INDIA'S EXTERNAL DEBT: GROWTH, DETERMINANTS AND IMPACT

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Chapter 1

Introduction

In the post-World War II era, the world saw the birth of many new nations. Primarily, they were the colonies of the industrialized countries and were developed only to supply raw materials to the colonizing country. Rightly, attention was focused to develop the economies of these countries. The earlier studies of the economic problems of developing countries has focused on a lack of capital, both physical and human. Rapid progress in solving these problems is seen to be hindered by a number of constraints—domestic savings, foreign exchange and human skills. In this setup, external finance can further growth by relaxing the first two constraints and promoting an expansion in productive capacity beyond what could be undertaken solely with national savings. Although there was no dearth of critics about the role of foreign capital, most economic theorists in the 1950s and the 1960s

accepted that external capital was necessary for accelerating growth and industrialization in the developing countries. Consequently, the policies in most of the developing countries were geared to reduce the impact of external shocks on the domestic economy, either by postponing them (with external capital)—thus providing more time for development—or by counteracting (through import substituting policies) them.

During this period (1950-70) official sources dominated capital flows to developing countries. Along with increasing the volume of aid, the developed countries, during this period increased the concessionality of their aid. Apart from external finance at favourable rates, developing countries also gained in the 1950s and the 1960s from a relatively stable world trading system of fixed exchange rates, preferential trading arrangements and an increasing number of commodity agreements within GATT. Although the terms of trade of most developing countries declined slightly during the post-World War II period, these favourable external developments were more than a compensation for the deterioration of the terms of trade. During this period, in spite of cross-country variations, the range of development experience was also good as most of the developing countries experienced moderate to strong growth performances.

In the first half of the seventies decade, two shocks hit the international system, which drastically altered the development prospects of the developing countries. The first one, the collapse of the Bretton Woods system of fixed exchange rates, occurred in August 1971 when the US government suspended the fixed-price convertibility of the dollar into gold and other currencies, imposed a 10 percent surcharge on imports and took other measures

aimed at eliminating its balance-of-payments deficits (prompted by the financing of Vietnam War). There measures ushered in a new international monetary regime in which at first (August 1971 to 1972) some major currencies were allowed to float (subject to exchange-control regulations) but by the following year (i.e. 1973), all the currencies were subject to a managed float. Since the new international monetary regime could expose the economies of the developing countries to international price fluctuations, this system proved particularly problematic for many developing countries.

The second development was the quadrupling of oil prices at the end of 1973 which immediately led to current account deficits of the oil importing developing countries and to parallel surpluses of the oil-exporting countries. The latters' preferences for liquid assets in the Euro-currency markets prompted the banks to look for new customers within the group of newly-industrializing countries, thus fulfilling the objective of recycling the petro-dollars. To minimize the risks associated with inflationary fluctuations, the variable interest rates were introduced.[1] As the increase in the demand for credit generated by the sharp rise in the oil prices was more than offset by an inflow of credit into the markets, until late 1970s, spreads (above that of LIBOR) were generally falling, real interest rates were barely positive and credit conditions in the international capital markets tended to favour borrowers.

[1]Typically, the variable interest rate uses London-Interbanking-Offer-Rate (LIBOR) as a benchmark for calculations. Depending on borrower's creditworthiness, spreads are also charged above it. Thus actual interest rate is LIBOR + spreads.

The adjustment to these shocks took time or was partially postponed leading to increased indebtedness from private and official sources. As the developing countries could also gain at the same time from buoyant market conditions in many primary products (the terms of trade improved in post-oil shock period), the overwhelming consensus in the 1970s was that increased indebtedness would not pose any long-term danger. Furthermore, because of favourable conditions in the capital markets and inflationary pressures generated by the oil price (and other commodity prices) increase, real debt burden of most developing countries remained low, real interest rates on bank loans and even more so on official loans were negative.

However, before developing countries could recover from the worst effects of the first oil shock, the second oil shock hit the developing countries in 1978. The second oil shock again led these countries to either finance adjustment or to postpone it, this time, however, at higher price and debt levels. But in contrast to the first oil shock, due to falling commodity prices and inflations, the terms of trade of non-oil developing countries deteriorated sharply this time.

Simultaneously, for combating inflationary pressures, a restrictive economic policy was adopted in most industrialized countries. In order to encounter the cost-pushed inflation that had originated due to the rise of fuel prices, domestic demand was reduced, even at the cost of unemployment. Particularly, the USA's policy of high interest rates had a great impact on the international capital markets. This policy aimed at diverting the financial resources that were available world-wide to the USA for financing the budget deficit affected the whole world's financial markets.

As many developing countries had taken most of their commercial credits at variable interest rates, this policy also pushed up their interest rates. Thus when inflation was reduced and historically high real interest rates ruled the markets, it became apparent that a lot of investments financed by foreign credits were economically viable only with low or negative interest rates but not with high positive ones.

The deepening of the restrictive monetary policies caused a further reduction of their already slow economic growth. The relative decline in their demand for the exports of the developing countries, in turn, resulted since 1981 in the fall of the export prices of the developing countries.[2]

The adjustment to the second oil shock proved problematic for many of the developing countries, particularly due to the emergence of protectionism (caused by continued recession and unemployment) in the industrialized countries. Partly due to the protectionism and in part due to the recession in world economy, the volume of world trade, which had grown at annual rates of 9-10 percent in the 1960s and of 6 percent in the 1970s, remained stagnant from 1979 to 1983.[3] Thus, rising nominal interest rates as well as declining export prices and quantities resulted in a sudden increase of the debt burden of the developing countries.

By the middle of 1982, growing concern arose in the international financial community regarding the ability of some of the larger borrowers to meet their external obligations on schedule. Consequently a sharp decline of

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[2]IMF, 'International Financial Statistics', 1988 issue.

[3]Ibid.

bank loans occurred in 1982. Thus, unanticipated credit rationing (partly triggered by Mexico's refusal to service debt) brought about the world debt crisis in 1982 threatening in effect the viability of the international financial system.

Under the leadership of IMF, a number of packages, combining additional financing from commercial and official creditors were organized to save the system in the post-1982 period. The IMF was immensely successful in the sense that all the major debtors had proved willing and able to service their debts.

The adjustment to the debt servicing also led to IMF's intrusion in macromanagement in the developing countries. In loose terms, the IMF-style adjustment came to imply trade liberalization, tight money and budget cutting, exchange rate devaluation and a reduction of government interventions in the markets. The expectation was that this set of policies would create incentives for the reallocation of resources towards internationally traded and/or tradeable commodities (exportables and import substitutes) and would enhance the foreign exchange position of the country. In the face of protectionist trends in the developed countries, these policies have only resulted in demand, employment and import containment in the developing countries and releasing in the process foreign exchange for debt service. Thus before the completion of the development process, developing countries have become capital exporters transferring resources (foregoing consumption and investment) to developed countries at an abnormal scale in order to pay interest obligations that can not be financed by net capital inflows. According to World Bank estimates, in each year since 1982, there

was a net transfer of resources from developing countries to their creditors, that amounted to US $ 37.6 billion in 1988 and was estimated to increase to US $ 42.9 billion in 1989.[4] Today debts are continuing to be serviced and the burden of making that possible has been placed squarely on the developing countries by the international financial system, with the assistance of IMF. Since the trade surpluses have been generated by demand compression and economic depression, rather by export growth, the adjustment to debt servicing carries vast domestic cost in the developing countries. In Latin America, the depression of economic activity caused 10.6 per cent decline in per capita income during the period 1981-84.[5]

In the post-1984, continued reverse transfers have kept the rate of growth of GDP depressed in the Latin American countries. As a whole, per capita incomes are below those prevailing at the beginning of the decade. Except for some Asian countries, the same story of declining per capita incomes is repeated in most of the developing countries in the 1980s. Thus, in terms of development, the 1980s was a lost decade for the developing countries.

Since the beginning of the development process after the independence and till late 1970s, India had been a marginal player in the international loan markets. Her needs of foreign exchange for capital accumulation (in the form of capital imports) were always there, but those were met from official sources. Her policy of inward-oriented development strategy encompassing

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[4]World Bank, 'World Debt Tables', various issues.

[5]World Bank, 'World development Report', various issues.

quantitative restriction on international trade and domestic production, controls on foreign exchange mobility, no doubt, kept her demands for foreign capital low. In the heyday of the international capital markets (i.e. in the 1970s) when interest rates were negative, developing countries were eager to continue their development process with borrowed funds. India, however continued her conservative stance on foreign loans and did not take advantage of the favourable conditions in the capital markets.

In comparison to pre-colonial period, the record of India's growth and industrialization under inward-oriented development strategy was no doubt impressive. However, India was not the only country that achieved a relatively high rate of growth of output in the post-colonial period. Indeed, several others not only achieved much higher rate of growth but also displayed a superior record in combating hunger, poverty and unemployment. As J. Bhagwati observed in the 1970s, 'It is now clear that the Indian economic performance, while a definite improvement over that of the pre-independence period, is less than satisfactory whether one takes the *capitalistic* index of growth rates of income or the *socialistic* indices of eradication of poverty and reduction of income inequality. International comparisons show that our growth rate during the last two decades since planning began has been bettered by a number of other countries of different sizes, political persuasions and economic ideologies: Taiwan, South Korea, Brazil and Israel are only a few of the examples that may be mentioned.'[6]

For long, the conventional wisdom (of the planners) was that a greatly

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[6]Bhagwati, J.N. [1973] *India in the International Economy*, pp. 1.

increased saving and investment effort would itself result in higher growth. So, the government policies were geared to maximize saving and investment efforts based on a detailed system of controls on international trade and domestic production. Indeed, the policies pursued over time did achieve high rates of savings and investment. But high rates of savings and investment, itself, did not result in high rate of growth. This happened even though savings as a percentage of GDP reached a high level of 24 percent in 1978-79. Thus, towards the second half of the seventies decade, it became clear that high rates of savings and investment are not an unerring recipe for growth: equally important is the efficiency with which they are utilized. As I.G. Patel quotes, 'Indian economic development has been inefficient in the sense that the returns on the vast amounts of investment made over the past three decades have not been adequate. The rate of savings and investment in India is high but the rate of growth is not because productivity is low and to some extent has tended to decline.'[7]

To increase the productivity of investment, attention was focused in the late 1970s on the various aspects of the inward-oriented development strategy. Most economists agreed that the main reason for this inefficiency lay in the regime of subsidies, controls, absence of competition and licences. As I.G. Patel puts it, 'Indian industry must be subjected increasingly to the forces of competition, both internal and international, if it is to become more efficient and that this requires that it be made increasingly free

[7]Patel, I.G. [1987] 'New Economic Policy: An assessment,' in Ruddar Datta ed., *India's New Economic Policy*, pp. 161.

from the shackles of industrial licensing, import control and other forms of control such as price control or control exercised ostensibly to overcome regional imbalance or monopoly and restrictive practices.'[8]

With such being the general perception in the country, it was not long before India shifted from the path of import substituting industrialization towards a more liberalized economic regime. Indeed, from 1978 onwards, India's development strategy began to shift from inward orientation to outward orientation, moderately at first and then more aggressively since 1984. The opening of the economy expectedly meant that initially her demands of foreign capital would be high. However, when India began her transition towards outward-oriented economic regime, conditions in the international loan markets were no longer favourable. Consequently in the 1980s, when market conditions deteriorated and real interest rates turned out to be positive, India began to borrow in a big way (compared to the Indian standard), increasing her exposure to official as well as commercial loans.

When developing countries, as a whole, are facing reverse transfers, declining per capita incomes and high interest rates, India's growing debt burden has rightly received the attention of the analysts. The objective of this study is to shed light on some key issues relating to India's external debt. The plan of the study is as follows.

Chapter 2 contains a brief survey of the literature highlighting the different approaches on debt analysis. On the basis of the survey we identify the following three key issues—growth, determinant and impact—for analysis

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[8]Ibid, pp. 162.

in the Indian context.

Chapter 3 examines the important aspects of evolution of India's external debt during the eighteen years period ending in 1988-89. Because of good data base, we choose this period for our analysis. It encompasses the various components of growth, extent of changes and its position in relation to other developing countries. The terms (maturity structure, interest rate, grace period) of past loans are also analyzed to identify the differences in terms among the sources, type of loans and the changes over time. Using conventional measures of debt burden, the burden of India's external debt is also estimated in this chapter.

In the last eighteen years, the Indian economy was exposed to various kind of shocks. Some were pure external shocks like oil while others are the outcome of internal disturbances. To combat the various internal/external factors and simultaneously to carry on the development process, the policy-maker had to borrow externally over the years. In Chapter 4, an attempt has been made to trace out the relative importance of these various internal/external factors for India's external debt buildup. In this directional sense, we have analyzed in this chapter the determinants of India's external debt buildup during the period 1972/73-88/89.

The objective of foreign borrowing is that the capital inflow will contribute to development in the sense that capital accumulation via foreign borrowing will lead the economy on a higher growth (output, export) schedule which in turn makes it possible to repay the loan. So, any judgement on the issue of external debt has to be made in conjunction with its effect on different macro variables. Equally important is to know its effect on various

variables under alternative system of controls, viz. physical or financial. In this behavioural sense, we will examine in Chapter 5 the impact of foreign borrowing in the Indian context using a computable general equilibrium model and judging in the process its effect on the various macrovariables.

Chapter 6 summarizes the major findings of the thesis and indicates the direction to which policy adjustment is required to avoid the situations (i.e. debt problems) that other developing countries now face.

Chapter 2

Survey of the Literature

2.1 Introduction

The growing volume of loans to less developed countries (LDCs) has heightened concern about the ability of countries to service their accumulated external obligations on schedule. The central question being asked is whether the LDCs have been borrowing too much and, simultaneously, whether the creditors have overextended themselves. This is partly because developing countries have become much more dependent on external funding for their economic development during the past two decades and partly because a growing number of countries has experienced difficulties in servicing their external debts since 1981. This chapter surveys the literature on debt analysis from the perspective of the borrowing country. However it is not

intended as an exhaustive treatment of the subject. Rather we confine the survey to highlighting the different approaches taken by some of the contributors.

The literature on debt analysis has followed two strands. One looks at the growth-cum-debt process emphasizing the relationship between debt servicing capacity with growth and development. Some contributions in this framework, however, take a nonoptimizing approach and try to cast light on sustainability of debt policies while others look at the issue from the optimality criteria. Section 2 surveys this approach to debt analysis.

The difficulty with the growth-cum-debt approach is that it lacks easy applicability to empirical analysis of debt crisis situations. Consequently, the empirical branch of the literature has tried to identify the probable causes of the debt crisis by estimating a probability model of rescheduling for a cross-section of debtor countries. Typically, such studies try to explain the crisis by looking mainly at the cross-country variation of a set of economic and financial variables. Section 3 surveys the literature of this kind.

Section 4 summarizes the major findings of the survey.

2.2 Growth-cum-Debt Models

The analysis of economic upliftment in developing countries has focused on lack of capital. Rapid progress through growth process is seen to be fundamentally constrained by absence of 'resources'—either in the form of

inadequate domestic savings or foreign exchange or both. In this setup, foreign capital can further growth by relaxing these two constraints and promoting an expansion in productive capacity beyond what could be undertaken solely with national savings.

To underpin this role of foreign capital, these models use the Harrod-Domar setup to trace out time paths of major macroeconomic variables and compare the trends in the debt to income or debt service to income ratios, to make judgement on the sustainability of the implied borrowing programmes. The works of Avramovie [1964], King [1968] and Solomon [1977] can be mentioned in this respect. Assuming a target growth rate, in conjunction with a fixed capital-output ratio and a fixed marginal propensity to save, Solomon shows that debt/output ratio will be bounded if target rate of growth is greater than real interest rate. The criterion is an achievable one as the evidences shows that the highly debted Latin American countries fulfill this condition in the late seventies. However this is not a sufficient condition, since interest payments can be high enough to reduce income to zero.

On the other hand, Bhaduri [1987] working with a model similar to Solomon, draws a more pessimistic conclusion of the role of foreign capital. In contrast to earlier works on the subject, he has however, focused his interest on a related question: whether substantial periods of foreign borrowing by a developing country result in the concerned country becoming *permanently* dependent on foreign borrowing. The process of transition from borrower to creditor, implicit in the works of Avramovie and King (under certain conditions) has been the justification for the debt policies and as

such Bhaduri's work is a challenge to it. As his emphasis is on the analysis of the macroeconomic conditions under which a borrowing country becomes independent of foreign borrowing, he has derived conditions on balance of payment equation in addition to that on domestic savings and productivity of investment to 'emphasize the double-edged nature of the problem of foreign borrowing.'[1] He finds that the macroeconomic conditions required for a borrowing country to be independent of foreign borrowing are too difficult to achieve. In other words, the developing country becomes permanently dependent on foreign borrowing.

Because of its strong assumptions on domestic savings, productivity of investment, etc., these models have limited applications. A common feature of most of these models is that the growth rate of output is assumed exogenous and the dynamics of foreign indebtedness can be expressed as a single differential equation. In other models, however, investment and output are determined endogenously with debt.

As the empirical evidences suggest that the government is the principal borrower of foreign capital, Kharas [1984] in his model looks at a situation in which government borrows from abroad for infrastructural facilities where the returns go to the private sectors. If the government is constrained in its ability to raise tax rate, the expansion of tax-base is required for debt servicing. The latter is, however, dependent on private saving-investment behaviour. According to his model, the government will set the level of foreign capital inflow in each period so as to maximize some national objective

[1]Bhaduri [1987], pp. 273.

subject to the constraint that long-run creditworthiness be maintained. In this situation, he finds that external borrowing takes place only when the addition of one unit of domestic capital results in such a level of marginal future expansion of the tax-base which exceeds the marginal future cost of borrowing. In his model, a high initial capital stock of output and a marginal propensity to save out of physical capital sufficiently greater than the rate of interest on foreign loans are necessary for boundedness of debt/output ratio.

There are other models that analyze the debt problems in the context of a more flexible neoclassical production structure. Since official aid is primarily allocated to relatively poor countries, Takagi [1981] in his paper, has assumed different determinants for loans from private and official sources. If the supply of official aid is negatively related to per capita GDP, his model indicates the existence of infeasible paths. If the initial value of debt outstanding is small in relation to its capital stock, the economy eventually reaches the long run equilibrium points at which both capital-labour ratio and debt-labour ratio remain unchanged over time. However with a low savings rate out of total resources (i.e. income plus capital inflow), consumption can exceed income, therefore giving rise to the possibility of debt problems independent of the efficiency of investment.

Models by Kharas and Takagi throw light on other possible sources of debt problems, not mentioned in the earlier models. In the earlier models, total consumption behaviour was determined by output, giving rise to the possibility of consumption being consistently greater than income. Implicit in this formulation is the belief that the capital flow acts purely as an ex-

ogenous net increment to the LDCs' capital stocks. In the latter models, consumption is specified as a function of new borrowing as well as of output and interest payments giving rise to the possibility of government expenditure being excessive relative to revenue. The change in perception that some debts are being used for consumption purposes stems from the empirical findings of Weisskopf [1972] and others.[2] Apart from the findings of Weisskopf et. al., Zaidi's [1985] analysis of the role of domestic savings, investment as well as budget deficit in widening the current account deficits of developing countries also provides empirical evidence to the questions raised by Kharas and Takagi. Using the test of causality developed by Granger [1969] and Sims [1972] and time series data of twenty non-oil developing countries with largest debt service payments in 1982, he has found that causal relationships run mostly from the changes in total (private and government) savings and investment to changes in current account. On the other hand, he finds 'mixed result of causal relationship between current account and fiscal balances with each affecting the other as often as not.'[3]

The different growth models discussed above stress the importance of marginal productivity of capital, the marginal propensity to consume out of foreign borrowing, the marginal saving rate, the growth rate of output, the rate of interest and the initial value of debt and capital. These studies suggest that the policy makers should ensure that these economic parameters bear an appropriate relationship with one another through adjustments in

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[2]The survey of this category of literature has been dealt for convenience in Chapter 5.

