

Theoretical Framework: Some Issues of Macro-economic Stability & Growth

INTRODUCTION

A macroeconomic instability situation usually takes the form of accelerating inflation and unsustainable fiscal and current account deficits. On the contrary, stabilization involves returning to low and stable inflation and a sustainable fiscal and current account position. Stabilization is obviously necessary in response to a macroeconomic crisis, but structural reform may or may not go with stabilization measures. Since some reforms may amplify the macroeconomic problems, it has been argued that stabilization should precede structural reforms. However, the content and timing of the stabilization measures must be considered in the light of the macroeconomic situation.

The purpose of this chapter is to digress briefly the theoretical framework incorporating relevant predilections in view of the importance to macroeconomic policies on growth and the underlying macroeconomic adjustments in an economy that would come to help gaining the empirical and analytical later part of this research, as is used for pedagogical discussion. Thus it is necessary to recall the salient aspects of instability issues in alternative theoretical paradigms in order to ensure clarity and smoothness and to place the research in correct perspective. In other words, theoretical instability channels underlie in the role of policies and thus theoretical and policy interaction constitute economic tradeoffs among policies, variables and outcomes through which instability is commonly measured. This chapter sets in to discuss the determinants of macroeconomic instability theoretically.

In such a context, the following issues like fiscal adjustment, twin-deficit problems, investment-growth nexus, devaluation, exchange rate, money-supply – price level, the counter-cyclical nature of inflation, the impact of absorption on reserves, the evolution of the debt-income ratio, the relationship between real interest rate and growth, the sustainability of the fiscal stance, amongst others, could act as theoretical guideposts for the formulation of issues in the role and conduct of macro-economic stabilization policy. These theoretical points would

enable the present research to translate the implied interrelationships into various policy - relevant solutions for some of the urgent structural adjustment problems confronted the Indian economy over the studied sample period. This chapter provides the following lines of approaches for analyzing responses towards such imbalances. Theoretically, it would be possible to predict the effects of policy relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as inflation, international reserves, savings, investment, fiscal deficits, BoP, and, above all, economic growth.

5.1 THEORY OF FISCAL ADJUSTMENT

While the pace of fiscal adjustment has to pay attention to cyclical factors, it is certainly important to speed up fiscal adjustment during periods of boom and recovery when there is a natural tendency for the budget to improve. A prime essential of macroeconomic stability in the medium and long-run is the sustainability of the fiscal deficit of the government. Such fiscal deficit can be financed by printing money, borrowing domestically, or borrowing abroad. However, excess reliance on each of these methods can lead to a crisis. If fiscal deficit is financed through domestic borrowing, the relationship between the interest rate and the growth rate of GDP is critical. If the former surpasses the latter, any primary deficit net of the inflation tax leads to a debt trap, in other words, to an explosive debt/GDP ratio. This is clearly unsustainable and would lead to the government reneging on the debt either explicitly or indirectly by eventual monetization and hyper-inflation and thereby the high interest / inflation trap and the subsequent spectre of an economic slowdown, which is often a leading indicator of recession [Rao, 2000].

Thus to analyze the fiscal stance, it is essential to understand the relationship between real interest rate (cost of capital) paid on the internal debt (r) and growth rate of real output (g). For such theoretical context, let 'd' represents the ratio of internal debt to GDP at market prices, i.e., $d = ID/GDP$. The movements in the debt-income ratio are closely related to its proximate determinants given by the following equation: $\Delta d = (r-g) d + x$; where Δd = change in the debt-income ratio, r = the implicit interest rate on internal debt less the inflation rate, and x is the primary deficit to income ratio, i.e., $x = PD/GDP$. A primary deficit is in theory sustainable if the interest rate is less than the growth rate of GDP because the debt/GDP ratio would converge

to a limit. However, this notion of sustainability is based on the assumption of constant values of the interest and growth rates. If the primary deficits remain high, there would likely to be a large divergence between the actual debt/GDP ratio and its theoretical limit [Rao, 1999].

