>
<td>0.952</td>
</tr>
<tr>
<td></td>
<td>error (-1)</td>
<td>-0.648</td>
<td>0.169</td>
</tr>
<tr>
<td></td>
<td>dFDS(-1)</td>
<td>-0.383</td>
<td>0.169</td>
</tr>
<tr>
<td></td>
<td>dFDS(-2)</td>
<td>-0.456</td>
<td>0.116</td>
</tr>
<tr>
<td></td>
<td>dCADS(-1)</td>
<td>0.407</td>
<td>0.238</td>
</tr>
<tr>
<td></td>
<td>dCADS(-2)</td>
<td>0.112</td>
<td>0.656</td>
</tr>
</tbody>
</table>

Note: *** 1 percent level of significance
Chart 2.4: The Relationship between Fiscal Deficit and Current Account Deficit

The Relationship between Fiscal Deficit and Current Account Deficit


Table 2.4: Error Correction Mechanism: Current Account Deficit and Primary Deficit

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Explanatory Variables</th>
<th>Coefficient</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCADS</td>
<td>Constant</td>
<td>-0.135</td>
<td>0.514</td>
</tr>
<tr>
<td></td>
<td>error (-1)</td>
<td>-1.467</td>
<td>0.002***</td>
</tr>
<tr>
<td></td>
<td>dPDS(-1)</td>
<td>-0.646</td>
<td>0.045**</td>
</tr>
<tr>
<td></td>
<td>dPDS(-2)</td>
<td>-0.293</td>
<td>0.275</td>
</tr>
<tr>
<td></td>
<td>DCADS(-1)</td>
<td>0.398</td>
<td>0.225</td>
</tr>
<tr>
<td></td>
<td>DCADS(-2)</td>
<td>0.293</td>
<td>0.207</td>
</tr>
<tr>
<td>DPDS</td>
<td>Constant</td>
<td>-0.066</td>
<td>0.733</td>
</tr>
<tr>
<td></td>
<td>error (-1)</td>
<td>-0.005</td>
<td>0.959</td>
</tr>
<tr>
<td></td>
<td>dPDS(-1)</td>
<td>-0.314</td>
<td>0.283</td>
</tr>
<tr>
<td></td>
<td>dPDS(-2)</td>
<td>-0.149</td>
<td>0.549</td>
</tr>
<tr>
<td>DCADS(-1)</td>
<td>0.091</td>
<td>0.763</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>DCADS(-2)</td>
<td>0.001</td>
<td>0.993</td>
<td></td>
</tr>
</tbody>
</table>

Note: Numbers in parentheses indicate number of lags. ** 5 percent level of significance and *** 1 percent level of significance.

In both the tables, Table 2.3 and 2.4 we can see that the error term is highly significant along with the one period lagged measure of the deficit.

### 2.14 Concluding remarks

In this chapter, we have critically reviewed the monetary approach and the fiscal approach to the balance of payment as well as the neo classical approach to assess the rationale behind targeting fiscal deficit relative to the size of the economy to restore balance in the external account. A survey of the literature shows that the propositions of the different schools are not conclusive in this regard. The underlying assumptions to establish the correspondence between the two deficits, fiscal and the trade, are too strong to be accepted. In the survey, we have found that there has been a tendency to focus on two gaps at a time, the ‘twin deficit’. In order to ascertain inter-relationships amongst the gaps, functional specification of the key variables are required. This, in a way would also make explicit the underlying causality of the model. Unless empirically tested, exact specification of the policy measure is not possible. There may exist a relationship amongst the three gaps, which is complicated and can vary from time to time with the change in policy and structure of the economy.

The existence of the black economy would further complicate the picture and an objective assessment of the macro economic performance. The private sector saving investment gap and the external gap are different than what are reported as corresponding to black income generation, there are black saving and black investment along with mis-
invoicing of exports and imports. Even the 'true' macro impact of the fiscal deficit is likely to be different as a part of it accrues to the private sector as illegal transfers. This is because of the cuts and commissions involved in the public sector transactions. So the existence of the black economy complicates the picture as all the major macro variables are affected and the hypothesised relationships amongst the gaps change.

The other important issue is the application of the method. We have highlighted two major issues, one, the issue of causation and the distinction between short and the long run. These are vital for a proper assessment of the model and its implications for policy formulation.

Incorporation of the black economy is therefore, imperative for a proper assessment of the gaps and the underlying 'true' economic relationship amongst the three gaps. A proper analysis requires construction of a model keeping in mind the methodological issues as well as the presence of the black economy as discussed above.