[3]Zaidi [1985], pp. 583.

fiscal parameters.

The discussion now turns to those models where the borrowing process is viewed in an optimizing framework.[4]

All these models have two features. One is a dynamic budget constraint which determines the country's long-term choice with respect to foreign borrowing. The other feature is a social welfare function which evaluates the benefits of alternate possible paths for consumption and output over time. The borrowing problem is solved by maximizing the welfare function subject to the dynamic budget constraint. The solution of the problem typically yields a path along which the marginal cost of foreign borrowing is equated to the marginal product of capital. When the supply function of foreign capital is known, this condition determines the optimal quantity of debt at each point of time. If the supply schedule of foreign capital is not infinitely elastic, the models suggest a benefit from a tax on borrowing, since in this situation, individual borrower imposes a negative externality on all other borrowers by driving up the average interest rate. Bardhan [1967], Hamada [1969] are typical examples of such models. On the other hand, Kharas shows that in the presence of externality, for example, caused by government's inability to raise tax rate, marginal return to invest should exceed the marginal cost of borrowing.

One sector models make no distinction between foreign and domestic goods. Bruno [1976] and Dornbusch [1983] however constructed two-sector

[4]For convenience, some empirical models whose welfare underpinnings are provided by the theoretical models have also been discussed here.

models (traded and non-traded) and showed how the future path of real exchange rate influences borrowing decision.

In the neoclassical growth models discussed above, the role of the external finance is primarily for investment purposes. Moreover, they fail to throw light on the appropriate response to various disturbances—present vs future, temporary vs permanent. The studies by McCabe and Sibley [1976], Dornbusch [1983], Obstfeld [1981], Martin and Selowsky [1981] and Sachs [1981] can be mentioned in this respect. Incorporating, both traded and non-traded goods, Dornbusch in his paper shows for a small country (facing a given world prices and real interest rate) how transitory disturbances in output or in world real interest rate affect the time profile of consumption and trade balance.

Two external (primarily oil) shocks, world debt crisis in the early eighties and the adjustment policies in the Latin American economies, have provoked considerable interest in these related issues. Apart from the above studies mentioned, authors like Dornbusch [1985, 1986], Kharas and Shishido [1987], Bacha [1986a, 1986b], Ffrench-Davis and Marfan [1988], Pinés [1989] and Sachs [1981] have enriched research in this area.

Dornbusch continued his earlier research on external debt, budget deficit, disequilibrium exchange rate and adjustment programmes in Latin America. He stresses the need of identifying a disturbance—permanent or temporary, anticipated or unanticipated—since the impact of the shock on saving, investment and budget differs. A temporary shock should be financed by debt whereas a permanent shock emphasizes the need for adjustment leaving debt unchanged. Further, of the various channels through which the

current account is affected by transitory or permanent disturbances, the impact of anticipated real depreciation on imbalance in current account dominates.[5]

Except for special cases, studies by Obstfeld [1982], Sachs [1983] and Cooper and Sachs [1985] also confirm this traditional rule of thump. However there is scope of expenditure switching policies to improve the standard of living if the balance of payment correction results in too much output and employment contraction. Dornbusch has argued that in Latin America, emphasis is *too much on demand, output contraction policies and too little on expenditure switching policies.* Using disaggregated country-wise data of Latin America, Ffrench-Davis and Marfan [1988] showed that the countries where the fall in the demand for traded goods was attained mainly by switching demand towards non-traded goods are precisely those which had the mildest recession. By contrast, those which emphasized more on expenditure reducing policies are the ones which faced relatively more severe recession.

The above studies provide the welfare underpinnings of numerous empirical analysis of adjustments to oil price rises and to other external shocks. Balassa [1984], Martin and Selowsky [1984], Bacha [1986] are typical examples of such studies. In one such studies, Bacha has used a simple accounting identity to decompose the various components of increase in external liability or evolution of country's deficit on current account over the time

[5]The principal findings have been summarized for convenience in Chapter 4.

period.[6]

In contrast to the works of Dornbusch [1983], McCabe and Sibley [1976], etc., Kharas and Shishido [1987] explicitly calculate the optimal path of foreign borrowing in a neoclassical general equilibrium model incorporating characteristics (in terms of three goods—traded, non-traded and a primary commodity purely for exports) of LDC economies. He has studied the linkage of macroeconomic variables, foreign borrowing and steady state capital and debt stocks for three type of shocks namely, a fall in the growth rate of the volume of commodity trade, a fall in world prices for commodity exports and a rise in the real interest rate. Each of the shocks is further analyzed under two alternative situations depending on the nature of the disturbance—temporary or permanent; anticipated or unanticipated. He finds that 'the external disturbances have a strong intertemporal substitution effects, in addition to effect on wealth which determine the optimum mode of adjustment.'[7] Thus, the standard argument *borrow to finance a temporary shock, adjust to a permanent one,* is not robust in case of real world shocks.[8] The model clearly shows that the structure of the economy and the intertemporal nature of the disturbance play significant role in determining the impact of the shock.

A frequent question being asked in view of the world debt problems and the adjustment policies in the 1980s is whether the balance of pay-

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[6]The explicit decomposition exercise has been outlined for convenience in Chapter 4.

[7]Kharas and Shishido [1987], pp. 146.

[8]See Dornbusch [1983], Sachs [1981, 1983].

ment corrections for sustainability of debts in Latin America and Africa have resulted in overadjustment (excess restraint) policies. To answer the question, Pinés [1989] has used a non-optimizing model, based on balance of payment identities and debt accumulation equation. He defines 'sustainability of debt in terms of keeping debt to export ratios on a declining trend' and uses it to devise two tests to quantify the associated amount of excess import restraint in debtor countries.[9] Both tests signify excess restraint in Latin America and Asia after the oil shocks.

A topical issue in the light of world debt problems is to what extent it represents illiquidity or insolvency. Illiquidity means that a debtor can not service the debt on the contracted time schedule but, in principle, can generate a present value of service equal to that amount. Insolvency means that it is impossible to service the debt in full on any time-table. However, inability to pay is in large measure a political question. As Dornbusch quotes, 'With a sufficient depression of economic activities and living standards (by devaluation for example) in order to generate foreign exchange, most debts are solvents, the only question is how much one can squeeze?'[10] Thus, this way of looking at the problem does not serve any purpose.

Optimal borrower models offer several insights. Foremost, these models emphasize the role of initial conditions in determining whether a country will be a borrower or a lender. They also indicate the role of government in correcting the deviation from optimal path due to the actions of atom-

[9]Pinés [1989], pp. 29.

[10]See Dornbusch [1986], pp. 89.

istic agents within the economy. However at a practical level, it is not an easy task to assess the optimality of borrowing policies. As a consequence, empirical branch of the literature has tried to identify those circumstances under which countries have experienced debt servicing difficulties. The next section discusses this type of literature.

2.3 Indicator Approach to Debt Capacity

The earliest approach to evaluate debt servicing capacity is by Avramovie [1964]. He has identified a country's short-term debt servicing capacity to the following types of variables: fluctuating (exports, capital flows, imports induced by internal shock), offsetting (reserves, compensatory finances, compressible imports) and rigid (interest payments, amortization payments, essential imports). Of these nine variables he considers the following three variables—amortization, interest, and exports in the form of debt service ratio to make judgement on sustainability of debt policies. Though this indicator captures a measure of the burden of country's debt and also of its vulnerability to external shocks, it excludes the other elements in the overall balance of payment. Apart from this indicator, he has also focused attention, in his book, on the external performance of the economy in relation to the debt service claims on it. Of particular concern is the mix and timing of its debt service claims. By far the most serious liquidity crisis is caused by the bunching of maturities. To avoid the risk from such a crisis and hence also the probability of such a crisis, atten-

tion should be focused on the advantage of longer maturities of debt, and balance these advantages against the costs of long-term debts.[11]

In recent years, we have seen that many countries have severe debt servicing problems with low value of debt service ratios while others have successfully managed a high value of debt service ratios. Also, the models discussed in the earlier section does not indicate that debt service ratio is a crucial variable for sustainability of debt policies. Moreover, there is no direct link between debt service ratio and efficiency of the economy. To overcome the shortcomings of this measure, attempts have been made to develop a quantitative technique by examining identified cases of debt difficulties (i.e. those involving debt reschedulings). For this, they have resorted to statistical techniques like discriminant analysis, logit analysis and probit analysis.

Discriminant technique assumes the existence of distinct subpopulations (here two—rescheduling countries and non-rescheduling countries) within the population, and the problem is to derive a classification rule on the basis of the sample information. However as Feder and Just [1977] rightly points out, 'the use of this methodology implies a rescheduling country suddenly becomes a *member of another species.*'[12] Rather, it is more correct to assume that the rescheduling decision is made after consideration of alternative costs.

On the other hand, logit or probit analysis is a framework for analyzing

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[11]Cooper and Sachs [1985, pp. 51] have also stressed the importance of these factors.

[12]Feder and Just [1977], pp. 26.

discrete choices and its output relates the selection probabilities to the factors that influence choice. Typically it predicts probability of reschedulings on the basis of the values of the underlying attributes.

Discriminant analyses of reschedulings by Frank and Cline [1971], Grinols [1976] and Sargen [1977] and logit analysis by Feder and Just [1977], Feder, Just, and Ross [1981], Cline [1983, 1984] and McFadden et. al. [1985] have identified a number of macroeconomic indicators of foreign debt crises, summarized in Table 2-1. As McFadden et. al. observes, 'The reported effects generally coincide with the expectations of macroeconomic theory: an increased debt burden or depleted reserves are associated, as are domestic monetary variables, with problems that tend to indicate debt financing of government operation, lax macroeconomic management or pursuit of ambitious development plans without adequate domestic saving.'[13]

In their classic essay, 'An Econometric Approach to Creditworthiness: Is there Life after Debt?', McFaddan et. al. have carried out an indepth econometric analysis of debt servicing problems. They also differ from the others in their definition of debt servicing problems (typically it is rescheduling vs non rescheduling) by including a number of indicators of repayment problems, in addition to rescheduling incidents, such as arrears in debt servicing, the existence of an upper credit tranche facility and current negotiation to reschedule private or official debt for the country under consideration. Using an improved data-base (93 countries over the period 1970-82, obtained from the World Bank) and various probit and logit speci-

[13]McFadden et. al. [1985], pp. 188.

fication, the authors estimate the probability of a country experiencing debt repayment problems in the following years as a function of an indicator of debt problems in the previous period and of a number of macroeconomic ratios such as debt service/exports, non-debt inflows/debt service, foreign exchange reserves/imports, exports/GDP and real GDP/population. Apart from these improvements, McFaddan et. al. have made another advance beyond the earlier works of Eaton and Gersovitz [1981] by specifying and estimating a structural model, which separately identifies supply and demand for new loans as well as limit on arrears that will be permitted before debt must be rescheduled or restructured. The estimates suggest that the demand for new loans is extremely sensitive to debt service due, strong demand component to smooth export fluctuation, strong cross-country variation in willingness to borrow, openness (measured by import ratios) of economy, etc.. The supply function is dependent on repayment problem, principal due and is insensitive to standard indicators of country performance. In contrast to other probit analysis, Berg and Sachs [1988] have used as explanatory variables structural parameters of LDCs such as trade regimes (outward or inward), degree of income inequality, share of agriculture in GDP and per-capita GNP.[14] They find that the higher income inequality is a significant predictor of a higher probability of debt rescheduling in a cross-section of middle-income countries, causality stemming from

[14]The studies by Balassa [1982] and Sachs [1985] suggest the importance of these factors for successful debt and macroeconomic management, for avoiding a crisis and for recovering from such a crisis after it has begun.

the difficulties of political management in an economy with extreme inequality.

Of the logit analysis, the one by Kharas [1984] deserves special mention. In his paper, he has made a foremost attempt to combine the empirical and growth theory approaches by extending a growth-cum-debt model featuring government's inability to raise taxes into a formal theory of creditworthiness. Creditworthiness is derived by comparison of actual capital stock with a critical level, representing that stock necessary to generate the tax base that ensures government with enough revenues to debt servicing. Here probability of rescheduling is linked to debt service-capital, net inflow-capital, investment rates and income level.

Apart from this set of issues, there have been studies where the attention is focused on the supply side of the financial markets. The objective is to enhance the knowledge about *lender's perception of the sustainability of borrower plans.* Another related issue of interest is the relationship between country's risk, lending decision of the creditors and credit rationing in the international financial markets. The papers by McFaddan et. al. [1985], Feder and Just [1977], Eaton and Gersovitz [1980, 1981] can be mentioned in this respect. Most of these studies have concentrated their attention on commercial borrower's (significant sources of loans are banks for those borrowers) i.e. heavily debtor countries; where the possibility of sovereign risk (repudiation risk) and credit rationing may be the dominating factors influencing the players of the markets. This, in effect, decreases its importance for marginal borrowers like India. Feder and Just [1977] in his analysis of the relationship between the terms of credits (spread over the LIBOR) and

country's risk found that spread over LIBOR was significantly related to the debt service ratio, an index of export fluctuation, import/reserve ratio, import/GNP ratio, per capita GNP and the projected GDP growth rate. Most of them are the same variables, the importance of which have been highlighted. Eaton and Gersovitz [1980, 1981] in their paper used disequilibrium econometric methods to estimate separately demand and supply function of loans. With a probability more than 0.5, they found that the eighty percent of their sample was supply constrained.

Having outlined the various approaches to analyze reschedulings we discuss some shortcomings of this literature. These models are estimated across a diverse groups of countries over long time periods. So it is doubtful that stable parameters exist across countries. The studies by Feder, Just and Ross [1981] and Saini and Bates [1978] indicate that there may be significant country and time effects. As McFaddan et. al. quotes, 'There are questions as to whether these studies identify leading rather than coincident indicators of repayment problems and whether the statistical assumptions underlying the reported standard errors are valid.'[15] The reliability of estimates of econometric modelling of creditworthiness for a well behaved borrower (say for example India which has no recorded incident of debt problems in recent years) is more of doubt as the cases of debt difficulties one uses are only of other countries. Moreover these models lack theoretical foundations which weaken the confidence in the interpretation of the results and in their use for forecasting purpose. Nevertheless these studies

[15]McFadden et. al. [1985], pp. 51.

have enriched our understandings of debt issues.

The development of econometric modelling of creditworthiness has been a positive one. However, the traditional indicators of debt measures, in spite of its shortcomings, have still stood as important indicators in the eye of the creditors with each borrowing country being ranked both against other countries and against own's past. For this reason, they are still important to the borrowers .[16]

2.4 Conclusion

The theoretical literature (i.e. growth-cum-debt models) on debt analysis focuses their attention primarily on the investment role of external finance. Of late, the attention of the literature shifts to consumption-smoothing considerations. However, at a practical level, deriving the conditions for consumption-smoothing rule (in case of optimizing models) or sustainable debt paths (in case of nonoptimizing models emphasizing investment role of foreign capital) pose too many problems. However, an understanding of the issues outlined in the theoretical literature offers insights to questions to be asked in making judgements about the sustainability of a country's debt policies.

The survey also highlights the use of various statistical techniques (such as discriminant analysis, logit analysis and probit analysis) that have been developed for measuring creditworthiness in the context of countries ex-

[16]See Cooper and Sachs [1985], pp. 51.

periencing debt difficulties. The case of India (with no incident of debt rescheduling) is different from them. Therefore, the evaluation procedure, in this case, depends heavily on individual country's assessment—its performance on the external front in relation to its debt service claims; mix and timing of its claims and on traditional indicators of debt measures. Equally important is to know the the determinants of foreign borrowing and the *exante* effect of foreign borrowing on the macro variables.

Table 2-1. Significant Macroeconomic Correlates of Repayment Crises in Developing Countries

Variable	Study[a]					
	Frank & Cline (1971)	Grinols (1976)	Sargent (1977)	Saini-Bates (1978)	Cline (1983)	Feder-Just-Ross (1981)
Debt service /exports	+		+		+	+
Principal services/debt	-				-	
Import/Reserve	+				+	+
Debt/GDP		+				
Debt/exports		+	+		+	
Debt service /reserves		+				
GNP per capita						-[b]
Foreign exchange inflows/debt service						-
(Current account)[2] /exports					-[c]	
Exports/GNP						-
Rate of domestic inflation			+			
Growth rate of money supply				+		
Growth rate of reserves				-	-[d]	
Growth rate of GNP per capita					-	
Total borroving /total imports					-	

a. Variables with significant effects are indicated by sign of effects. These studies differ in countries and time periods and in definition of both dependent and independent variables. It only lists a collection of models. The table has been taken from McFaddan et. al. (1984).

b. Defined relative to U.S. GNP per capita.

c. This variable is multiplied by the sign of the current account surplus.

d. Cline reports significant positive and negative sign on this variables.

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Chapter 3

Evolution of India's External Debt, 1972-89

3.1 Introduction

This chapter examines the evolution of India's external debt and the burden associated with it. This chapter is organized into eight sections. The second section briefly reviews the market conditions in the 1970s and the 1980s with regard to developing countries' external borrowing and their implications on India's foreign borrowing during the same period. The sources of data, classification rule of foreign loans and implications of various types of loans are outlined in section 3. The fourth section presents

a profile of India's indebtedness—growth and burden (aggregate)—both in a cross-section setting as also in intertemporal context of India. The mix of external obligations is analyzed in section 5. It encompasses the various components of growth and its extent of changes over time. In the context of Latin American countries, a significant part of debt simply resulted in capital flight. Is it true also for India? The question is investigated in section 6. In section 7, the terms (interest rate, maturity structure and grace period) of past loans are analyzed in detail to identify the differences in terms among the sources, types of loans and changes over time. Using conventional measures of debt burden, the burden of India's external debt is also estimated in detail in this section. A summary and concluding remarks found in the final section.

3.2 Foreign loans availability: Demand/Supply Schedule

In absolute terms the developing countries' capital needs are enormous. Achieving even moderate living standards in the poorer and populous countries notably India and China will require very large capital amounts. As foreign capital forms an integral part of the development strategy of most developing countries, the availability of foreign capital (foreign loans in general) to India will be affected by the other countries' demand, their capacity to absorb and the supply conditions in the world markets. Consequently,

for an analysis of growth, composition and burden of India's indebtedness, it is important to know the demand and the supply conditions in the world markets, their changes in the 1970s and the 1980s and the implications of the shifts on India's demand schedule of foreign capital. For these reasons, the issues pertinent to the global market conditions of the demand/supply schedule of foreign loans and that of India will be reviewed in this section.

According to Hughes [1979], three principal demand characteristics broadly corresponding to the term structure of lending and borrowing affect the developing countries' demand for foreign capital. The demand characteristics are:

1. The developing countries have a demand for short-term capital synonymous with the demand for trade credit and smoothing out the seasonal fluctuations. Of course a part of short term borrowing is not for short-term purposes. Given particularly good balance of payments and debt management, this may not cause difficulties. However a country will ultimately face problem if it borrows to postpone the underlying adjustment. In due course of time, short-term borrowing then has to be translated into medium-term borrowing.

2. To undertake structural adjustment, a country has a demand for medium-term capital. Such borrowing facilitates adjustment to changes in demand, supply or correction for past policy mistakes. The IMF (subject to policy conditions), government and banks of developed countries are main sources of medium-term terms. However, if restructuring is not undertaken, the medium-term borrowing, has to be

transformed into long-term borrowing.