Fiscal sustainability is critically associated with the excess of the growth rate over the real interest rate i.e., $r - g < 0$. Thus it is important to examine the relationship between these two variables. On this point, it is true that a rise in the real rate would by weeding out unproductive investment, increase the productivity of capital. It is thus hypothesized that there should be an inverse relationship between the real rate of interest and the incremental capital-output ratio (ICOR), because the reciprocal of the latter is a measure of the productivity of capital. This means that a rise in the real interest rate would decrease the ICOR (i.e., increase the productivity of capital). It is equally true that a rise in the real interest rate could reduce the investment rate per se. Since the growth rate is the product of the marginal productivity of capital and the investment rate, the overall effect of the real interest rate on the growth rate would depend on the relative magnitudes of these two conflicting effects; it seems probable that at very high real rates, the negative impact would outweigh the positive impact, thereby causing a contraction in growth [Rao, Samant and Asher 1999]. The difference between the actual fiscal deficit (X) and the cyclically neutral fiscal deficit (CNFD) is the fiscal stance (FIS); i.e.,

$$FIS = X - CNFD$$

$$\& CNFD = g \text{ GDP}^* - t \text{ GDP}$$

Where, g is the expenditure- to -nominal GDP ratio, and t is the revenue –to-nominal GDP ratio, both in a given base period, GDP^* is the trend value of GDP. A positive FIS implies an expansionary stance. And fiscal impulse is the inter-year change in the fiscal stance; i.e., fiscal impulse = ΔFIS

5.2 THEORY OF EXTERNAL SECTOR ADJUSTMENT

5.2.1 TWIN - DEFICIT PROBLEM

If the fiscal deficit is financed by borrowing abroad, the process in turn would imply that debt sustainability requires that the interest rate on external borrowing be less than exports [Joshi & Little 2004]. If this condition is realised, a primary deficit (i.e., non-interest) in the current account of the balance of payments is sustainable. If there is a large primary current account deficit, it would imply a high terminal external debt/export ratio, which is likely to raise the

interest rate at which the country can borrow and there would be credit rationing. It is important to note that public sector deficits can increase external debt in two ways: (a) by direct public foreign borrowing and (b) by increased internally held public domestic borrowing which is likely to spill over into current account deficit and increased private foreign borrowing. If there is excess demand situation with a fiscal deficit and current account deficit, this problem can be eased in two ways: (a) fiscal retrenchment accompanied with expenditure switching policy such as exchange rate devaluation (or depreciation) and (b) by policies to promote private investment.

Much of the underlying theoretical debate of the structural adjustment programme is on the relationship between the gross fiscal deficit (GFD) and the current account deficit (CAD). The twin-deficits are largely the results of the development strategies being followed by the country as well as macroeconomic policies pursued by its major trading partners. The national income identity decomposing domestic absorption into its basic components incorporating the balance sheet accounting identity of the assets and liabilities of monetary system in the presence of external sector budget constraint transformed to savings-investment balance states that aggregate domestic investment is financed by domestic savings and foreign savings (or current account deficit) i.e.,

$$I = S + CAD; \text{ where, } I = I_g + I_p \text{ and } S = S_g + S_p$$

$$\text{Or, } I_p = S_p - (I_g - S_g) + CAD$$

$$\text{Or, } I_p = S_p - GFD + CAD$$

where, GFD = gross fiscal deficit and CAD = current account deficit of the domestic economy [Mohanty, 1997; Marwah and Klein, 1998; Chandrasekhar, 1999; Rao 1999; Rao et al. 1999a, 1999b; Ahluwalia, 2004]. GFD are caused due to any or all of the followings: excessive public sector investment, increasing government consumption in the form of subsidies to public enterprises, a reluctance to raise taxes and spending increased. CAD is foreign savings or positive savings of the foreign residents (of the external sector) in their dealings with the economy or, the balancing item between current external expenditures and foreign exchange receipts. The components of the former include total imports, net investment income accruing to the external sector from the government (or, interest on external debt by government), and net investment income accruing to the external sector from the private while

that of later include total exports, net official transfers that the government receives from external sources, net external receipts of the private sector comprising net transfer payments from the external to the private sector and net factor payments from abroad. Thus CAD must be financed either by drawing down international reserves (or net foreign assets) or by an increase in net capital inflows implying an increase in international indebtedness of the domestic economy.