3. There are important areas of investments in developing countries which have long gestation periods of more than ten years.[1] For this reason, the third and principal demand for foreign capital is for long-term development

Political as well as economic factors determine the demand schedule of each type of capital separately. Also, bad fiscal policies often encourage excessive foreign borrowing. If the taxation base of a country is narrow, there will be intense pressure to borrow abroad for public investment.[2]

Because the cumulative denmand of *creditworthy* developing countries is small in comparison to the supply of foreign capital, they are largely able to determine the amount they borrow, their domestic policies are the principal determinants of borrowing levels.[3]

Political as well as economic factors determine also the supply of foreign capital. For example, bilateral assistance from super powers are often politically motivated, military strategic issues play significant role in choosing the recipient and the level of flows. They also have an economic component as donors expect future trade and investment gains.

Savers—individuals, institutions or governments—are the ultimate sources of capital flows to developing countries. Financial intermediaries, notably

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[1]Mostly, such investments are for infrastructural facilities, construction of dams, etc.

[2]See Freeman, J.R. [1982].

[3]See Riedel, J. [1983].

banks, transform these savings, particularly from individuals and institutions into loans. They are purely profit maximizers and must cover themselves in case their clients—public/private enterprise, government or country—fail to service the loan on schedule or ultimately default. As already mentioned in the earlier chapter, measurement of creditworthiness (for lending abroad) encompasses borrower's future as well as current economic position.

The supply schedules of each category of capital are globally determined. Hence, macroeconomic policies in the industrial countries affecting their own demand of capital influence the availability of capital to developing countries. Thus in the mid-70s, the failure on their part to adjust to increased petroleum prices led to their low demand for capital for domestic investment. At the same time, low absorbers among the oil exporters placed their savings in the financial intermediaries in the industrialized countries. Thus the Eurodollar markets had excess liquid which were recycled primarily in the developing countries. Consequently, the share of financing from official creditors (governments and multilateral agencies) to non-oil LDC's declined from 67 percent in 1975 to 35 percent (roughly) in 1982.[4] Most of these bank loans were extended at variable interest rate to offset the risks associated with inflation. Because of the lag in the perception of inflation, developing countries were able to borrow at extremely low real interest rates during the later half of the seventies decade.

However the favourable real interest rates were reversed after the second

[4]Cf. IMF, 'World Economic Outlook', various issues.

oil shock. As mentioned in the earlier chapter, due to restrictive policies in the industrialized countries and U.S.'policy of high interest rates, the cost of borrowing as indicated by LIBOR plus average spread which had fluctuated between 6-1/2 and 7-3/4 percent in the period 1975-77, rose to 18 percent in 1981 and around 15 percent in 1982.[5] In real terms, the interest rate also rose to a historically high level. By the middle of 1982, concern arose in the international financial community regarding the ability of some of the larger borrowers to meet their external obligations on schedule. This was reinforced by the acute debt servicing difficulties in Latin America, Africa and elsewhere. Consequently, disbursements from private creditors declined in the post-1982 period.

The international developments in the demand/supply schedule of capital have affected the supply of capital to India. Right up to late 1970s, India followed the path of inward-oriented development strategy encompassing quantitative restriction on international trade and domestic production. Consequently her demand for foreign capital was low and could easily be met from official sources. Thus, when real interest rates in the financial markets were extremely low (negative), India was practically absent from the financial markets. However, from 1978 onwards, India's development strategy began to shift from inward orientation to outward orientation, moderately at first and more aggressively since 1984. The opening of the economy expectedly meant that initially her demand for foreign capital would be high. In contrast to rising demand for foreign capital in the 1980s,

[5]Cf. Buira [1988], pp. 828-829.

the supply of official credits to India was substantially diminished due to the decline of global supply of official (particularly bilateral) credits.[6] Further, the entry of China and sub-Saharan African countries in the official loan markets cut into India's share of credits. Since China and India are both large and low income countries, to which official credits, particularly from international agencies (especially I.D.A. credits), are extended, their competition reduced India's share of such credits.

The decline of official credits vis-a-vis rising demand of foreign capital means that India had to borrow substantial amount from financial markets in the 1980s. However in the 1980s, real interest rates in the financial markets rose to a historically high level. Thus, when real interest rates were high, India began to borrow in a big way (relatively) from the financial markets.[7]

The above discussion is intended to suggest that the global perspective should be kept in view while analyzing India's evolution of external debt.

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[6]Tight monetary policies and recession in the 1980s were the main causes for the decline of global supply of official credits.

[7]It must be mentioned that because of excellent credit-rating, India's real cost of borrowing in the first half of the 1980s from the financial markets was considerably lower than that of many developing countries. However, as we will see later, the cost of borrowing from the financial markets increased considerably in the later half of 1980s.

3.3 The Data

This section is divided in three parts. The first part outlines the classification rule of external debt, part two gives the data sources while part three discusses the implications of the various kinds of debt.

Classification Rule

There are several ways in which external loans to India can be categorized. One way is to classify them according to their source, that is the organizations that provide loans. An alternative classification is based on type of loans—official versus private, concessional versus nonconcessional or tied versus untied. Depending on the purpose of the loans, one may derive yet another way of classifying the loans. A fourth way of classification is based on accountability of loans, that is whether the loans are on government account or government is the guaranteer of the loans or they are private nonguaranteed loans. Yet, in every classification the problem of overlap exists. With this limitation in mind, a diagram of the classification rule of India's external debt is given in Figure 3-1; it will be used as the framework for the forthcoming discussion.

The external debt in Figure 3-1 covers all types of (reported) debt owed to non-residents and repayable in foreign currency, goods or services. As we can see from Figure 3-1, the external debt of India can be classified into three broad categories—short-term debt, debt arising from transactions with the International Monetary Fund (IMF) and medium and long-term

debt.[8] The short-term debts arising in the ordinary course of trade are normally considered deferred cash payments. However, if these short-term transactions have not been liquidated on time, commercial arrears arise and in economic terms, they are not different from medium and long-term external debt. Figure 3-1 shows that medium and long-term debt can further be divided into broad categories—private non-guaranteed and public/publicly guaranteed debt.[9]

Depending on the nature of the creditor, public/publicly guaranteed external debt is classified into two broad categories: official and private. An official debt may further be contracted in either bilateral or multilateral arrangements. Bilateral flows are the resources that are transferred from one country to another; multilateral flows are those resources that come from international or regional institutions.

The major sources of bilateral loans to India are the members of the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD): Austria, Belgium, Canada, Denmark, United Kingdom, West Germany, Italy, Japan, Netherlands, Switzerland and United States. They periodically set a financial target for their

[8] All obligations with an original maturity of less than one year are considered short-term debt. Those which have original maturity of more than one year are treated as medium and long-term debt.

[9] Private non-guaranteed loans are liability on the part of private borrowers. As data according to the nature of the creditor are not available for private non-guaranteed debt, the decomposition exercise in Figure 3-1 has not been carried out for them.

Official Development Assistance to India. Besides the members of DAC, India has also received loans from OPEC (Oil and Petroleum Exporting countries) members as well as from centrally planned economies: Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, USSR and Yugoslavia.[10]

With respect to multilateral loans, the category includes the World Bank Group, consisting of World Bank's credits and the International Development Assistance (IDA); European Economic Community (EEC); OPEC Special Fund; International Fund for Agricultural Development (IFAD) and IMF Trust Fund.

According to the classification in Figure 3-1, both bilateral and multilateral flows may be either tied or untied. Tied loans are usually tied in two ways. Firstly, they are tied to the project. Secondly, the loan is tied up with imports, goods or technology from the donor country. The loans from international agencies which are tied only to the projects, are the sole exception to the rule. Untied loans are general purpose loans. For such loan, the use of loan is not specified by the donor country. However, frequently the condition of the loan stipulates that the recipient country should use the loan for financing imports of goods and services from the donor country.

Private debt inflows to India have been divided into two parts, suppliers and commercial credits. Suppliers' credits are basically the medium-term credits extended by manufacturers, exporters and other suppliers to the

[10]The following OPEC countries have extended credits to India: UAE, Kuwait, Iran, Iraq and Saudi Arabia.

government agencies or private institutions that purchase goods and services in overseas markets. Commercial loans are the credits offered by the private banks and other financial institutions in the developed economies to the Indian government agencies or private institutions.[11] According to the tiednes criteria, they fall in the category of untied loans.

Because of paucity of data, the defence credits which constitute yet another form of external debt are excluded from the decomposition exercise in Figure 3-1. As the limitation of data inhibits direct measurement of debt arising out of defence credits, we have used in our study an indirect measure of defence credits outlined in the next part.

The above scheme excludes the deposits of non-resident Indians under FCNRA (Foreign Currency Non-resident Account) deposit. Technically, country's obligations under FCNRA deposit are not debt. However, in view of its growing size in the second half of the 1980s, our discussion will highlight its growth.

The Sources

The data on external debt are available from a number of sources such as RBI, Ministry of Finance, World Bank, OECD, Institute of Finance (IIF), etc.. However the coverage of data on external debt differs from source

[11] Since the banks in the developed economies can also extend non-guaranteed loans to private borrowers in the recipient country (i.e. loans classified under the category of private non-guaranteed debt), in our discussion, commercial loans always refer to loans under the category of public/publicly guaranteed debt.

to source and as such there exists noticeable differences in the estimate of external debt obtained from various sources.[12] The foreign sources (World Bank, IIF, OECD) provide disaggregated time series data of external debt on all categories of debt. They are broadly reconciable except for the short-term debt from banks which are included in the data of OECD and IIF but are not available in World Bank's statistics in the preceding decade.

As already mentioned, two sources of Government of India publish data on external debt. Both of these sources publish extensive time series data of flows (both in gross and net terms) of official external loans on government and non-government account. The recent publications provide estimate of India's total debt on govt. account, non-govt. account, IMF and commercial loans. However, none of the sources includes short-term debt. Moreover the government calculates debt in the currency in which it is contracted whereas the foreign sources go by a World Bank' currency pools. Therefore if appropriate adjustment is made by way of including and excluding the component on uniform basis and currency mixes are taken care of, data from different sources can broadly be reconciled.

As already mentioned, defence credits are not covered by any of the sources. However a rough estimate of defence credits can be obtained by taking into account the excess of RBI' payments for imports over Custom's import figures. The discrepancy reflects several factors. Some imports, such as offshore oil rigs and military equipments do not pass through customs. Also, differences between RBI's payments for imports and custom decla-

[12]That is, all categories of debt which are shown in Figure 3-1.

rations reflect differences in valuation and timing. Nevertheless, we can possibly argue that most of the differences are explained due to the defence imports which are by and large paid through bilateral defence credits.

Implications

The various categories of loans have different implications. With regard to public and publicly guaranteed loans, it can be argued that the government has the leverage to direct the foreign loans into priority sectors and so the end use of the loan matches the long-term objective of the government. But the same argument does not hold for the private non-guaranteed credits. Of course, such credits are liability on the part of private borrowers. But three points need to be noted in this regard. One, as they are contracted in foreign currency, government, in effect, bears the convertibility risk. The second, in cases where private borrowers fail to discharge loans, the government has to eventually come to their rescue for maintaining the creditability of the country. Lastly, the government loses control over the allocation of foreign exchange even though its liability remains in ultimate analysis. However, when the credits are closely linked to borrower's export potential, these do not add to burden although government's choice of foreign exchange allocation gets distorted. For these reasons, this type of credits can not be resorted liberally.

With regard to short-term credits, the implication has to be viewed in the context of the use to which it is put. If it is taken to even out the time-lag in outflow and inflow of foreign exchange or unforeseen situations,

it is not much of concern. But if it is used to meet repayment liability particularly of the commercial borrowing or short-term debt, the net burden on the economy is likely to be higher. Furthermore, if liquidity is not adequate, the country may face balance of payments crisis when sizable amount of short-term debt is to be repaid and loans are not forthcoming due to decline in creditworthiness.

With regard to transactions with IMF, it may be mentioned that IMF is a lender of last resort. This kind of lending invariably leads to IMF's intrusion into economic macromanagement.[13] So it is advisable to limit this kind of borrowing.

As regards defence credits which are not included as part of external debt by any sources, it can only be mentioned that this kind of borrowing does not contribute to development.[14]

With regard to NRI deposits which are not included as part of external debt by the official sources, it can be argued to show that they are preferable to commercial borrowings even though they are likely to be more costly than the later. Therefore, if the growth of NRI deposits (net) can be maintained by providing attractive terms, these deposits can be considered as loans in perpetuity.

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[13]See Chapter 1 for detail.

[14]Since, the foreign capital is not used for capital formation, concomitant increase in debt capacity is not generated in this case.

3.4 The Trend of External Loans to India

The large magnitude and rapid growth of India's external debt is shown in Table 3-1.[15] As this table shows, the rate of (average) growth of external debt has jumped from 10 percent in the 1970s to 18 percent in the present decade.[16] However, after deducting for inflation, the real growth of debt is found to have increased at an even more rapid pace: after remaining unchanged in the 1970s, it rose by 16.0 percent in the 1980s.[17] Table 3-1 also shows that for all developing countries, real annual growth of debt is of the order 18 percent during the period 1980-88. Thus, inspite of the sharp rise over the preceding decade, India's growth of debt in the eighties decade seems to be on the lower side of the developing countries' growths of external debt. Two points need to be noted in this regard. Firstly, the high growth of external debt is realized at a time when the terms of borrowing

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[15]The estimate excludes defence credits and NRI deposit liability.

[16]Because of weak data base of some types of debt between the years 1971-75, while dealing with debt figures for the World Bank, the starting year of the trend analysis is changed from 1972 to 1970. The simple averages of the growth rates of the periods 70-75 and 75-80 and 80-85 and 85-88 are used for computing the growth rates in the 1970s and the 1980s.

[17]The deflator we have used for conversion is India's export unit value index. Since debt has to be paid in foreign currency and export is the primary source of foreign exchange earnings, its price index should be the appropriate deflator. The unit value index of exports of goods and services would be an improved deflator but the unavailability of data has forced us to go for the second best option.

have not been particularly favourable for India. As Table 3-1 indicates, when real interest rate was negative for India, her borrowing was also low. However in the 1980s, average real interest rate on the Indian loans has increased substantially. It is during this time that India's external debt has been rising rapidly.[18] Secondly, the above measure of growth of debt does not include defence credits and NRI liabilities. If these are included, our growth of external debt is expected to be much more.

Table 3-2 provides an indirect measure of defence credits by taking into account the excess of RBI's payments for import over its payments on Custom basis. As this table indicates, the discrepancy is of the order of US $ 9.02 billions (approximately 20 percent of India's external debt) between the years 1970-86. Note that much of the discrepancy has occurred in the present decade. Moreover as the differences between 1970-86 reflect gross flow of defence credits, we can assume defence debt will possibly be higher than US $ 9.02 billion at end of 1986.[19]

Still this estimate of debt does not include the NRI deposit liability. The estimate of NRI deposit liability can however be obtained from a different source viz. RBI's 'Annual Report'. According to this source, India's NRI deposit liability stood at Rs. 10,054 crores (or US $ 5 billions) at end of March 1988 (Table 3-3). Including this amount, we find that India's external debt (inclusive of NRI liabilities and defence debt) increased from

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[18]The causes for the rise of external debt will be discussed in the next chapter

[19]According to some experts, defence credit is estimated at Rs. 15000 crores, equivalent to US $ 10 billions at current exchange rate (Cf. Sarma [1989], pp. 5).

US $ 8 billions in 1970 to US $ 71 billions in 1988, equivalent to an annual increase of 43 percent per annum.[20]

The above discussion has examined the growth of external debt in an intertemporal context. Next in a cross-section setting, the growth and burden of external debt is analyzed. For comparison, we have chosen only countries with population more than 40 millions in 1986 to eliminate small countries (small with respect to population), whose problem is expected to be quite different from that of India.

Table 3-4 shows the growth and burden of India's external debt vis-a-vis selected developing countries at two points of time. As this table indicates, between the years 1970 and 1988, the growth of India's external debt was one of the lowest among the selected developing countries. Comparison with other developing countries also reveals that India's debt burden, as measured in terms of per capita debt or in terms of debt income ratio, was one of the lowest among the selected developing countries in 1988 (Table 3-4). Between 1970 and 1988, there is a substantial improvement in the relative position, even though debt income ratio increased from 13.9 percent in 1970 to 19.3 percent in 1988 due to a pace of growth of debt higher that of income. The same trend is also observed for debt service/export ratio between the years 1970 and 1988. It should be noted that the above data exclude defence credits and NRI deposit liabilities. When that is added, the debt income ratio is expected to be higher than observed ratio.

With regard to other determinant of debt service burden, viz. terms

[20]The lower estimate of defence debt is included here.

of borrowing, Table 3-5 reveals that India's position with regard to interest rate vis-a-vis other developing countries suffered marginal deterioration between 1970-84 (from 10th position to 9th position).[21] The fall in relative position is faster thereafter as her position was relegated to 7th position in 1988.[22] Table 3-5 also shows that India's ranking with regard to share of variable rate public loans declined from 8th position to 9th position in relation to selected developing countries, even though the share of variable rate public loans increased sharply from 7.9 percent in 1984 to 15.6 percent in 1988. Two factors have caused such a trend. Firstly, in the 1980s, several of the developing countries like Brazil, Mexico, Nigeria, etc. faced severe debt problems. Consequently, they could raise loans only at flexible rate. Secondly, it should be noted that non-guaranteed loans which are usually borrowed at flexible rate of interest are not included in the above statistics. In view of the fact that this component of external debt was increasing for India in recent past, India's relative position with respect to this indicator is likely to be higher.

In comparison to developing countries under review, India's relative position worsened both in terms of maturity and grace period.[23] Further the deterioration is more pronounced for maturity structure: between 1984-

[21]The ranks are computed in order of descending interest rate, maturity period, grace period and share of variable rate public loan.

[22]The cause of the shift is analyzed later.

[23]The grace period specifies the time span during which no interest is charged on the disbursed loans.

88, India's position declined from 3.5th in 1984 to 5.5 in 1988.

In the light of the above observations, the following points have emerged:

1. In comparison to seventies decade, India's official published external debt increased sharply in the eighties decade.

2. The surge of debt occurred when real interest rates on the Indian loans were on the rise.

3. The other components of debt (which are not included in the official figure), viz. defence debt and NRI deposit liability also increased sharply since 1980.

4. In relation to other developing countries, the measures of debt's burden do not show any significant intertemporal deterioration in India's relative position.[24]

5. In the post-1984 period, India's relative position suffered deterioration in regard to maturity period, interest rate and grace period.

3.5 The Mix of External Obligations

The mix of external obligations is important for the debtor country because not only it spreads the risk of debt overhang, but also diminishes the po-

[24]It must be mentioned that there are shortcomings to the above analysis based on two points of time.

litical/economic pressure of the creditor that often pervades bilateral debt inflow. Below, an attempt has been made to analyze the mix of past loans.

Table 3-6 indicates that our debt profile has witnessed substantial changes in the eighties decade.[25] Prior to the 1980s, nearly entire increase in external debt has been in the form of publicly guaranteed long-term loans from official creditors. Since 1980, the other components of debt has been rising, thereby raising their share of the total to 14.0 percent in 1988. Part of it came from the long-end of maturity distribution while the rest is accounted for short-term debt and IMF credits. Note that private non-guaranteed loans registered sharp increase in the 1980s. As noted before, the growth of this kind of debt is to be taken with caution. On the otherhand, short-term debt increased to around 6.6 percent (US $ 3770 millions) of the total debt in 1988. Furthermore, note that the cumulative share of short-term debt and IMF credits increased sharply from 6.6 percent in 1980 to 16.3 percent in 1982. During the period 1984-88, their share of the total—14.5 percent annually—was also high. Meanwhile within the category of long-term publicly guaranteed credits, growing proportion of loans has come from financial markets, thereby raising their share of the total to 12.2 percent in 1986.

What are the forces causing the spurt in commercial borrowing? As noted before, in the 1980s, oil price shock and recession in the world economy dried the scope of bilateral resource flows particularly from the OPEC countries. At the same time commercial banks accumulated petro-dollars

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[25]The discussion excludes NRI deposit liability and defence debt.

which the oil exporting countries deposited with them. India in need of large foreign exchange in pursuance of liberalization of imports in 1980s has no other alternative but to go to the banks for raising medium term loans.[26] Consequently the share of the private creditors in the total rose from 3.5 percent in 1980 to 12.2 percent in 1986 while that of bilateral credits suffered sharp decline from 53 percent in 1980 to 31 percent 1986. The share of multilateral credits, however remained roughly constant in the 1980s.

It is clear from the above analysis that India's debt structure changed substantially in the 1980s. Further, the dependence on short-term debt and IMF credits increased sharply in the last decade.

Till now our observation is restricted chiefly to aggregated figures (of the various categories) in each year. Now our attention shifts to detailed analysis of the mix of external obligations. Since the trend analysis between official and private has already been done, we analyze only the growths—itself to sources—of official loans.[27]

Shift in sources

Over the years India has received various categories of loans—bilateral loans from OECD/OPEC countries, credits from East European countries, mul-

[26] To what extent liberalization policies account for debt buildup and how far the policies liberalized the external sector? An attempt to answer the questions will be made in the next chapter.

[27] That is, the loans from official creditors.

tilateral loans from international agencies. The bilateral loans from East European countries are repayable through export of goods, while the other two categories of loans are repayable in foreign currencies. Though both these categories of loans are repayable in scarce foreign currency, it is better to distinguish between them as the terms and conditions of the loans differ.

Now any discussion of annual inflow of loans to India can be made in terms of any of the following concepts—loans authorized during the financial year, loans drawn during the financial year or loans utilized (disbursed) during the financial year.[28] The amount of loans authorized during a year corresponds to the annual debt incurred inclusive of the undisbursed portion of the loans. The undisbursed portion of the loans has no cost associated with it, except in case of a few loans which have a commitment charge on the undisbursed amount.[29] The other two concepts are nearly equivalent, though drawal is generally slightly more than the disbursed amount of the loan. Because of its relevance, our trend analysis will be based on disbursed amounts only.

Table 3-7 indicates a steady decline in disbursement of bilateral loans repayable in foreign currency over the years concomitant with a continuous increase in inflows from international agencies while the loans from East

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[28]The disbursed and utilized amounts are essentially same.

[29]Of course, if the undisbursed portion is put to use, it can be argued that the benefit is expected to increase. However the burden of debt, other thing being equal, simultaneously increases and consequently, net effect is difficult to ascertain. So, any analysis based on this concept will be of limited use.

European countries, though increasing at a fast pace, still constitute a small portion of the total official disbursements. The decline is sharp for the bilateral loans (especially from OECD countries which are concessional in nature) whose share registered a fall of 47 percent over the years.[30] As OECD countries provide most of the bilateral assistance repayable in foreign currency (except for the years 1974-78 when OPEC countries contributed a significant portion of bilateral loans), this period does not show any growth of loans (utilized) of this kind.

Within the category of bilateral loans repayable in foreign currency, new sources have emerged over time while the traditional sources have lost their importance. Table 3-8 indicates that USA and UK, which were principal sources in the sixties, feature no longer among the six major sources for all the years. The rapid decline of assistance from these two prominent sources contributed partly the decline of OECD loans. Nonetheless, France, Japan have increased marginally their assistance. With the participation of OPEC countries in the aftermath of first oil shock India found new sources of loans. However, their shares are nominal, except for Iran whose contribution was impressive during the years 1975/76-77/78. Their increasing participation however, was a temporary phenomenon as OPEC members were faced later with the erosion of their surplus. Thus, the decline of loans from USA and UK was not compensated by other OECD members or by new sources of loans.

A relative decline in loans from OECD countries could be attributed to

[30] Computed from Ministry of Finance's booklet on 'External Assistance.'

two factors—an increasing role of loans from international agencies and a recession in DAC countries. The later point is a valid one as the growth rate shows the decline in the subsequent years of the second oil shock.

As Table 3-7 shows, the loans from international agencies became more and more important in the later half of 1970s and the 1980s. It increased from Rs 1724 million in 1972-73 to Rs 18300 millions in 1988-89, equivalent to a growth rate of 33 percent in disbursements (see Table 3-7). While the bilateral loans declined over the years, the share of multilateral loans (disbursed) increased from 30 percent in 1972-73 to 72 percent in 1988-89, representing an average annual share of 61 percent during the period 1972/73-88/89. However a disturbing trend from mid-70s onwards is noticeable within this category. The World Bank group which lend capital both in soft as well as hard terms, has been extending significant portion of their credits in recent years in hard terms. Note that the share of its credit in hard terms (i.e. World Bank credit) increased from 6 percent in 1972-73 to 15 percent in 1982-83 and further to 47 percent in 1988-89 (Table 3-8).

Both these two categories of loans are repayable in scarce foreign currency. In this respect, any sign in the increase of loans from the third category which are repayable through exports of goods and services is welcome.[31]

[31]It may be argued that repayment in terms of exports of goods and services may ultimately amount to paying in foreign exchange where goods exportable in international markets are to be sent to them. However East-European market enables the Indian exporters to escape from the international competition as India practises balance trade with

The rise in the disbursement of loans of the kind is rather impressive. However, its share of the total disbursed loans during the past years is only nominal. With economic problem in the East European countries, it is expected that the loans of this kind will decline over the years, though the share of loans from Russia increased in the 1980s (Table 3-8).

The implication of the changed utilization profile of official debt (disbursed) is far reaching. The bilateral loans in general have soft terms (as we will see later). Consequently the burden of debt has increased due to this shift. Secondly, loans from international agencies are in general in form of project tied loans (unlike that of bilateral credits, some part of which are untied loans). Consequently, the shift slowed the pace of utilization of loans.[32]

In summary, the following features of past loans can be highlighted:

- decline of bilateral loans
- decline in the importance of traditional sources
- diversity of sources
- emergence of new sources
- increase of high-cost loans.

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them. In view of our export performance in hard currency area, it can be argued to show that the net effect of this arrangement of repayment is beneficial.

[32]The point is substantiated in the next part.

Next the mix of past loans is analyzed from the angle of tiedness of loans.

Shift towards tied loans

The past disbursement of loans to India can be classified into one of the four categories stated below:

1) loans tied to specific project

2) loans tied to project and country[33]

3) non-project loans but country tied

4) loans untied to project or country.

The past trend shows that most of the bilateral loans fall in category two and to some extent in three while the loans from international agencies are solely distributed in category one. For our analysis we have clubbed loans of *type one and two* as tied loans and *three and four* as untied loans. The classification is based on the empirical observation that the rate of disbursements between either *one and two* or *three and four* does not differ much while significant difference in rate of utilization between the two classes can be observed.[34]

[33]The country-tied loan means that the loan is tied up with imports of goods or technology from the donor country.

[34]Cf. Ministry of Finance, 'External Assistance.'

The tied loan has several disadvantages. Foremost, because of the difficulties of matching rupee resources or due to intrinsic problems of project implementation, the rate of utilization of tied loan is slow.[35] The low rate of utilization of tied loan impedes its effect on economic development and thereby slowing the process of concomitant increase in debt capacity. Moreover, the low rate of utilization of tied loan increases the project cost. Another disadvantage of tied loan is that the credit can not be utilized to meet current account deficit. Also, in cases where it is tied to import of goods, its utilization will not necessarily improve the foreign exchange situation to the extent to which it finances imports, which would otherwise not have taken place. Since the aid is tied up with procurement condition, the choice of technology is limited. In addition, it has been observed that aid recipient pays higher prices for spare parts, inputs and raw materials which follow the machinery and equipments supplied under tied aid. These excess costs due to tying of loans considerably reduce the worth of aid. The estimates of excess cost of source-tied loans for India are not available. There is, however, little reason to believe that the excess cost of tied aid to India could be any less than those experienced by other developing countries. UNCTAD has estimated such cost to be in the region of 10 to 20 percent of nominal aid flows to Pakistan, Iran and Tunisia during the sixties.[36] With these points in mind, now we begin the trend analysis of

[35]In general, in case of tied loans, government bears the rupee cost of the project while the foreign exchange component of the project is taken care of by the credit.

[36]Cf. Bhagwati [1966].

tied and untied loans.

The low rate of utilization (and hence its disadvantage) of tied loans is best understood when we note that on World Bank's account which extends only tied loans, utilized loans constitute only 25 percent of the authorized amount at the end of 1984-85.[37] During that period, the same ratio for tied loans from Saudi Arabia is 55 percent, that of USSR 80 percent and IDA slightly higher at 70 percent. On the other hand, the ratio of utilized loans to authorized amount of bilateral untied loans is much higher: 92 percent for Austrian loans, 100 percent for Belgian loans, 97 percent for loans from Netherlands, 100 percent for Italian loans and 75 percent for Danish loans.

The point is also confirmed in Table 3-9 which shows the share of disbursed outstanding debt (DOD) as percent of debt outstanding including the undisbursed amount (DOU). As international agencies mostly extended project tied loans since 1980, DOD/DOU ratio is lowest for such loans. The increasing disbursement of bilateral tied loans in the 1980s has also caused sharp fall in their DOD/DOU ratio: between 1980-86, it deteriorated from 81 percent to 70 percent (Table 3-9). By contrast, for private debt, DOD/DOU ratio improved sharply since 1983 due to the growing volume of commercial loans.[38]

The past disbursements of loans classified by categories (tied and untied) are shown in Table 3-10.[39] As this table shows, the debt (disbursed) profile

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[37] Cf. RBI, vol. 2, various issues.

[38] As noted before, commercial loans are mostly untied loans.

[39] Because of *data limitation*, the estimates are shown only for *years up to 1984-85*.

of the period is characterized by surge of tied loans. Indeed, the growth is so much that the share of the tied loans registered a twelve percent jump (from 43 percent to 56 percent) over the years.

What has been the cause for the rapid increase of tied loans? To answer the question, we decompose the disbursed tied loans by sources between the years 1972/73-84/85 (Table 3-11a). As this table indicates, the striking increase is basically due to an increasing degree of participation since the seventies decade on the part of international agencies and their policy decision to provide loans tied to specific projects (see Table 3-11a). Another factor for the growing importance of the tied loans is the change in the policy stance of several OECD countries (Japan, USA, Canada) towards tied loans. However the former point is more important as the growth of multilateral loans has outpaced that of bilateral loans. So the increase in the share of tied loans is basically *supply induced phenomenon.*

With regard to destination of tied loans, loans are mostly utilized in the key sectors like transport, power, steel, oil, etc to increase the capacity in these sectors (Table 3-12). The agricultural development has rightly reflected priority over other sectors as reflected by its large share of the total. Much of it have been utilized for building irrigation facility, flood control, dry land farming, wasteland development etc. Since the destination of the tied loans is the key sectors, the low rate of utilization of tied loans entails long-term cost even outside the sphere of these sectors.

The low growth of untied loans has already been highlighted. However, as Table 3-10 indicates, the growth is not uniformly spread. It exhibits rapid decline in the second half of the 1970s followed by substantial increase

(relatively) in the 1980s. To understand the causes of this trend of untied loans, we decompose the disbursed untied loans by sources between the years 1972-73 and 1984-85 (Table 11b). The following observations can be made from the table:

1. The untied loans from OECD countries have declined over time. In view of changed scenario of lesser activity on the part of the OECD countries and their policy shift, the declining trend of untied loans is expected.

2. In the later half of the 1970s, the decline of untied loans from OECD countries had been compensated partly by bilateral loans from OPEC countries. A close observation of Table 3-11a and Table 3-11b also reveals that OPEC countries had primarily extended untied loans.

3. The entire increase (relatively) of untied loans in the 1980s is explained by the inflow of commercial loans. Indeed as Table 3-10 indicates, their share of the total untied disbursed loans has increased to more than 90 percent in recent years. In view of fall of untied bilateral loans and balance of payment problems in the 1980s, the growth of untied commercial loans is inevitable as they can be used for meeting current account deficit.

Lastly it should be mentioned that not all disbursement of untied loans actually adds to capital inflow. Between the years 1972-73 and 1978-79, a part of the untied loans (Rs. 78.16 crores) had been in the form of debt relief loans (i.e. by way of refinancing credits, cash credits, rescheduling,

postponement or grants either cash or in reduction in interest) from OECD countries.[40] In reality, such loans were mostly on paper since their extension did not amount to foreign exchange inflows, though these entailed reduction in foreign exchange outflows. Since 1979-80, however onwards, OECD countries did not grant any such credits.

In summary, the annual inflow of tied loans had an increasing share in the late 1970s and the 1980s. On the otherhand, whatever increase in the disbursement of untied loans had occurred in the 1980s, had come solely in the form of commercial loans.

3.6 Debt Buildup and Capital Flight

In the 1980s, the issue of capital flight has gained importance in discussion of third world debt and development, particularly in Latin America.[41] Naturally, question arises whether India's debt buildup is synonymous with capital flight.Though capital movements are strictly monitored in India, *capital flight can still be achieved by a number of mechanisms. They are:*

1. *Cash transfers*: The hard currency purchased on the black markets can be physically smuggled abroad by hired couriers.

2. *Trade misinvoicing*: Export undervoicing and import overinvoicing facilitates capital flight.

[40] Cf. RBI, 'Report on Currency and Finance, vol. 2,' various issues.

[41] See Lessard and Williamson [1987], Deppler and Williamson [1987].

3. *Commissions*: In case of commissions the foreign supplier pays the recipient a part of the proceeds from the sale of goods and services. Usually, the supplier deposits the amount directly into overseas accounts held by the recipient.

4. *Inter-bank transfers*: Domestic banks and local branches of foreign banks are empowered to facilitate transfer of foreign exchange. They may be willing and able to circumvent legal restriction.

With these points in mind, we are set to begin the measurement of capital flight from India in the last two decades. The residual measure of Dornbusch [1985] is used by us for the measurement of capital flight. According to this approach, it is realized that the increase in gross external debt corresponds to the sum of three items identified from the balance of payment accounts:

Increase in gross external debt = + current account deficit
− direct and long-term portfolio capital inflows
+ official reserve increase
+ other private capital outflows.

With respect to capital account transactions, a distinction is made between direct investment and long-term portfolio capital flows on the one hand and on the other, the short-term flows which for simplicity can be thought as hot money on the way in and as 'capital flight' on the way out. According to the measure, part of the debt increase not accounted

for by the current account deficit or the net capital (direct and portfolio) outflow or official reserve increase is calculated. It gives a measure of capital flight.[42] Of course, the measure is an imperfect one since it does not precisely correspond to the definition of capital flight advanced above.[43]

Table 3-13 presents summary estimates of capital flight from 1971 through 1987. It totalled US $ 17.0 billion during this period. It corresponds roughly 35 percent of our total external debt outstanding. What is more significant is that during the last seven years, capital flight has multiplied more than two-fold over the amount in the preceding decade. In the light of above statistic, it is not surprising that 'deposits of Indians, not residents in Switzerland, in Swiss banks rose by nearly 1149 million Swiss francs between 1979 and 1984, from 788 million Swiss francs to 1937 million Swiss francs'.[44]

The implication of such capital flight for the Indian economy is serious. It directly affects growth in two ways. On the one hand, capital abroad does not contribute to domestic investment; on the other, scarce foreign exchange instead of financing essential imports, is used to finance capital flight.

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[42]See Dornbusch [1985], pp. 214-215.

[43]The adjustment for trade misinvoicing can be devised by comparing data from trading partners and our own source. However defence imports are not included in India's trade data while they are done in developed countries data. So the corrections for trade misinvoicing by applying this difference will give imprecise estimate.

[44]Cf. Sarkar [1987].

3.7 Cost of External Debt: India's Debt Burden

The large magnitude and rapid growth of external loans have heightened concern regarding our mounting external debt burden. The central question being asked whether India has enough capacity to meet the increased debt service payments in the future. The answer is difficult as the notion of debt capacity is closely linked to the whole realms of government fiscal and monetary policies. Because of the wide range of these considerations, it is difficult to devise any one measure as a definite measure of debt capacity. Often it is argued that the debt servicing capacity depends upon the growth of national income, output and particularly export earnings. Apart from the above factors, the experience of the 1970s has taught the importance of appropriate debt structure (terms of finance). As a basis of judging debt burden, creditworthiness, in this section, an assessment of India's debt servicing capacity and burden will be made by some standard indicators. Also the debt structure of past loans will be reviewed to estimate the burden of debt servicing.

In a cross-section setting, we have already analyzed India's debt burden and debt structure in section 4. In this section, a detailed analysis will be done in the intertemporal context.

3.7.1 Terms Structure of past loans

The terms and conditions associated with past loans differ widely between the sources. Some charge commitment fee on the undisbursed amount while others extend interest free credits but take a service charge. However, common to all, are three elements of terms of finance, viz. interest rate, maturity period, grace period, which together are instrumental in determining the debt structure. Since many studies in the literature have commented on the importance of appropriate debt structure with respect to these three elements, our analysis of terms of finance is confined only to these instruments.[45]

For the study, to analyze the changes in the term structure of publicly guaranteed loans over time and between creditors (official and private), the average terms of new commitments will be reviewed.[46] Further to analyze the changes in the term structure between sources (bilateral, multilateral) and type of debt (tied and untied), the disbursed loans from official creditors to India have been classified on the basis of interest rate, maturity period and grace period. Lastly, the limitation of data does not permit us to the analyze the term structure of other two categories of debt, viz private non-guaranteed and short-term debt and as such our study underestimates the extent of change.

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[45]See, for example, Avramovie et. al. [1964], Cooper and Sachs [1985], Dornbusch and Helmers [1988].

[46]The limitation of data have forced us to analyze the term structure on the basis of these second best indicators.

Interest Structure

As Table 3-14 indicates, there are distinct signs of hardening of India's borrowing terms which could have contributed much to the increase in the debt service burden. Interest cost on new official credit commitments after remaining stable around 2 per cent until 1980 rose sharply to 6.2 per cent in 1982. Though in 1983 it softened to 4.4 percent but rose again and stablized around 5.3 percent in the later years. By contrast, the interest rates (nominal) on private credits (commercial and supplier's credit) after rising steadily in the 1970s declined continuously during the period 1980-84. This was mainly due to good credit-rating enjoyed by India and partly due to development in the capital markets. However, due to fall in credit-rating, the interest rates are on the rise in recent years. It should be noted that the above statistic excludes the interest structure of private non-guaranteed and short-term debt which are borrowed at a higher interest rate. In view of the fact that these components of debt were increasing in the recent past, interest rate on external loans is likely to be higher than the observed rate.

A rise in the current interest rate raises the cost of any future debt. Whether it also increases the interest burden of existing India's debt depends on the factor: whether the debt is at a fixed or floating rate.

The distinction between fixed and floating rate is the following: a fixed rate loan establishes a definite interest rate when the loan agreement is signed. A subsequent rise in world interest rate is the creditor's problem. A floating-rate loan, in contrast, has an interest rate that is revised periodically in the light of recent world interest rates. Typically such loans specify

the interest rate as a premium over the London Inter-bank Offer Rate (LIBOR), a dollar interest rate widely viewed as a sort of world standard. Clearly the distinction between the fixed and floating-rate is a question of who bears the risk of interest rate volatility.