The current account deficit as well as the gross fiscal deficit are generally linked within a general equilibrium framework as their basic proximate determinants, primarily the rates of inflation and growth, are themselves endogenous variables. Thus any meaningful analysis towards such imbalances suggests that their fundamental causes be specifically identified as the general equilibrium nature of the problem is not only a theoretical issue. Based upon the above identity, it indicates that improvements in the CAD can take place only if sectoral savings rise relative to sectoral investment. This also indicates that an increase in external savings i.e., the CAD can offset public sector dissavings whereby the pre-empting the crowding out of private sector investment. Now if the government fiscal deficit is corrected would that reduce the CAD? To ascertain the validity of this proposition, it has recently been a contentious policy issue in the context of the Indian economy particularly with the initiatives of structural adjustment programmes in the 1990s.

5.2.2 THEORY OF EXCHANGE RATE

This sub-section begins with some terminological preliminaries. As an empirical economic proposition the purchasing power parity (PPP) theory states that international prices of traded goods and services when converted to a common currency should equalise across national boundaries. Cassel (1921) viewed PPP as a determinant of “true equilibrium of the exchange”. However, there are many who have raised question about the validity of the PPP as a theory of exchange rate determination and accorded some value to the doctrine only when “disturbances are mainly of a monetary origin”. The broad consensus that has emerged in the literature about the validity of PPP has aptly been summarised by Rogoff (1996), “while few empirical literatures take PPP seriously as a short-term proposition, most impulsively believe in some variant of PPP as an anchor for long-run Real Exchange Rate”.

Following the British convention, the nominal exchange rate is the price of home currency in terms of foreign currency, i.e., so many units of foreign currency per unit of domestic currency. On the other hand, the American convention defines the nominal exchange rate as so many units of domestic currency per unit of foreign currency [Joshi & Little 1998]. However, the present research has followed the British convention. The absolute version of the PPP theory implies that the nominal exchange rate (E) is determined exclusively by the ratio of foreign price level (P_f) to home country's price level (P_h). In other words, nominal exchange rate is the price of one unit of foreign currency (i.e., \$) in terms of the home currency (Rs.). If law of one price holds for a particular commodity 'i' then PPP based nominal exchange rate for that commodity would be given as:

$$E_i = P_f^i / P_h^i ;$$

A fall in the exchange rate means a devaluation of the home currency, and a rise means an appreciation.

Expressing all variables in logarithms, the absolute version of PPP can be expressed as:

$$\log (E_i) = \log (P_f^i) - \log (P_h^i)$$

On the other hand, the relative version of PPP does not specify any relationship between the levels of exchange rate and prices of the traded commodities and instead it merely states that relative change in the nominal exchange rate should be equal to relative change in foreign price minus relative change in domestic prices (or, price differentials between the two countries), i.e.,

$$\Delta \log (E_i) = \Delta \log (P_f^i) - \Delta \log (P_h^i)$$

Thus test for relative version of PPP can be carried out merely as a test of whether the rate of growth in exchange rate has been able to offset the difference between the rate of growth in home and foreign price indices. However, theoretically PPP should be valid only for traded goods and in the absence of any such relevant price index for traded goods, a number of price indices like WPI (Wholesale Price Index) and CPI (Consumer Price Index) can be experimented.