In the light of the above discussion, it is important not only to analyze the changes in interest rate, but also the extent of variable rate debt. Prior to the 1980s, foreign loans with variable interest rate constituted less than 1 percent of the total (see Table 3-14). Since 1980, partly due to the growing volume of commercial loans, the share of loans subjected to variable interest rate has risen to more than 15 percent of the total. Moreover as our estimate excludes certain categories of debt, viz. short-term debt and private non-guaranteed debt, which are on the rise in recent years, the extent of foreign debt with flexible interest rate is expected to be much more.

With regard to interest rate of debt (disbursed) from official creditors, Table 3-15 shows that nearly 61 percent of disbursed debt during the years 1972/73-84/85 were contracted at low interest rate (0-2 percent per year).[47] Out of the remaining 39 percent of disbursed debt between the years 1972/73-84/85, 17 percent were in the category of high interest rate (more than 6 percent per year) 16 percent belong to the interest range 2.1-3 percent per annum and the remaining 6 percent were contracted at medium interest rate (3.1-6 percent per annum). Furthermore, the data in Table 3-15 indicates a deterioration in terms in the later half of the seven-

[47]The interest rates of disbursed loans from official creditors are available *only up to 1984-85*. So the interest rates of latest years are not shown in Table 3-15.

ties decade. Note that the share of high interest loans (6.1+ percent per annum) increased from 7 percent in 1972-73 and 20 percent in 1978-79 to 43 percent in 1983-84. The increase has come partly at the cost of medium interest loan and in part from loans in the interest range 2.1-3 percent per year.[48]

What has been the cause for the relative increase of high interest loans? To answer the question, we decompose the official debt inflow (disbursed) by sources classified by the interest class separately for the tied and untied loans between the years 1972-73 and 1984-85 (Table 3-16a and Table 3-16b). The following observations can be made from the tables:

1. The terms of bilateral loans from OECD countries have improved over time.

2. Between the bilateral loans from OPEC countries and OECD countries, the terms of the later are more favourable than the former.

3. The worsening of terms since the later half of 1970s stemmed basically from an increasing inflow of loans from the World Bank.

4. Except for loans from the World Bank, the other multilateral loans are not more costly than bilateral loans. However, an increasing role of hard-wing of the World Bank in the later half of the 1970s implies

[48]The main factor for the sudden rise of high interest loans in 1983-84 was the increased disbursement from the World Bank.

the relative increase of high interest loans.[49]

5. Between tied and untied loans from official creditors, there is no perceptible variation in the interest rate except for the variation caused by the participation of the World Bank loans.

Maturity Structure

Table 3-14 shows the maturity spread of public/publicly guaranteed loans over time. As this table shows, maturity period of new official credit commitments after remaining stable around 30 years until 1985 declined sharply to 26.8 years in 1987. On the otherhand, the maturity period of new private commitment underwent substantial year-to-year volatility due to changes in the international environment and India's credit-rating in the financial markets: between 1970 and 1987, it has declined from 18.6 years to 11.2 years. Partly due to this shift and in part due to the changes in the maturity period of new official credit commitments, the average maturity of new committed loans declined from 44.8 years in 1978 to 25 years in 1985 and further to 20.0 years to in 1988.

Coupled with these shifts, since 1980, a growing proportion of capital inflows has come in the forms of IMF credit and short-term debt (maturities less than a year) (Table 3-6). As noted before, these credits enable the borrower to tide over the difficulties in the balance of payment accounts.

[49] As noted before, the growing (relatively) inflow of loans from World Bank was mainly a supply induced phenomenon.

Thus, their rising shares in the eighties reflect partly worsening current account position.[50] Consequently the share of debt with maturities more than a year (i.e. total debt minus short-term debt and IMF credits) declined sharply from 93.5 percent in 1980 to 89 percent in 1988. As mentioned earlier, such a level of dependence on short-term debt could precipitate debt-servicing problems if liquidity is inadequate.

With regard to maturity profile of loans from official creditors, Table 3-17 indicates that most of the inflows have come from the long-end of maturity distribution. As this table indicates, loans with maturity period more than 30 years have outpaced loans with maturity period between 20 to 30 years.[51] Consequently, the share of the later category of loans has fallen sharply over time. Meanwhile, disbursement of loans with maturity less than 10 years has been modest during the period 1972/73-84/85. This category of loans constitutes less than 6 percent of sumtotal of India's official indebtedness between the years 1972-73 and 1984-85.

As regards maturity profile between bilateral and multilateral loans, Table 3-18a and Table 3-18b indicate that in the eighties, maturity profile of multilateral loans has hardened while that of bilateral loans has improved over time. This has been possible partly due to softening of terms of bilateral assistance from DAC member countries namely, Japan, Germany,

[50]The developments regarding current account have been discussed explicitly in Chapter 4.

[51]The maturity period of disbursed loans from official creditors are available *only upto 1984-85.*

Canada and partly due to increasing role of hard-wing of the World Bank. This is true separately, both for tied and untied loans.

In the aftermath of first oil shock, the bilateral assistance has come from the new entrants of the credit market. They are the OPEC members, viz. Saudi Arabia, Iran, Iraq, UAE and have primarily extended credits with maturity spread below 20 years. Partly for this, a sudden rise of this category of loans is noticeable in mid-1970s.

As already mentioned, the principal sources of untied official loans are DAC members and middle east countries. Table 3-18b indicates that loans with maturity below 20 years were disbursed in significant proportion only in the years 1976-77, 1977-78, 1979-80, 1980-81. In other years, credits have come mostly from the long-end of maturity distribution. Furthermore, in the early eighties, loans having maturity between 20 and 30 years had the maximum share while the same was true for loans with maturity above 30 years in the preceding decade. The shift in maturity distribution was the outcome of increasing disbursements from IDA and USA (PL 480 convertible currency credits) in the 1970s and from Netherlands in eighties.

Grace Period

As already mentioned, grace period stipulates the time span during which no interest has to be paid on the disbursed amount. In a sense, it gives the borrowing country an opportunity to invest the capital productively within the grace period so that the return from the investment can be utilized to meet the servicing cost. The grace period of new commitments to India

is shown in Table 3-19. As this table shows, partly on account of changes in the market condition, there has also been a marginal hardening of the grace period both in the case of official and private credits.

In summary one may conclude from the above discussion and that in section 3.4 that our worsening of terms of external borrowing is more against country's own past than in relation to other developing countries.

3.7.2 Indicator Approach to Debt Capacity

We have seen that India's debt structure has worsened against the country's own past. Naturally, question arises how far it has exacerbated our debt burden. An assessment of it will be made below through some standard indicators.

Decline in Net Flows and Net Transfers

Two concepts are frequently used to describe the net effect of borrowing and repayment on the flow of financial resources. Net flow refers to disbursements minus principal repayments. It measures whether new financing exceeds debt being retired. The other one is net transfer which refers to disbursements minus interest and principal repayments. Negative net transfer implies that total debt service payments exceed gross inflows causing in effect transfer of net real resources from the economy and that a trade surplus is thus required.

Table 3-20 depicts the changes over time in the burden of India's ex-

ternal debt with respect to these indicators. As the table shows, the net flow has been positive, though in recent years, it represents a much smaller share of yearly gross disbursements. Note that the net flow after stabilizing at 70 percent of disbursed loans in the period 1970-84, declined to 65.95 percent in 1988. Moreover, net flow from private creditors, after stabilizing at more than 70 percent of disbursed loans in the first half of the eighties decade, declined sharply to 46.7 percent in 1986.

Coupled with the decline in net flow, net transfer fell steeply in the post-1985 period. Net transfer, which amounted to 58.0 percent of the total disbursements in 1984, declined sharply to 39.5 percent in 1985 and further to 24.9 percent in 1988 (Table 3-20).

Earlier, we have seen that the traditional indicators of terms of finance, though deteriorated against past, did not change drastically in the 1980s. However, when we look at the figures of net transfer in the 1980s, it seems that there is an apparent contradiction. However, subsequent analysis (using regresstion technique) shows that this behaviour of the 1980s is the outcome of a relatively faster growth of repayment than disbursement.[52]

[52]Using a semilog functional form, interest payments (I), disbursement (D) and repayment (R) of debt as independent variables and net transfer (NI) as independent variable, we find that the estimated coefficients of I, D and R in the regressed equation are respectively -0.002, 0.005 and -0.009. At 5% level of significance, only the variables D and R are found to be significant.

Change in Debt Indicators

A variety of debt indicators are commonly used to measure debt servicing capacity of developing countries. There are basically two broad categories of debt indicators:

1. Those that measure a country's capacity for making payments in foreign exchange. The debt service or total debt outstandings as a percentage of exports of goods and services are the commonly used indicators of this type.

2. Those that measure a country's capacity to generate real resources (which can then be used to pay for imports and service debt). The most widely used indicator of this type is the debt/GNP ratio which measures debt burden as percent of the economy's productive capacity.

These conventional indicators of capacity to handle external debt have little theoretical basis. Nevertheless as Cooper and Sachs writes, 'They have become important indicators in the eyes of lenders, with each borrowing country measured both against other countries and against the borrowing country's own past. This, in effect, makes them important to borrowers. A sharp increase in these indicators is taken as a warning signal even when they are relatively low.'[53]

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[53]See Cooper and Sachs [1985], pp. 51.

We have seen in section 4 that India's relative position with regard to debt indicators has not deteriorated significantly in relation to other developing countries. However, when the debt indicators are measured against India's own past, the fact emerged that they have undergone significant deterioration in recent years (Table 3-21). Between 1980-88, the weight of external debt relative to national income has increased from a level of 11.1 percent in 1980 to 21.7 in 1988, representing an annual rise of 13 percent over the years. Because India achieved export growth that was lower than that of GNP growth, the ratio of debt to exports of goods and services rose steeply from 128.2 percent in 1980 to 268.4 in 1988 (Table 3-21).[54]

In section 5, we have seen that India's debt structure altered substantially in the 1980s. Because the growth in exports was not sufficient to compensate for the increased debt servicing burden arising due to the shift towards private creditors, the debt service ratio on account of long-term debt, after declining on a continuum basis in the 1970s, rose to 25 percent of our export earnings in 1986. When servicing burden on short-term debt and IMF liabilities is included, the figure is still higher—nearly 30 percent of our exports earnings from good and services. This happened because of the amortization of earlier IMF loans and servicing burden of short-term debt—arising due the growing dependence on these two sources since 1982. For the same reason, the debt service ratio on account of long-term , short-term and IMF liabilities reached as high a figure as 31 percent in 1987.

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[54] See World Bank, 'World Development Report,' various issues.

The debt service ratio though widely used as a measure of creditworthiness suffers from the defect of bunching of maturities. As long as investors have confidence in the management of an economy, they will roll over principal repayments. For this reason, interest service ratio—interest payments divided by exports of goods and services—perhaps is a better indicator of the country's ability to make payments abroad, since it avoids the distorting effects caused by a bunching of repayments, prepayments, or refinancing. Table 3-21 shows that interest payments on long-term debt as a proportion of exports of goods and services declined significantly during the period 1970-80. Since 1981, primarily because of high interest loans interest-service ratio sustained continuous increase: it absorbed 12 percent of our export earnings in 1988.

The broad pattern emerged from this study is that India's debt servicing capacity witnessed sustained deterioration in recent years. Even though its debt burden did not chang significantly vis-a-vis other countries, this deterioration would cause hardening in the lending rates of Indian loans in the financial markets in the coming years. The available evidences suggest that the spreads of the Indian loans in the financial markets have risen significantly in the late-1980s.[55]

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[55]Cf. Financial Times, Aug. 3, 1990.

3.8 Conclusion

The purpose of the chapter has been to examine the evolution of India's indebtedness and the burden associated with it. In the process, the extent of changes whether in sources, type of debt or in debt structure has also been highlighted. In summary, one could draw the following conclusions.

- Compared to the seventies decade, our pace of external borrowing has been faster. Nonetheless, the cumulative growth rate of our debt during the entire period stands out to be low in comparison to other developing countries.

- The period of high growth of external debt is synonymous with the period of global rise of real interest rate and the Indian loans in particular.

- Defence debt has increased rapidly in the eighties. Because of its large size, intake of further such debt needs close scrutiny.

- The study points to the fact that capital flight in the Indian context is an issue (though not a major one) in the 1980s. Obviously, its implication are serious.

- Since 1980, India's debt structure has altered significantly. Prior to the 1980s, nearly entire India's external debt had been in the form of long-term public/publicly guaranteed debt. By contrast, India's dependence on short-term debt and IMF liabilities has increased significantly since 1982. Also private non-guaranteed debt and NRI

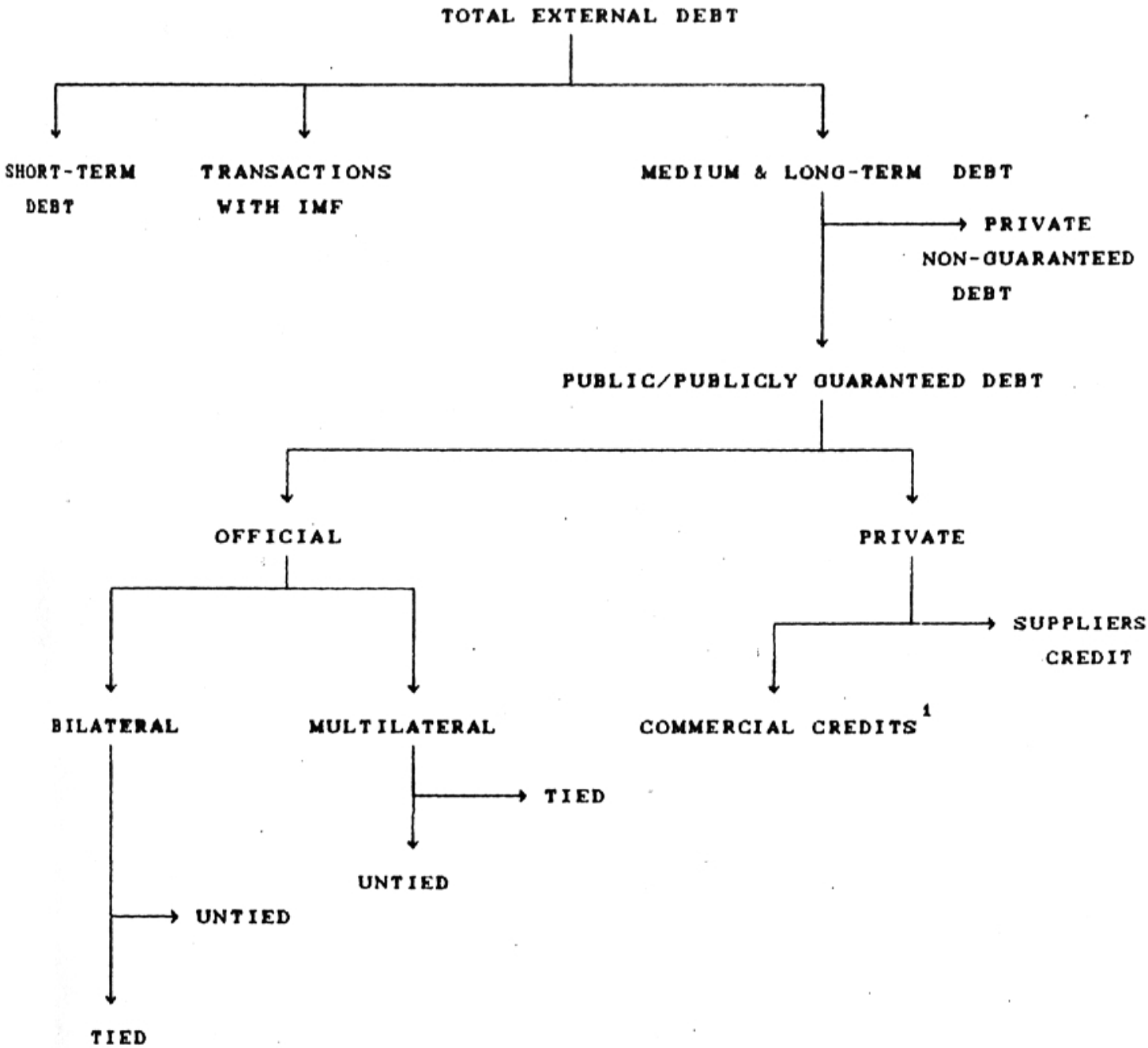
deposit liability (which is not included in the official figure) played a greater role (relatively) in our debt buildup in the 1980s.

- Within the category of long-term public/publicly guaranteed loans, bilateral assistance contributed a substantial part of our borrowing in the 1970s. However in the eighties, multilateral and private debt (specially commercial loans) have played a greater role in our debt buildup.

- The tiedness of loans also increased over the years. Consequently, the pace of disbursements of loans (as measured by DOD/DOU rates) have declined in the eighties. Thus while a significant portion of loans (at favourable terms) have remained undisbursed, India has to raise commercial loans at hard terms.

- The burden of debt, as reflected in the debt indicators, also witnessed significant deterioration in the present decade. Though the measures of debt burden in relation to other developing countries reflect no significant change in position up to 1988, the deterioration with its own past is expected to affect the term structure of commercial and short-term debt in the coming years. The evidence suggests that the terms of such loans have increased substantially in the post 1988 period.

Figure 3-1. Flow-chart of Classification Rule



Here commercial credits refer only to public/publicly guaranteed bank loans. This excludes non-guaranteed (i.e. within the category of private non-guaranteed debt) bank loans.

Table 3-1. Profile of India's External Debt[a] and selected Indicators of Growth

	1970	1975	1980	1982	1984	1985	1986	1987	1988
Total External Debt (billions of US dollars)	7.9[b]	12.45[b]	19.33	25.10	31.78	36.68	41.09	46.37	57.51
Average interest rate %[b]									
[1] India		2.3	2.4	3.2	3.7	4.5	4.3	4.4	6.3
[2] Developing Countries			20.0	10.0	8.6	7.8			
Average real interest rate %[c]									
[1] India		-4.8	-9.9	-1.0	2.1	1.7	5.0		
[2] Developing countries			-19.0	13.4	9.7	12.5			

India's growth (nominal) %	70-75	75-80	80-85	85-88
[1] Total Debt	11.40[b]	8.91[b]	17.95	18.93
[2] GNP	12.01	17.95	4.46	11.20
[3] Exports of goods and services	30.10	22.49	1.38	20.99
India's growth (real) %				
[1] Debt	-1.37[b]	-2.03[b]	16.04	15.43
[2] Exports	5.37	6.15	2.58	11.08
Developing Countries (real) %				
[1] Debt		4.7	18.31	
[2] Exports		3.83	-1.28	

a. At end of each year, debt corresponds to disbursed amounts only. The data exclude defence debt and NRI deposit liability.

b. The estimates are for long-term debt.

c. Average interest rate on long-term debt is adjusted by changes in export prices.

Source: 1. World Bank, 'World Debt Tables,' various issues;
2. IMF, 'International Financial Statistics.'

Table 3-2. Estimates of Defence Credits to India
(billions of US dollars)

Year	Imports		
	Custom basis	RBI's payment basis	Difference
1970	1.80	2.01	0.21
1971	2.08	2.34	0.26
1972	1.94	2.29	0.35
1973	2.83	3.08	0.24
1974	4.49	4.26	-0.23
1975	5.63	4.95	-0.68
1976	5.02	4.62	-0.40
1977	5.86	5.32	-0.55
1978	7.00	7.40	0.40
1979	8.87	9.82	1.05
1980	13.29	13.95	0.66
1981	13.80	14.15	0.35
1982	13.25	14.05	0.80
1983	12.59	13.87	1.28
1984	12.84	14.22	1.37
1985	14.37	15.08	0.71
1986	13.79	15.69	1.89
	Rough estimates of defence credits disbursements[a]		
	[1] 70-79		0.65
	[2] 80-86		8.37
	[3] 70-86		9.02

Source : International Monetary Fund, "International Financial Statistics, 1988 and 1990 issues.

a. Calculation based on cumulative differences.

Table 3-3. Composition of India's External Debt
(Rs. crores, percentages in parenthesis)

As at End-March	External Assistance (1)	IMF (2)	External Commercial Borrowing (3)	NRI Deposit Liabilities (4)	Total[a] (1+2+3+4)
1980	12178 (90.68)		1252 (9.32)		13340
1985	24004 (60.6)	4888 (12.3)	6908 (17.4)	3819 (9.6)	39619
1986	26638 (58.4)	5271 (11.5)	8075 (17.7)	5650 (12.4)	45634
1987	32312 (56.7)	5548 (9.7)	11243 (19.7)	7847 (13.8)	56950
1988	36578 (56.3)	4732 (7.3)	13543 (20.9)	10054 (15.5)	64907
1989	46838 (55.9)	3696 (4.4)	19147 (22.8)	14154 (16.9)	83835

a. The total does not include short-term debt and defence debt.

Source: Reserve Bank of India, 'Annual Report, 1988-89'.

...le 3-4. Growth and Burden of External Debt in Selected Developing Countries[a]
...t at end of each year, ranks in parenthesis)

...ntry[b]	Total Debt		Long-term Debt								
	Percapita	Millions of dollars	Disbursed and Outstanding					As percent of GNP		Debt service as % of exports goods & services	
			Percapita		Millions of dollars		Compound rate of growth				
	1988	1988	1970	1988	1970	1988		1970	1988	1970	1988
...	70.5 (11)	57513 (3)	14.70 (9)	62.9 (11)	8118.0	51168	29.0 (10)	13.9 (7)	19.3 (11)	23.7 (4)	24.9 (7)
...ladesh	93.8 (10)	10219 (12)	..	85.7 (10)	..	9330		..	48.5 (6)	..	20.5 (9)
...il	793.5 (4)	114592 (1)	55.42 (3)	701.9 (3)	5128.0	101356	104.2 (4)	12.2 (8)	29.6 (10)	21.8 (7)	42.0 (2)
...	36.6 (3)	42015 (5)	..	29.6 (13)	..	32196	.. ..	.. ..	8.7 (13)	.. ..	6.9 (17)
...	995.4 (2)	49970 (4)	51.39 (5)	861.1 (2)	1713.0	43259	134.7 (2)	22.5 (2)	126.7 (1)	38.0 (2)	16.6 (10)
...ia	62.8 (12)	2978 (13)	6.86 (11)	58.9 (12)	1690.0	2790	86.6 (6)	9.5 (10)	50.6 (5)	11.4 (10)	37.4 (3)
...	1213.5 (1)	101567 (2)	17.69 (1)	1059.3 (1)	5966.0	88665	77.0 (8)	16.2 (5)	52.4 (4)	44.3 (1)	43.5 (1)
...	279.3 (8)	30719 (8)	10.06 (10)	263.1 (8)	567.0	28967	278.2 (1)	4.3 (11)	102.5 (2)	7.1 (11)	25.7 (4)
...	160.0 (6)	17010 (11)	26.88 (7)	132.0 (9)	3069.0	14027	19.8 (11)	36.6 (1)	37.6 (8)	23.9 (3)	24.1 (8)
...ines	500.0 (6)	29448 (9)	41.90 (6)	485.0 (6)	1544.0	24467	82.4 (7)	21.8 (4)	62.6 (3)	23.0 (5)	27.7 (5)
...	888.7 (3)	37156 (7)	61.28 (2)	651.8 (4)	2015.0	27376	69.9 (9)	22.3 (3)	16.2 (12)	20.4 (8)	11.5 (12)
...	367.7 (7)	20530 (10)	19.36 (8)	302.0 (7)	726.0	16905	123.8 (3)	10.2 (9)	29.7 (9)	14.0 (9)	15.7 (11)
...	735.9 (5)	39592 (6)	53.37 (4)	587.1 (5)	1886.0	31589	87.5 (5)	15.0 (6)	46.1 (7)	22.6 (6)	35.2 (4)

...t excludes defence debt and NRI deposit liability.
...ntries with population more than 40 millions in mid 1986.
...rld Bank, 'World Development Report,' various issues.

Table 3-5. Terms of External Public/Publicly guaranteed Borrowing of Selected Developing Countries[a], 1970-1988
(Shares and interest in percent, maturity and grace period in years, ranks in parenthesis)

Country	Average Rate of Interest			Maturity in Years			Grace period in years			Share of variable Rate Public loan[b]		
	1970	1984	1988	1970	1984	1988	1974	1984	1988	1970	1984	1988
India	2.4 (10)	6.7 (9)	6.3 (7)	34 (1)	28 (3.5)	20 (5.5)	8 (2.5)	7 (2.5)	6 (3.5)	0.0 (8.5)	7.9 (8)	15.6 (9)
Bangladesh	0.0 (11)	1.4 (12)	1.5 (12)	0 ...	38 (1)	33 (1)	0 ...	9 (1)	10 (1)	0.0 (8.5)	0.1 (12)	0.0 (13)
Brazil	6.8 (3.5)	12.2 (1)	9.5 (1)	14 (5.5)	9 (8.5)	11 (11)	3 (7.5)	3 (6)	4 (5.5)	11.8 (1)	79.1 (2)	70.0 (2)
China	...	...	7.1 (4)	...	...	13 (9)	...	...	4 (5.5)	...	...	39.1 (5)
Egypt	5.3 (6)	6.9 (8)	6.4 (6)	21 (3)	17 (4.5)	23 (3.5)	8 (2.5)	4 (5.5)	7 (2.5)	0.0 (8.5)	1.7 (11)	1.4 (12)
Ethopia	4.4 (7)	4.5 (11)	3.0 (11)	32 (2.5)	31 (2)	24 (2)	7 (3)	6 (3)	7 (2.5)	0.1 (7)	7.7 (9)	6.7 (11)
Mexico	8.0 (1)	11.0 (2)	8.2 (2)	12 (6.5)	11 (7)	15 (8)	3 (7.5)	5 (4)	3 (6)	5.7 (2)	83.0 (1)	78.6 (1)
Nigeria	6.0 (4)	10.4 (3)	7.6 (3.5)	14 (5.5)	9 (8.5)	16 (7)	4 (6.5)	2 (7)	5 (4.5)	2.7 (3)	56.0 (3)	40.6 (4)
Pakistan	2.8 (9)	5.2 (10)	5.2 (10)	32 (2.5)	28 (3.5)	23 (3.5)	12 (1)	7 (2.5)	6 (3.5)	0.0 (8.5)	6.8 (10)	8.8 (10)
Philippines	7.3 (2)	9.0 (6)	5.4 (8)	12 (6.5)	15 (5)	22 (4)	2 (8)	4 (5.5)	7 (2.5)	0.8 (6)	41.0 (5)	43.2 (3)
South Korea	5.8 (5)	9.7 (4)	7.6 (3.5)	19 (4.5)	12 (6.5)	20 (5.5)	6 (4)	4 (5.5)	4 (5.5)	1.2 (4)	46.8 (5)	30.5 (8)
Thailand	6.8 (3.5)	8.7 (7)	5.3 (9)	19 (4.5)	17 (4.5)	18 (6)	4 (6.5)	7 (2.5)	6 (3.5)	0.0 (8.5)	29.4 (6)	34.4 (6)
Turkey	3.6 (8)	9.6 (5)	7.0 (5)	19 (4.5)	12 (6.5)	12 (10)	5 (5)	4 (5.5)	5 (4.5)	0.9 (5)	28.4 (7)	34.1 (7)

a. All countries with population more than 40 million in mid 1986.
b. As percentage of public/publicly guaranteed loans.

Source: World Bank, 'World Development Report', various issues.

Table 3 6. Profile of India's External Debt[a]
(billions of U.S. dollars, percentages in parenthesis)

	1970	1975	1980	1982	1984	1985	1986	1987	1988
Total External Debt [1+2+3]	..[b]	..	19.33	25.10	31.78	36.68	41.09	46.37	57.51
[1] Long Term Debt[c]	7.94	12.45	18.00	20.92	25.60	30.82	34.72	40.77	51.17
			(93.5)[d]	(83.6)	(82.2)	(84.4)	(84.0)	(87.9)	(89.0)
(A)[c] Official Creditors	7.61	11.92	17.05	18.46	20.40	23.61	26.90		
			(88.2)	(73.6)	(64.2)	(64.4)	(65.5)		
(i) Multilateral	1.56	3.24	6.72	9.13	11.25	12.75	14.08		
			(34.8)	(36.9)	(35.4)	(34.8)	(34.3)		
(ii) Bilateral	6.05	8.68	10.33	9.33	9.15	10.86	12.82		
			(53.4)	(37.2)	(28.8)	29.6)	(31.2)		
(B)[c] Private Creditors	0.33	0.30	0.68	1.29	3.10	4.26	5.01		
			(3.5)	(5.1)	(9.8)	(11.6)	(12.2)		
(i) Supplier's	0.28	0.27	0.15	0.09	0.24	0.41	0.43		
			(0.8)	(0.4)	(0.7)	(1.1)	(12.2)		
(ii) Financial Markets	0.05	0.03	0.53	1.20	2.86	3.85	4.58		
			(2.7)	(4.8)	(9.7)	(10.5)	(11.1)		
(C) Private non-guaranteed	0.10	0.28	0.34	1.24	2.61	3.09	2.60	3.44	1.47
			(1.7)	(4.9)	(8.2)	(8.4)	(6.3)	(7.4)	(2.6)
[2] Short-Term Debt	...	...	0.93	1.83	1.74	1.52	2.30	1.95	3.77
			(4.8)	(7.3)	(5.5)	(4.1)	(5.6)	(4.2)	(6.6)
[3] Use of IMF Credits	0.00	0.81	0.33	2.88	3.93	4.29	4.29	3.65	2.57
			(1.8)	(9.1)	(12.3)	(11.5)	(10.4)	(7.9)	(4.5)

a. At end of each year, debt corresponds to disbursed amounts only. The data exclude defence debt and NRI deposit liability.
b. Not available.
c. A and B include public and publicly guaranteed loans.
d. As percentage of total debt.

Source: World Bank, "World Debt Tables," various issues.

Table 3-7. Annual Official Debt Inflow (Disbursed), 1972/73-88/89
(millions of rupees)

Period	Official Debt (Disbursed)[a]							
	Bilateral				Multilateral		Total	
	Repayable							
	Foreign currency		Through Exports					
	Nominal	Change[c]	Nominal	Change[c]	Nominal	Change[c]	Nominal	Change[c]
1972-73	3889.30 (67.25)[b]		158.00 (2.74)		1729.60 (29.85)		5774.10	
1973-74	4086.94 (58.49)	5.29	228.28 (3.27)	44.90	2670.91 (38.22)	54.96	6986.18	20.99
1974-75	5210.94 (59.95)	27.91	298.46 (2.71)	4.98	3329.50 (37.92)	24.68	8778.97	25.66
1975-76	7622.02 (68.99)	46.29	926.6 (2.71)	95.71	3995.71 (39.46)	20.00	11941.33	42.87
1976-77	5110.01 (50.80)	-32.95	972.15 (3.69)	15.17	4574.32 (45.48)	14.49	10056.48	15.78
1977-78	3992.93 (48.79)	-22.86	995.94 (4.14)	-10.21	3800.71 (47.10)	-16.92	8068.58	-19.77
1978-79	3125.91 (42.91)	-20.52	290.96 (3.16)	-91.04	3925.87 (59.91)	3.20	7282.14	-9.70
1979-80	2722.21 (32.05)	-12.89	941.26 (4.01)	47.62	5429.59 (63.92)	38.32	8499.06	16.69
1980-81	3415.50 (22.14)	25.46	329.40 (2.19)	-3.52	11676.89 (75.71)	115.07	15422.09	81.58
1981-82	3069.79 (25.07)	-10.19	225.85 (1.84)	31.61	8946.27 (73.08)	-29.38	12241.85	-20.62
1982-83	2891.90 (19.70)	-7.75	400.70 (2.78)	77.87	11129.50 (77.44)	24.40	14371.40	17.39
1983-84	3024.60 (21.62)	6.81	761.60 (5.44)	90.25	10188.00 (72.84)	-8.46	13986.90	-2.67
1984-85	3962.25 (25.83)	31.18	1086.20 (8.34)	42.71	8561.25 (65.77)	-15.97	13017.22	-6.93
1985-86	4072.70 (29.78)	21.13	1618.90 (11.83)	49.04	7985.40 (58.39)	-6.70	13674.80	4.82
1986-87	4983.00 (28.9)	22.35	1769.70 (10.09)	8.94	10831.70 (61.62)	35.64	17578.40	28.54
1987-88	3962.50 (30.5)	67.82	2220.00 (8.1)	25.87	16822.50 (61.38)	55.31	27405.00	55.90
1988-89	5017.50 (19.8)	-40.00	2070.00 (8.1)	-6.76	18900.00 (72.1)	8.80	25987.50	-7.36

a. Excluded from official debt, the folloving credits: PL480, PL665(TCM), Third Country Purchases, International Sugar Organisation.
b. Figures in brackets give respective shares
c. Percentage change over previous year.
Source: Ministry of Finance, "External Assistance", various issues.

Table 3-8. Major Sources of Official Debt (Disbursed[a], 1972/73-88/89
(shares in percent)

Year	W.Germany	World Bank	IDA	U.S.A.	U.K.	Canada	France	Iran	Iraq	Japan	Netherland	USSR	IMF Trust Fund	A.D.B.
1972-73	12.97	6.23	23.60	9.37	20.66	8.81								
1973-74	6.97		37.72	8.27	17.76	5.88	5.95							
1974-75	7.19		34.14	7.40	12.21	4.57			8.78					
1975-76	6.68	5.72	30.86	8.78	5.17		3.52	24.68						
1976-77	7.31	5.72	39.77	5.61				14.60		6.13				
1977-78	4.38	14.10	30.96					17.92		5.15				
1978-79	8.39	18.82	33.62					8.95		6.25	5.06			
1979-80	6.21	13.13	48.27	4.62							4.73	3.99		
1980-81	4.62	8.48	31.61	4.97			3.53							
1981-82	5.51	24.97	46.62	4.86							4.19			
1982-83	4.80	15.65	58.93				2.61			3.97		2.78		
1983-84	4.29	25.08	46.47	3.74			3.65					5.44		
1984-85	4.95	16.93	47.63				8.15					8.34	33.79	
1985-86	4.68	17.70	39.13	2.70		2.26	11.20			3.65	1.76	11.84		
1986-87	4.85	26.79	34.05	3.77		1.15	2.19			5.57	1.03	10.03		
1987-88	5.39	35.03	25.48	1.75			5.23			12.83	1.67	8.10		
1988-89	5.82	47.44	22.04				2.63			6.50	1.83	8.15		2.01

a. Excluded from official debt the following credits: PL480. PL665(TCM), Third Country Purchases and.Is 1 International Sugar Organisation.

Source: Ministry of Finance, "External Assistance," various issues.

Table 3-9. India's outstanding debt— Disbursed and Undisbured

At end of each year	Debt outstanding + Undisbursed (DOU)							
	Nominal in Millions of dollars				Debt Disbursed as percent of DOU			
	Bilateral	Multi lateral	Private	Total	Bilateral	Multi lateral	Private	Total
1970	2474	1885	506	9869	80.9	82.9	65.2	80.5
1975	10479	5065	484	16028	82.8	64.1	62.0	76.9
1980	12810	11782	1580	26179	80.7	57.0	49.0	67.7
1981	12040	13650	1848	27537	79.0	57.1	49.9	65.8
1982	11758	15405	2880	30049	79.4	59.2	44.7	65.7
1983	12966	16958	4009	32727	75.0	69.9	44.5	65.4
1984	12239	18501	4536	35277	74.8	60.8	68.9	66.6
1985	14499	21871	5969	42999	74.9	58.9	71.4	65.8
1986	18550	24984	6589	49529	69.1	57.7	76.1	64.4
1988	19961	30946			65.1	59.5		

Source: World Bank, "World Debt Tables", various issues.

Table 3-10. Tied and Untied Loans (Disbursed), 1972/73-84/85
(millions of rupees at IMF parity rate)

Year	Utilization of Loans[a]					Percent of Total	
	Tied	Untied			Total	Tied	Untied
		Commercial	Others[b]	Total			
1972-73	2376.71	..[c]	3097.41	3094.41	5471.12	43.44	56.56
1973-74	2921.66	..	3648.19	3648.19	6569.85	44.47	55.53
1974-75	3084.61	..	5399.72	5399.72	8484.33	36.36	63.64
1975-76	5239.59	825.00	6299.71	7124.41	12364.00	42.38	57.62
1976-77	5551.16	442.00	4131.40	4573.90	10125.06	54.83	45.17
1977-78	5302.16	675.00	2451.31	3126.30	8424.46	62.91	37.09
1978-79	5439.61	450.00	1590.56	2040.56	7480.17	72.71	27.28
1979-80	7315.60	592.50	944.94	1536.84	8852.44	82.64	17.36
1980-81	8814.90	1890.00	6065.00[d]	7955.64	16770.63	52.56	47.44
1981-82	10708.50	2332.50	1214.00	3546.80	14255.30	75.12	24.88
1982-83	13240.00	3547.50	749.30	4296.80	17536.80	75.50	24.50
1983-84	12854.00	5310.00	621.20	5931.20	18785.20	68.43	31.57
1984-85	11185.86	8025.00	768.86	8793.86	19979.72	55.99	44.01

a. Loans from France is excluded.

b. Refers to period July-June.

c. Not available.

d. The data includes Rs 5217.7 millions of IMF credits.

Source: Ministry of Finance, "External Assistance", various issues.
World Bank.