On the other hand, the 'real exchange rate' is not an exchange rate in the ordinary sense but the proxy for the competitiveness of tradable goods and it can be defined in different ways

depending on the relative price that is the focus of interest. According to PPP theory, the real exchange rate (RER) can be defined in the long run as the nominal exchange rate (E) that is adjusted by the ratio of the foreign price level (P_f) to the home price level (P_h). Mathematically, it can be written as $RER = E P_h / P_f$. In terms of this definition, a decrease in RER can be interpreted as the real appreciation of the exchange rate. If PPP holds, then principal source of variation in RER should be the price ratios and not the nominal exchange rate. Consider the following expression of changes in RER:

$$\Delta \log (RER) = \Delta \log (E P_h / P_f) = \Delta \log (E) + \Delta \log (P_h / P_f)$$

The variance decomposition exercise vividly reveals that the variation in real exchange rate is dominated by the variation in nominal exchange rate, rather than by the price ratios as predicted by PPP theory [Nag & Mitra 1998]. The Nominal Effective Exchange Rate (NEER) is taken as representative of exchange rate. The NEER is a weighted average of the bilateral nominal exchange rates of the home currency in terms of foreign currency. In the construction of the NEER, the exchange rate of a currency is expressed as the price of one unit of that currency in terms of the numeraire foreign currency [Mathur 1999]. A rise (fall) in the NEER thus represents an appreciation (depreciation) of the home currency Rupee.

5.2.3 THEORY OF DEVALUATION

Devaluation is a stabilization tool to cure BoP disequilibria. However, foreign trade area of an open under-developed economy may itself be one of the structural constraints for macroeconomic stability particularly when the Marshall-Lerner-Robinson condition for the stability of the foreign exchange market stating that the sum of price elasticities of home demands for the foreign good and of foreign demand for the home good should at least be unity violates is linked to domestic structural rigidities due to low elasticity of supply of the exportable of the underdeveloped economy, and devaluation accompanying rise in the domestic price of the exportable may trigger an inflationary spiral. Moreover, capital mobility of capitalists could be one of the reasons for the balance of payments disequilibria of the under-developing economies [Ray, 1990]. The Marshall-Lerner expenditure-switching condition implies that a rise in exchange rate (devaluation) would improve the trade balance. However, in a situation where the export response is weak and the share of imports in variable costs is high, a devaluation could result in a domestic recession as tends to be contractionary if the decline in

the value of the Keynesian multiplier resulting from distributional shifts is greater than the increase in income resulting from the rise in the trade balance associated with the devaluation [Kaldor, 1978; Krugman and Taylor, 1978; Taylor 1983; Patnaik, 1991].

As long as to that extent that structural trade imbalances persist, 'capital flight' could simply take the form of exporters keeping their money abroad in anticipation of future devaluations, which could act as a barrier to capital inflow and in turn would involve depletion of foreign reserves. Thus the effects of devaluation on growth working through its effects on foreign savings (or to finance the current account deficit) are ambiguous. Moreover, that results in inflows of Foreign Institutional Investment (FIIs) and Portfolio Investment (FPI) more, which are financial capital for commercial credit and are more speculative and extremely unstable in nature for their easy repatriability and responding adversely to any instability either of the real economy or financial variables such as rate of inflation and the exchange rate; instead of Foreign Direct Investment (FDI) aimed at little impact on productive capacity creation and thereby impinges on growth. The factors that affect the profitability of investment opportunities in developing countries (or host country receiving the capital) include real and monetary factors in the host country such as growth rate of real GDP, inflation rate, appreciation in exchange rate, interest rate differentials, host country's financial system and government policies regarding financial management. One strand of theoretical thought in aiding the development and growth process include investment-led, import-led and export-led growth strategies while the other thought swayed from financial repression to financial deepening hypotheses in promoting macroeconomic growth and development [Agarwal 1997; Marwah & Klein 1998; Masih 1999]. The behavior of important variables related to BoP are exports, imports, current account balance, exchange rate, external debt, foreign exchange reserves, and net invisible earnings.

5.3 THEORY OF SAVINGS, INVESTMENT & GROWTH

Investment is one of key linkages through which macroeconomic policies influence the real sector. The nature of the linkage varies between countries, and the theories of investment differ in terms of the channel of influence. Theoretically, there are four popular investment approaches namely accelerator model, the cash-flow model, the securities valuation or Tobin's 'q' model and the standard neoclassical model [Bischoff 1971; Clark 1979]. All these models

focussed on the movements in net investment. One of the important mechanisms by which instability may occur is via the inefficiency of investment. It is evidenced that episodes of high inflation may lead to misallocation of investment across different sectors in an economy that consequently impact on efficiency of investment.

The theoretical and empirical studies point out that savings and investment have a pivot role to play in the instability adjustment process as they are the direct variables bearing upon macroeconomic policies that in the short to medium run causes to change in the intensity of use of resources, and the efficiency within which they are used, to be a major determinant of the long-run real growth rate of an economy. Such transmission channels combine both the real and financial factors as well. How the role of savings and investment is important in explaining economic growth discussed earlier in chapter 2, in which the traditional Harrod and Domar growth theory underpinned the investment rate as the prime mover of economic growth while the neoclassical growth theory considers investment rate to be important in explaining the level of per capita income, but not the growth rate of per capita income; and in the new endogenous growth theory, investment has more recently regained importance as a key determinant of economic growth.

5.3.1 PUBLIC & PRIVATE INVESTMENT / CROWDING –IN & - OUT

It is important to note that debt sustainability issue and the crowding out issue are connected. Even if long-run sustainability is not threatened, high fiscal deficits are undesirable because they may lead to crowding out of private investment or net exports. Certainly the magnitude of these effects depends on as to whether there is output slack and private savings are growing. However, private savings cannot grow fast enough reasonably indefinitely to absorb high fiscal deficits. If private investment is crowded out by unproductive public consumption, the growth rate of GDP would directly be reduced. Even if it is crowded out by public investment, there is a loss in terms of growth, if, as being often the case, private investment is more productive than public investment. If crowding out takes in the form of higher trade deficits, the economy's external debt increases. The growing volume of government borrowing may drive up interest rates and reduce private investment and GDP growth. Thus crowding out could be severe enough to lead to unsustainable debt. The fall in interest rates that follows from fiscal adjustment may help to 'crowd in' private investment, but this is not automatic as other

conditions are important to be met such as provision of infrastructure and the transparency and credibility of the reform process.

Fiscal policies affect private investment through three major channels: public investment, public deficits and the user cost of capital. The effect of public investment on private investment has to be understood with respect to two opposing views whether the ultimate effect of the former on the later is one of displacement or promotional by understanding the channels through which the effect is transmitted. One school (classical theory as well as its modern versions) argues that public investment must displace private investment. Or, more generally, when expenditure in growth process is financed through taxation, inflation or debt, utilising the scarce resources which normally is available for the use of private sector in the production of marketable goods, the effect works through the rate of interest, but the channel of influence may be the price level, depending on how much investment is financed, in which full employment output is always critical. And so it is claimed that deficit financing and thus government borrowing can crowd out private investment since both public and private sectors have to compete in terms of loanable funds which inevitably raises the rate of interest, thereby displacing private investment. In other words, debt-based deficits put pressure on domestic credit and consequently rise in interest rates leading to crowding out of private investment. On the other hand, the second school advocates that the net effect of increase in public investment on private investment is positive in Keynesian economy via the multiplier effect if the economy is operating below capacity, i.e., the crowding in effect is brought about by raising capital productivity, which in turn, pushes up the demand for inputs and other services. All these eventually raise the demand for output produced in the private sector and as a consequence an increase in private sector investments. Thus, the higher the complementarity between public and private capital, the more likely be that public investment would have a net positive effect on private investment. There is strong likelihood that an increase in government investment generally 'crowds in' private investment, and that a reduction in the former would reduce private investment as well. The critically important considerations in this respect are: (i) the extent to which public and private investments are competitive or complementary in nature; (ii) the position of capacity utilization in both consumer goods as well as capital goods industries; (iii) the ability to import capital goods, i.e., the foreign exchange reserve position, and (iv) the mode through which public investment is financed.