Table 3-11a Sources of Tied Loans.
(millions of rupees; conversion at IMF parity rates)

Sources	Disbursement of Loans[a]												
	72[b]	73	74	75	76	77	78	79	80	81	82	83	84
Abu Dhabi Fund						52.5		59.4	17.3				
United Kingdom	170.2	445.8	373.6	224.7	176.9	151.3	135.2	82.4	14.2				
Canada	217.0	101.6	55.9	13.1	9.1	12.5	112.7	176.8	223.6	235.1	264.8	243.8	282.2
Czechoslovakia	67.1	66.0	64.2	49.6	85.4	45.8	3.4	1.1					
W.Germany	143.6	119.5	84.6	70.4	106.5	264.9	150.9	302.7	514.8	465.2	453.2	400.0	335.6
Hungary			14.7	42.7	27.6	47.2	10.6						
Japan	64.6	168.0	165.0	236.4	477.3	269.0	122.0	226.2	327.7	138.1	571.8	616.2	222.5
Kuwait Fund					136.2	92.7	86.1		61.1	65.7	163.3	107.8	425.5
Poland	5.5	23.5	16.8	4.9	0.3	0.1	0.8	0.3	0.2				
Saudi Arabia							21.8	291.3	92.5	39.3	0.7	13.1	15.6
Switzerland	15.6	15.6	3.0	35.9	43.4	22.8	15.4	13.0	1.3				
U.S.S.R.[c]	85.4	138.8	142.7	226.3	258.6	241.9	215.2	339.9	329.2	225.8	400.1	761.6	1086.2
U.A.E.					150.0								
U.S.A.	229.7	24.0	74.7	188.0	8.2			393.1	768.9	592.9	187.5	524.0	257.1
Iran[d]				1691.6	937.5	511.4	652.4						
E.E.C.								214.2	180.6				
OPEC Fund							105.0		31.6	76.1	299.2	46.5	37.3
World Bank[e]	360.7	244.4	331.7	309.9	575.3	1138.9	1371.9	1115.2	1308.5	3057.8	2250.3	3508.4	2204.4
I.D.A.[f]	1016.9	1574.7	1757.6	2145.9	2558.7	2451.5	2436.1	4100.2	4875.0	5707.6	8470.9	6499.8	6200.7
I.F.A.D.									68.3	104.7	109.1	133.3	119.7

Table 3-11b Sources of Untied Loans.
(Millions of rupees; conversion at IMF parity rates)

Sources	Disbursement of Loans[a]												
	72[b]	73	74	75	76	77	78	79	80	81	82	83	84
Austria	17.5	18.8	8.8	16.2	16.7	9.8	1.0	1.5	5.1	21.8	34.4	11.7	12.4
Belgium	23.8	20.3	91.8	212.3	54.1	40.3	60.3	40.3	33.2	46.6	38.6	45.7	46.1
United Kingdom	1022.8	795.5	698.3	392.0	1.4	0.4							
Bulgaria				19.1	0.3		1.0						
Canada	292.6	310.3	345.9	251.1	119.8	234.0	93.2	0.3	0.1	4.7	9.5	8.3	86.7
Denmark	8.8	15.6	13.9	13.9	9.8	25.3	24.8	20.6	20.6	53.1	200.5	105.6	155.8
W.Germany	605.5	367.8	546.7	727.7	629.6	137.4	460.8	225.6	197.3	209.2	237.4	200.3	309.9
Italy	122.6	168.2	25.8	145.2	83.2	203.5	41.5	50.6	11.9	364.2	30.9		52.9
Japan	236.7	210.9	203.3	140.1	142.3	147.5	333.5	72.9	11.6				
USA	391.3	555.9	578.0	861.3	556.9	185.2	198.0						
UAE[c]				375.0									
Netherland	101.5	142.3	181.3	125.0	268.5	289.7	330.0	402.7	396.1	514.4	189.0	236.9	97.6
Iran		191.3	694.9	1256.4	531.1	935.0		116.5	165.6				
Iraq			770.7	260.5	277.4	32.8	33.5	13.2	6.5				
I.D.A.[d]	346.0	851.2	1240.3	1539.8	1440.0	46.8	12.9						
OPEC Fund						163.5							
I.S.O.[e]											9.3	12.7	7.3
IMF credits									5217.7				
Commercial Loans[f]				825.0	442.5	675.0	45.0	592.5	1890.0	2332.5	3547.5	5310.0	8025.0
Total	3097.4	3648.2	5399.7	7124.7	4573.9	3126.3	2040.6	1536.8	7955.6	3546.5	4296.8	5931.2	8793.9
Of which loans on debt relief	733.0	782.6	960.0	628.3	646.9	217.8							

a. French loans are excluded.
b. Refers to financial years i.e. 1972-73.
c. United Arab Emirates.
d. International Development Assistance, i.e. credit extended by the World Bank at soft terms.
e. International Sugar Organisation.
f. The amounts of commercial loans are for the period July-June.
Sources: Ministry of Finance, "External Assistance," various issues.

Table 3-12. Tied Loans on Purpose
(million of rupees; share in parenthesis

Year[a]	Utilization of Loans by Purpose								
	Transport & Communication	Power	Steel	Iron ore	Industrial Development	Agrilcultural Development	Fertilizer	Others	Total
1972	795.38	95.68	106.40		737.35	630.35		11.25	2376.71
	(33.47)	(4.03)	(4.45)		(31.03)	(25.54)			
1973	981.97	78.05	27.86		1175.20	636.05		6.90	2891.66
	(33.61)	(2.61)			(40.22)	(21.77)			
1974	877.68	119.42	24.68		1107.05	897.58		58.20	3084.61
	(28.45)	(3.87)			(35.89)	(29.10)			
1975	825.39	272.80	950.45	754.00	1037.75	1316.23		88.20	5239.59
	(15.66)	(5.20)	(18.14)	(14.39)	(19.80)	(25.12)			
1976	844.39	631.03	995.37	6.71	1105.80	1888.39		79.12	5551.11
	(15.22)	(11.37)	(17.93)		(19.92)	(34.02)			
1977	695.16	531.67	2.01	511.40	1685.85	1658.00		218.32	5302.66
	(13.11)	(10.03)		(9.64)	(31.79)	(31.27)		(4.12)	
1978	596.64	679.24	1.86	652.45	1133.21	2013.19		362.97	5439.61
	(10.97)	(12.49)		(11.99)	(20.86)	(19.01)		(6.67)	
1979	721.22	1514.93	29.58		972.34	3445.56		631.77	7315.70
	(9.86)	(20.71)			(13.29)	(47.10)		(8.63)	
1980	413.62	1840.66	2.99		1478.28	4343.94		732.50	8814.99
	(4.69)	(20.88)			(16.77)	(49.31)		(8.31)	
1981	461.50	2423.30			3177.53	4068.37		577.80	10708.50
	(4.31)	(22.63)			(29.67)	(37.99)		(5.39)	
1982	1161.00	2918.60	0.90		2516.25	5660.65	9.30	987.60	13254.30
	(8.76)	(22.02)			(18.98)	(42.11)		(7.45)	
1983	1000.07	2337.02			2879.97	5835.58	12.70	801.86	12867.20
	(7.78)	(18.16)			(22.38)	(45.35)		(6.23)	
1984	739.05	2670.60			2185.00	4479.09	7.40	1112.02	11193.16
	(6.60)	(23.86)			(19.52)	(40.00)		(9.93)	
72-84	10108.39	1611.30	2142.40		21191.35	36876.28		5668.51	94069.80

a. Refers to financial years.
b. In percent.

Soure: Ministry of finance, "External Assistance", various issues.

Table 3-13. Summary estimates of Capital Flight from India
(millions of U.S. dollars)

Year	Increase in gross external debt	Direct and portfolio capital inflow	Current account	Reserve increase[a]	Capital flight[b]
1971	1032.4	-1.0	-653.0	-189.0	189.4
1972	869.0	-3.0	-167.0	26.0	731.0
1973	674.0	-13.0	-546.0	68.0	183.0
1974	1690.0	-6.0	1207.0	70.0	2961.0
1975	940.0	-10.0	-148.0	-322.0	460.0
1976	794.0	-8.0	1571.0	-2216.0	141.0
1977	1528.0	-8.0	2108.0	-2597.0	1031.0
1978	861.4	0.0	683.0	-2258.0	-731.6
1979	479.6	0.0	48.0	-981.0	-453.4
1980	2332.0	0.0	-1785.0	872.0	1419.0
1981	1856.0	0.0	-2698.0	2629.0	1787.0
1982	4521.0	0.0	-2524.0	1894.0	3891.0
1983	3169.0	0.0	-1932.0	755.0	1992.0
1984	2476.0	0.0	-2343.0	-908.0	-775.0
1985	5353.0	0.0	-4214.0	-145.0	994.0
1986	4686.0	0.0	-4627.0	326.0	385.0
1987	5059.0	259.0[c]	-3750.0	456.0	2018.0
Total Capital Flight					
(1) 1971-79					4511.4
(2) 1980-87					11712.0
(3) 1971-87					16664.0

a. - indicates reserve increase.
b. This column is calculated as the part of debt increase not accounted by current account deficit, net capital (direct and portfolio) outflow or reserve increase.
c. World Bank's estimate.
Source: 1) International Monetary Fund, "International Financial Statistics", 1985 issue.
2) World Bank, "World Debt Tables", various issues.
3) United Nation, "World Tables", various issues.

Table 3-14. Average Terms of External Borrowing

Year	Interest in percent			Maturity in years			Variable rate public debt[b]
	All[a]	Official	Private	All[a]	Official	Private	
1970	2.4	2.2	6.3	34.8	35.9	18.6	0.0
1975	2.5	2.3	8.0	28.9	29.6	12.7	0.0
1978	1.9	1.8	12.7	44.4	44.8	7.3	0.4
1980	4.7	2.2	15.5	31.0	36.0	9.5	2.5
1982	7.3	6.2	9.9	25.6	31.4	12.3	4.5
1983	6.4	4.4	10.1	23.7	31.7	9.0	5.4
1984	6.7	6.0	9.7	26.6	30.2	10.9	9.1
1985	6.1	5.4	3.3	25.3	30.7	9.8	10.2
1986	5.5	5.1	6.5	21.0	24.8	9.7	10.1
1987	5.7	5.4	7.0	25.3	26.8	11.2	13.1
1988	6.3			20.0			15.6

a. Based on terms of new credit commitment to India.

b. As percentage of public and publicly guaranteed debt.

Source: a) World Bank, 'World Debt Tables', various issues.

b) World Bank, 'World Development Report, 1989 & 1990.'

Table 3-15. Interest structure of India's Official External Debt (millions of rupees at IMF parity rate; percentages in parenthesis)

Year	Interest range (percent)				Official debt[a] disbursed (tied & untied)
	0-2	2.1-3	3.1-4	6.1+	
1972-73	3304.19 (62.10)[b]	1075.69 (0.20)[b]	575.86 (10.80)[b]	365.57 (6.90)[b]	5779.52
1973-74	4380.18 (68.90)	1099.68 (17.30)	640.29 (10.10)	236.13 (3.70)	6985.09
1974-75	5186.08 (73.90)	1027.55 (14.60)	470.97 (6.70)	331.12 (4.70)	8779.08
1975-76	5571.96 (66.70)	1695.84 (20.30)	476.56 (5.70)	607.42 (7.30)	11960.41
1976-77	4780.73 (61.10)	1619.02 (20.70)	849.70 (10.80)	589.57 (7.40)	10055.78
1977-78	3290.21 (52.70)	1009.10 (16.10)	602.91 (9.60)	1345.15 (21.50)	8068.61
1978-79	3381.60 (59.40)	969.38 (15.30)	724.71 (11.40)	1252.10 (19.70)	7281.76
1979-80	5100.38 (62.80)	994.40 (12.20)	648.04 (8.00)	1373.32 (17.00)	8499.58
1980-81	6159.32 (64.80)	1636.39 (17.20)	427.52 (4.50)	1272.45 (13.40)	10208.14
1981-82	6918.27 (58.00)	1498.81 (12.10)	149.39 (1.20)	3422.06 (28.70)	12241.83
1982-83	10125.21 (72.30)	1384.22 (9.60)	417.12 (3.00)	211.40 (15.10)	14970.51
1983-84	2682.70 (30.90)	2019.30 (29.30)	240.30 (2.80)	3729.20 (49.00)	19987.50
1984-85	7594.59 (69.00)	1640.30 (19.70)	710.98 (5.90)	2066.05 (17.30)	19040.92

a. French loans and IMF credits are excluded from total.

b. As percentage of total.

Source: Ministry of Finance, "External Assistance", various issues.

Table 3-16a. Interest Rates of India's Official Disbursed Tied Loans (Disaggregated by Sources)
(millions of rupees; conversion at IMF parity rate)

Year	Interest Class in percent per annum (sourcewise)																	
	U.K.	Canada			W.Germany				Japan		U.S.A.				Kuwait	Saudi Arabia	Abu Dhabi	U.A.E.
	0-2	0-2	31-6	6.1 +	0-2	2.1-3	3.1-6	6.1	2.1-3	3.1-6	0.2	2.1-3	3.1-6	6.1+	3.1-6	3.1-6	3.1-6	3.1-6
1972-73	170.2	210.0			18.1	12.8	12.8			64.6	1.3	109.8	109.4					
1973-74	445.8	100.9		0.7	22.1	97.4				168.0	4.9	16.4		0.1				
1974-75	373.6	47.9	8.0		14.2	64.2	6.2			165.0		12.7	62.0					
1975-76	224.7	12.5		0.6	36.4	33.1	0.9			236.4		19.6		168.4				
1976-77	177.0	9.1			19.8	82.0	4.7			477.3				8.2	136.2			150.0
1977-78	151.3	9.7		2.8	95.1	169.9				269.0					92.7		52.5	
1978-79	135.2	112.7			49.4	101.5				122.0					86.1	21.8		
1979-80	82.4	176.6			294.4	7.3			52.4	173.8		135.1		258.1		291.3	59.4	
1980-81	14.2	223.6			503.5	8.0	3.3		250.9	76.8					61.1	92.5	17.3	
1981-82		235.1			427.6	5.9			99.7	38.4		592.9			65.7	39.3		
1982-83		264.8			451.4		1.8		564.6	7.2		187.5			163.3	75.0		
1983-84		235.1			400.0				496.8	119.4		524.0			107.8	13.1		
1984-85		282.2			277.2	0.5	1.5	56.3	198.9	23.6		257.1			425.5	15.6		

a. French loans are excluded from the decomposition exercise.

b. The World Bank loans at variable rate of amount Rs 20.8 millions in 1972-73, Rs 2.8 millions in 1973-74 and Rs 0.6 million in 1974-75 are excluded from the decomposition exercise.

Sources: Ministry of Finance, "External Assistance," various issues.

ble 3-16a. Interest Rates of India's Official Disbursed Tied Loans (Disaggregated by Sources)
illions of rupees; conversion at IMF parity rate)

er	Interest Class in percent per annum (sourcewise)											
	Czechoslovokia	Hungary	Poland		USSR	E.E.C.	OPEC Fund	World Bank[b]		I.D.A.	I.F.A.D.	I.S.O.
	2.1-3	2.1-3	2.1-3	3.1-6	2.1-3	0-2	0-2	3.1-6	6.1+	0-2	0-2	0-2
72-73	67.1		5.5		85.4			15.9	324.1	1016.9		
73-74			22.9	0.6	138.8			6.3	235.3	1574.7		
74-75	64.2	14.7	16.8		142.7				331.1	1757.6		
75-76		42.7	4.9		226.3			16.8	293.2	2145.9		
76-77		27.6	0.3		258.6				575.3	2578.5		
77-78		47.2	0.1		241.9				1138.9	2451.5		
78-79	3.4	10.6	0.8		215.2		105.0	119.8	1252.1	2436.1		
79-80			0.3		339.9	214.2			1115.2	4100.2		
80-81			0.2		329.2	180.6	31.6	153.0	1155.5	4875.0	68.3	
81-82					225.8		76.2		3057.8	5707.6	104.7	
82-83					400.1		229.2	138.9	2111.4	8470.9	109.1	9.3
83-84					761.6		46.5		3508.8	6499.8	133.3	12.7
84-85					1086.2		37.0	191.7	201.3	6200.7	119.1	7.3

French loans are excluded from the decomposition exercise.
World Bank loans at variable rate of amount Rs 20.8 million in 1972-73, Rs 2.8 million in 1973-74 and Rs 0.6 million in 1974-75 are excluded from the decomposition exercise.
rces: Ministry of Finance, "External Assistance."

...ble Interest Rates of India's Official Disbursed Untied Loans (Disaggregated by Source)
...s of rupees; conversion at IMF parity rate)

	Interest Class in percent per annum (sourcewise)[a]																		
	Austria		Belgium	U.K.	Canda	Denmark	W.Germany		Italy		Japan	U.S.A.			Netherland			IDA	OPEC fund
	0-2	2.1-3	0-2	0-2	0-2	0-2	0-2	2.1-3	3.1-6	6.1+	3.1-6	0-2	2.1-3	6.1	0-2	2.1-3	3.1-6	0-2	0-2
...56	17.5		23.8	1022.8	292.6	8.8		605.5	122.6		236.7	176.2	101.7	41.5		87.8	13.9	346.0	
...57	18.8	1.1	20.3	795.5	310.3	15.6		367.9	168.2		210.9	220.1	335.8			142.3		851.2	
...58	8.8		91.8	698.3	345.9	13.9	256.3	290.4	25.8		203.3	379.5	240.5			181.3		1240.3	
...59	16.2		212.3	392.0	215.1	13.9	425.1	302.6		145.2	140.1	337.5	523.8			125.0		1539.8	
...60	15.6	1.3	54.1	1.4	119.8	9.8	339.5	290.1		83.2	142.3		556.9		16.2	252.3		1440.0	
...61	7.5	2.3	40.3	0.4	234.1	25.3	35.0	102.4		203.5	147.5		185.2		29.6	260.1		46.8	163.5
...62		1.0	60.3		93.2	24.8	351.9	108.9	41.5	41.5	333.5		198.0			330.0		12.9	
...63	0.4	1.1	40.3		0.3	20.6	*	225.6		50.6	72.9				169.9	232.8			
...64	5.1		33.2		0.1	20.6	197.3			11.9	11.6					396.1			
...65	21.8		46.6		4.7	53.1	209.2			364.2						514.4			
...66	34.4		38.6		9.5	200.5	237.5			30.9						189.0			
...67	11.7		45.7		8.3	105.6	195.2									236.9			
...68	12.4		46.1		86.9	155.8	309.9			52.9						97.6			

...redits, loans from France and commercial loans are excluded from the decomposition exercise.
...Ministry of Finance, "External Assistance", various issues.

Table 3-17. Maturity structure of India's Official External Debt

(millions of rupees at IMF parity rate; percentages in parenthesis)

Year	Maturity class (years)				Official debt[a] disbursed (tied & untied)
	0-10.0	10.1-19.9	20-29.9	30.0+	
1972-73	297.24 (5.20)[b]	2631.60 (45.80)[b]	952.91 (16.60)[b]	1867.01 (32.50)[b]	5773.52
1973-74	398.27 (5.70)	2792.49 (40.10)	572.98 (8.20)	3194.29 (45.90)	6985.09
1974-75	1595.72 (18.20)	2629.96 (30.00)	907.09 (10.30)	3632.27 (41.40)	8779.08
1975-76	691.98 (5.40)	5042.90 (49.40)	1379.49 (11.90)	4569.98 (39.30)	11960.41
1976-77	2175.27 (19.80)	1497.42 (13.10)	2511.49 (22.80)	4876.80 (44.90)	10055.78
1977-78	465.79 (5.80)	3618.37 (45.40)	705.41 (8.80)	3189.24 (39.91)	8068.61
1978-79	16.11 (1.70)	2785.00 (40.00)	1092.96 (14.80)	3092.25 (43.50)	7281.76
1979-80	995.15 (9.90)	1970.16 (23.20)	910.96 (10.70)	5276.23 (62.10)	8493.58
1980-81	199.74 (2.00)	2465.44 (24.10)	1043.70 (10.20)	6499.69 (63.70)	10208.14
1981-82	964.21 (2.30)	9718.02 (23.30)	4554.94 (28.50)	7923.28 (45.90)	12241.89
1982-83	72.20 (1.20)	3269.89 (22.70)	794.06 (5.10)	10194.34 (70.90)	14970.50
1983-84	227.50 (1.60)	4672.00 (33.40)	677.60 (4.80)	8410.10 (60.10)	13987.20
1984-85	766.33 (5.80)	3797.95 (29.20)	1097.02 (8.00)	7411.95 (57.00)	13040.92

a. French and IMF credits are excluded from total.

b. As percentage of total.

Source: Ministry of Finance, "External Assistance", various issues.