To examine the link between investment and growth, the present research needs to have a theoretical framework in order to build the analytical framework, which appropriately captures causality running in an empirically testable manner by using the gross investment rate rather than the stock of capital as is the appropriate indicator of investment in explaining long-term growth. One subsidiary interest of this research has been to ascertain empirically the relationship between the investment rate and the growth rate in the Indian economy with emphasis on the role of policy in mediating postulated relationship. Scott's theory of endogenous economic growth (1989, 1992) has certain features to purport the need of this present research from both theoretical and empirical points of view as provides an explicit role for policy to influence, interactively with gross investment, the relationship between investment and growth as gross investment captures both investment (capital formation) and technological effort. This theory allows for policy to impact on the relationship between investment and growth by impacting the efficiency of investment as gross investment combines both technological change and related policy factors.

5.4. POLICY RESPONSE TO EXOGENOUS SHOCKS: SOME THEORY

Economic theory emphasises the pivotal differentiation between temporary and permanent negative shocks to real income. A temporary shock is self-reversing and does not imply a reduction in permanent income. Current consumption needs therefore to be maintained above the temporarily low current income. But in the case of permanent negative shock, the underlying proposition is in favour of an immediate cut in consumption as income has gone down permanently. A reduction in food output due to drought is an example of temporary reversible shock and stabilisation requires the costs of stock – holdings or borrowings as optimal stabilisation measure based on the equality between marginal cost and marginal benefit principle with the usual assumption of diminishing marginal utility of income can only be attained in course of time. This principle suggests that the use of foreign exchange reserves or loans is clearly a cheaper method of stabilisation than building up of a buffer stock from domestic procurement or imports to stabilise food prices. This argument thus suggests no obvious role for demand management policy of the conventional type.

A rise in the international price of oil and the consequent deterioration in the terms of trade could in principle be permanent. This means that a rise in the price of imported oil would

reduce the country's real income permanently below its previous trend. Thus it may be optimal to postpone some of the necessary cuts in consumption fairly quickly and external borrowing for consumption may be used cautiously. The current account deficit can be expected to widen due to increase in oil import bill. This further influences the ratio of the current account deficit to exports to reduce. This in turn may require a depreciation of the nominal exchange rate for mobility of resources to shift production towards tradable goods and consumption switching (away) from them to combat inflation and BoP deterioration [Hamilton 1983].

The general argument on inflation is that it is an outcome of an array of factors such as monetary expansion, expansionary fiscal policy and deficit financing, excess demand, structural bottlenecks, inter-sectoral inconsistency and supply constraint, deficits in foreign exchange reserves, currency devaluation, poor harvest due to severe drought, changes in administered prices, oil price hike, exchange rate shock, interest rate shock, terms of trade shock etc. [Rani 1999; Murthy 2000].

CONCLUSION

This chapter has not attempted to examine which theory of growth and stability is more appropriate in the Indian context. Such an attempt falls outside the scope of this research. Rather, it has been interested in pursuing a more limited objective to ascertain theoretically the route of instability channels with emphasis on the role of policy in mediating the postulated relationships. In particular, it looks at the determinants of macroeconomic instability and the interrelationships between macroeconomic policies, variables and outcomes. These theoretical points would act as guideposts for subsequent empirical analysis explaining the instability linkages between real sector and financial sector indicators being influenced by macroeconomic policies and exogenous shocks to accurately predict the effect of policy-relevant variables such as interest rates, exchange rates, capital inflows, amongst others, on key macroeconomic outcomes such as fiscal deficits, savings, investment and inflation, external reserves and BoP, income distribution and, above all, economic growth in India.

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