5-18a. Maturity Distribution of India's Official Disbursed Tied Loans (Disaggregated by Sources)
ons of rupees; conversion at IMF parity rate)

	Maturity Distribution in years (sourcewise)[a]																		
	AbuDhabi Fund	U.A.E.	Czechos-lovakia	Poland		USSR	EEC	OPEC Fund	World Bank			I.D.A.	I.F.A.D.	I.S.O.	Kuwait Fund		Saudi Arabia	
	10.1-19.9	0-10	10.1-19.9	0-10	10.1-19.9	10.1-19.9	30 +	10.1-19.9	0-10	10.1-19.9	20-29.9	30 +	30 +	0-10	10-19.9	20-29.9	10-19.9	20-29.9
73			67.1	5.5		85.4			2.0	336.8	1.9	1016.9						
74					23.5	138.8				244.4		1574.7						
75			64.2	16.8	0.8	142.7			23.2	308.5		1757.6						
76				3.0	1.9	226.3			4.8	264.1	41.1	2145.9						
77		150.0		0.3		258.6			134.8	440.5		2578.5				136.2		
78	52.5				0.1	241.9			181.4	888.3	69.2	2451.5				92.7		
79			3.4	0.8		215.2		105.0		1371.9		2437.1				86.1	21.8	
80	59.4			0.3		339.9	214.2			1115.2		4100.2						2[illegible].3
81	17.3			0.2		329.2	180.6	31.6		1308.5		4875.0	68.3			61.1	92.5	
82						225.8		76.2		3057.8		5707.6	104.7			65.7	39.3	
83						400.1		229.2		2250.3		8470.9	109.1	9.30		163.3	75.6	
84						761.6		46.5		3508.8		6499.8	133.3	12.7	45.7	62.1	13.1	
85						1086.2		37.0		2155.7	48.7	6200.7	119.1	7.3	140.8	284.7	15.6	

French loans are excluded from the decomposition exercise.
Source: Ministry of Finance, "External Assistance."

7-18a. Maturity Distribution of India's Official Disbursed Tied Loans (Disaggregated by Sources)
ions of rupees; conversion at IMF parity rate)

	Maturity Distribution in years (sourcewise)[a]																	
	U.K.	Canada				W.Germany			Japan			Switzerland	USA				Iran	
	10.1-19.9	0-10	10.1-19.9	20-29.9	30 +	10.1-19.9	20-29.9	30 +	10-19.9	20-29.9	30 +	0-10	0-10	10.1-19.9	20-29.9	30 +	0-10	10.1-19.9
73	170.2		6.9	210.0		137.5	6.2		64.6			15.6	106.6	2.7		111.1		
74	445.8	0.1	0.6		101.0	97.4	22.1		168.0			15.6	0.1			21.3		
75	373.6		8.0		47.9	9.0	75.5		165.0			3.0	62.0		12.7			
76	224.7		0.6		12.5	21.9	35.9	12.6	236.4			35.9	168.4			19.6	8.3	1683.3
77	177.0				9.1	7.1	99.4		477.3			43.4	8.2				937.5	
78	151.3				9.7	22.6	147.3	95.1	269.0			22.8						511.4
79	135.2				112.7	2.1	135.0	13.8	26.8	95.2		15.4						652.0
80	82.4				176.6	7.3	20.2	275.2	15.1	211.1		13.0	258.1			135.1		
81	14.2				223.6	0.3	14.5	500.0	2.9	324.8		1.3		116.9		652.0		
82					235.1		37.6	427.6		97.0	41.1					592.9		
83					264.8	0.6	2.3	450.4		107.1	464.5					187.5		
84					235.1			400.0		210.7	405.5					524.0		

loans are excluded from the decomposition exercise.
Ministry of Finance, "External Assistance."

-18b Maturity Distribution of India's Official Disbursed Untied Loans (disaggregated by Source)
...s of rupees; conversion at IMF parity rate)

	Maturity Distribution in years (sourcewise)																	
	Austria		Belgium	U.K.	Canada	Denmark			W.Germany			Italy	Japan					
	10.1-19.9	20-29.9	20-29.9	10.1-19.9	30 +	0-10	10.1-19.9	20-29.9	10.1-19.9	20-29.9	30 +	0-10	10.1-19.9	20-29.0	3[illegible] +			
[illegible]	17.5		23.8	1022.8	292.6		8.8		200.0	404.7		122.6	236.7					
[illegible]74	18.8	1.1	20.3	795.5	310.3		15.6		200.8	167.1		168.2	219.9					
[illegible]75	8.8		91.8	698.3	345.9		13.9		1.0	545.8		25.8	203.3					
[illegible]76	16.2		212.3	392.0	215.1	5.8	8.1			627.7	100.0	145.2	140.1					
[illegible]77	15.6	1.3	54.1	1.4	119.8	9.2	0.6		3.2	470.0	156.4	83.2	142.3					
[illegible]78	7.5	2.3	40.3	0.4	234.1	25.3				35.0	102.4	203.5	118.7			23.7		
[illegible]79		1.0	60.3		93.3	24.8				325.3	135.5	41.5						
[illegible]80	0.4	5.1	33.2		0.3	0.2		20.4		20.8	204.8	50.6		72.9				
[illegible]81		21.8	46.6		0.1	20.6				197.3		11.9		11.6				
[illegible]82		34.4	38.6		4.7			53.1			209.2	364.2						
[illegible]84		11.7	45.7		9.5	1.1		199.4			237.5	30.9						
[illegible]85	6.6	3.7	46.1					105.6		5.1	195.2							

Table 3-19. Average Terms of New Credit Commitments to India
(grace period in years)

Creditors	1970	1975	1978	1980	1981	1982	1983	1984	1985	1988
All	8.0	7.5	9.2	6.9	7.8	6.1	5.8	6.4	6.2	6.0
Official	8.9	7.7	9.3	7.6	8.3	7.1	7.9	7.2	7.9	
Private	4.5	2.9	1.1	3.9	3.7	4.0	3.0	3.1	3.0	

Source: a) World Bank, "World Debt Tables", various issues.
b) World Bank, "World Development Report", various issues.

Table 3-20. Net Transfers and Net Flows from External Borrowing of India (millions of dollars)

Year	Long-term								
	Disbursement			Net transfer			Net flows		
	Total	Official sources	Private sources	Total	Official sources	Private sources	Total	Offical sources	Private sources
1970	915.2	890.2	40.6	388.3	424.6	-30.3	583.3	592.3	-8.9
				(42.4)	(47.7)	(-75.0)	(63.7)	(66.5)	(21.9)
1975	1905.4	1793.4	111.4	1073.8	1005.8	34.0	1341.9	1240.5	50.4
				(56.3)	(6.1)	(30.5)	(70.4)	(69.2)	(45.2)
1980	2902.3	2238.9	378.3	1702.0	1289.8	248.2	2124.5	1639.8	290.7
				(58.6)	(7.6)	(65.6)	(73.2)	(73.2)	(76.8)
1981	2422.3	1756.0	244.4	1227.6	826.2	101.4	1672.5	1175.7	159.8
				(50.7)	(44.1)	(41.5)	(69.0)	(66.9)	(65.4)
1982	3127.8	1955.9	586.9	1610.4	986.9	393.4	2212.5	1951.6	494.9
				(51.5)	(50.5)	(67.0)	(70.7)	(69.1)	(84.3)
1983	3267.4	1992.8	695.5	1444.6	892.7	373.9	2225.6	1326.4	521.2
				(44.2)	(46.2)	(53.8)	(68.1)	(68.6)	(74.9)
1984	4581.1	2165.1	1581.0	2651.1	1147.3	1201.8	3519.5	1597.4	1986.1
				(57.9)	(53.0)	(76.0)	(76.7)	(73.8)	(87.8)
1985	4460.3	2159.2	1172.0	1763.4	948.0	598.4	2889.8	1501.2	906.6
				(39.5)	(44.0)	(51.0)	(64.8)	(69.7)	(77.3)
1986	4491.1	2612.3	1029.4	777.7	840.1	105.6	2136.6	1579.4	481.2
				(17.3)	(32.2)	(10.3)	(47.6)	(60.5)	(46.7)
1987	6191.0			1994.0			3511.0		
				(32.2)			(56.71)		
1988	6217.0			1546.0			4100.0		
				(24.87)			(65.95)		

Notes:a) All totals include private non-guaranteed debt, otherwise items refers to public and publicly-guaranteed debt.

b) Figures in brackets indicate percentage to respective disbursement.

Source: a) World Bank, "World Debt Tables", various issues.

b) World Bank, "World Development Report", various issues.

Table 3-21. Principal Ratios relating to India's External Debt (ratios in percent)

	EDT/GNP	EDT/XGS	Longterm Debt[a]		Debt (long & short)		TDS/XGS	DDS/XGS
			DS/XGS	INT/XGS	DS/XGS	INT/XGS		
1970	..[b]	..	23.4	8.6	..	..	..	..
1975	..	..	14.3	4.6	..	..	..	..
1978	13.8	192.8	12.3	4.4	..	..	..	..
1980	11.1	128.2	9.8	3.4	..	..	..	..
1981	11.8	144.3	9.9	3.7	..	..	..	..
1982	13.9	179.8	12.9	5.1	14.6	8.4	15.8	2.9
1983	14.4	188.2	14.8	6.3	17.6	9.9	20.4	5.6
1984	16.3	193.5	15.3	6.8	15.7	11.9	19.7	4.4
1985	17.2	236.9	20.5	8.6	22.5	13.7	27.3	6.8
1986	18.1	246.9	25.0	9.1	29.8	12.4	30.9	5.3
1987	18.8	238.3	24.0	8.7	25.2	13.8	31.5	7.5
1988	21.7	268.4	21.8	11.9	29.6	..	..	..

a. Long-term debt includes non-guaranteed debt.

b. Not available.

Note: EDT = Total external debt, i.e. long-term debt (guaranteed and non-guaranteed), short-term debt, IMF libility.
DS = Debt service payments.
INT = Interest payments.
XGS = Exports of goods and services.
TDS = Total debt service payments, including payments on IMF credits.
DDS = Debt service payements on short-term debt and IMF credits.

Sources: a) For data on TDS & service charge on short-term debt: OECD, Paris, 1989, "Financing and External Debt of Developing Countries."
b) Other data are obtained form: World Bank, "World Debt Tables," various issues.

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Chapter 4

Determinants of India's External Debt, 1972/89

4.1 Introduction

We have seen in chapter 3 that India's external debt increased rapidly in the eighties. At the same time, India witnessed a noticeable deterioration against its own's past although not so much relative to other countries in its debt servicing capacity (as reflected in debt indicators). In the process, it has maintained growth momentum while avoiding the debt problems (so far) other developing countries now face.

The purpose of this chapter is to analyze India's experience with debt

accumulation over the period 1972/73-88/89 and to identify some of the factors that may explain India's foreign indebtedness. Specifically, the objectives of this chapter are:

1. During the period 1972/73-88/89, India's economy was exposed to various kinds of internal/external shocks. Here, an attempt has been made to trace out the relative importance of these various internal/external factors for India's external debt buildup in the last two decades.

2. In the process, we investigate whether the current account deterioration is the outcome of unfavourable international environment or the result of development strategy pursued in the eighties.

3. The causal linkages between the current account balance, savings (private)-investment (private) balance and government's fiscal balance are also investigated using the time series technique developed by Granger [1969] and Sims [1972].

Before we begin our discussion on determinants of external debt, it must be mentioned that there are basically two structural reasons for India's debt buildup. They should be kept in view while analyzing India's determinants of external debt. The two structural reasons are:

Debt-financed Development Strategy

One of the major causes of India's debt accumulation is closely associated with some of the characteristics of its long term growth strategy, in par-

ticular, the way the Five-Year Plans have been formulated and executed. The formulation of Five-Year Plans begins with a reasonable target rate of growth. Within the framework of Harrod-Domar model, with a given capital-output ratio, target rate of growth determines the required investment. If the domestic savings expected to be available during the plan period can not meet the investment target, then the shortfall is made up by foreign capital inflows which are assumed to be available.

Of course, it must be mentioned that the Indian plans are largely internally financed. But the fundamental philosophy underlying planning has not changed over time: time and again when our projections regarding imports and exports went awry, planners have sought funds from abroad (primarily official credit at low interest rate) to achieve the investment target. Some reliance on foreign savings in the early stages of development was necessary to tide over the balance of payment deterioration which was inevitable as the increase in the rate of investment would necessitate imports of machinery and other producer goods which to start with, could not be met from domestic supplies. In the long run, growth via export promotion, import substitution would gradually raise the propensity to save and so in the process would reduce India's dependence on debt. In reality, however domestic saving rate (as a proportion of GDP), after reaching its peak at 24 per cent of GDP in 1978/79, stagnated around 22.5 per cent in the eighties.[1] Consequently, higher investment target of Sixth and Seventh Five-Year Plan caused widening of the saving-investment gap in the

[1]Ministry of Finance, 'Economic Survey, 1989-90.'

eighties.

It was clear in the eighties that the ambitious import substitution programmes in energy and fertilizer of Sixth Five-Year Plan concomitant with import-liberalization would aggravate current account situation.[2] But the planners were not too much concerned about the balance of payment consequences.

The preceding argument should not be interpreted as implying that the planners were not concerned about rising levels of foreign borrowing. As noted in the earlier chapter, right up to the 1980s, policymakers took a conservative stance on foreign borrowing. However, in the 1980s, policymakers have been more liberal towards foreign borrowing.[3]

Preference of Debt financing over Foreign Direct Investment

The other structural reason for higher debt burden is that private foreign investment (PFI) has played a minor role in our development process and has been much less important than in other countries. In fact, net inflows (after deducting dividends and repatriation) from PFI had been negative during the entire seventies decade.[4] What is more, in relation to other developing countries, the share of gross inflows (from PFI) in GDP does not show any increase over the years (Table 4-1).[5] Even in neighbouring

[2]See Joshi and Little [1987], pp. 374 and Sixth Plan's document, pp. 32 and 233.

[3]Cf. Chapter 3, section 3.4.

[4]See Lal and Mohammad [1983], pp. 144.

[5]For criteria of selection of countries, see Chapter 3, section 3.4.

country like China which began to tap PFI in the late seventies, the share of direct investment in GDP in 1988 was much higher than that of India. A greater reliance on foreign direct investment as a source of capital financing and a channel for technology transfer could have alleviated India's debt burden.

The insignificant role of PFI in the development process is not entirely unexpected. In India, like many other developing countries, because of the potential negative effects of PFI on national autonomy, the attitudes of both industrialists and economists on their inflows have continued to be ambivalent. On one hand, government has wooed PFI by offering various incentives; on the other hand, it has instituted various forms of controls on the operation of foreign firms. While the broad framework of policy has not been hostile to foreign enterprise participation, PFI has been subject to a detailed set of regulations concerning its sectoral allocations and nature of its participations. Besides excluding PFI from certain key industries, there are stipulations concerning the extent of foreign equity participation, maximum rates of royalty to be paid on the import of technology and the duration of technology licensing agreements between Indian and foreign firms. As V.N. Balasubramanyam writes, 'In practice, all these have meant a detailed bureaucratic scrutiny of the application of foreign investment and technical collaboration. The delays, expense and confusion caused by this policy of considering each case on its merits have been a major cause for complaints on the part of both Indian and foreign firms.'[6]

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[6]Cf. Balasubramanyam [1984], pp. 146.

On their part, the extensive regulatory framework has resulted in low level of PFI in India and consequently a higher debt burden.

The rest of the chapter is organized into 5 sections. Section 2 examines the various components of growth of debt. Section 3 analyzes the determinants of debt build up in seventies and the eighties. In section 4, an attempt has been made to examine whether the external imbalances are the outcome of the imbalances between the saving and investment on the private account or the results of government's fiscal imbalances. A brief summary and concluding remarks are found in the final section.

4.2 Components of India's Growth of Debt

The extent of growth of India's external debt during the last two decades has been highlighted in Chapter 3. Naturally, the question arises as to the components which have caused this upsurge of external debt. The balance of payment's identity, linking capital inflow and current account (CA) provides a framework for decomposing the growth of external debt. Formally,

$$\begin{aligned} \textit{Increase in 'new' capital inflow} \;=\; & + \textit{CA deficit} \\ & + \textit{Reserve accumulation} \\ & + \textit{Repayment} - \textit{Direct and} \\ & \textit{Portfolio capital inflow} \end{aligned} \tag{4.1}$$

The above identity clearly shows that there are three components of growth of 'new' capital inflow (and hence debt), viz. repayment, current account deficit and reserve accumulation. It also indicates that to the extent there is an inflow of direct investment, the growth of debt gets reduced. To identify the different sources of growth of debt in the last two decades, the various components in equation (4.1) have been estimated and shown in Table 4-2.

As Table 4-2 indicates, the largest single component of growth of debt was clearly the current account imbalance ratio: its weight relative to GNP rose to 0.90 percent during the period 1971-88.[7] The other major component of growth of debt was the amortization payment whose weight relative to GNP rose by 0.62 percent during the same period. Together, these two components explain nearly 70 percent of the growth of debt between the years 1971 and 1988. The rest can be assigned to reserve buildup and capital flight.[8]

Although the increase in debt buildup corresponds to a large extent to the financing of current account deficits, its contribution in the overall increase is not uniformly spread over time. Indeed, as this table shows, only during the periods 1980-84 and 1985-88, current account deficit explains

[7]Since the quality of data of debt prior to the 1970s is low, the analysis takes 1971 as the initial year for the decomposition exercise.

[8]Since the sum of current account deficit, repayment of debt and reserve increase was less than the difference between the increase in 'new' capital inflow and foreign investment (net), it seems that a part of debt buildup financed capital flight.

most of the increase in the growth of debt. By contrast, cumulative current account was positive during the period coinciding with the fifth plan (1974-78). The reserve accumulation and the repayment liability were the main elements contributing (almost equally) to the growth of debt during this period.

The discussion has highlighted the relative importance of different components of the growth of debt in the last two decades. Within these three components of growth of debt, the most important one is surely the current account deficit. This is because the increase in repayment liability is partly the outcome of past current account imbalances and the consequential increase in debt. The various internal/external compulsions concomitant with the government policies, in turn, determine the current account imbalances. This suggests that this source of growth of debt (viz. current account) should be analyzed in detail. In the next section, we will examine this source of growth of debt in detail.

4.3 Adjustment to shocks and Debt Accumulation

This section is divided in four parts. The first part outlines the theory behind the balance of payment analysis, part two gives the methodology of investigating into the questions posed, part three describes the sources of data while part four analyzes the result.

4.3.1 Theory

The foreign debt accumulation in the Indian context is largely associated with chronic current account deficits. According to national accounts identity, current account measures net payments (deficit) or net receipts (surplus) for goods and services, including unilateral transfers. Thus,

$$\textit{Current account} = \textit{Total receipts} - \textit{Total payments} \tag{4.2}$$

Total receipts, on the otherhand, are equal to income received by resident which is GDP plus transfers (TR) plus net factors payments (NFP). Total payments are expenditure on goods or services, denoted by E, plus transfers made. So, equation (4.2) can be alternatively put as:

$$CA = GDP + NFP + NTR - E \tag{4.3}$$

Since total income plus net transfers received by resident is either saved (S), paid in taxes (T) or consumed (C), it can be written as: $GDP + NFP + NTR = C + T + S$. As total expenditure is the total of government spending (G), household spending (C) and investment spending by firms (I), it can be written as: $E = G + C + I$. Substituting in equation (4.3) yields:

$$CA = (S - I) + (T - G). \tag{4.4}$$

The identities (4.3) and (4.4) state:

- Current accounts deficits reflect an excess of expenditure over income. To correct a deficit, expenditure should be cut or receipt must be increased.

- The current account can improve only if saving rises relative to investment or if the surplus (T - C) in the government budget improves.

- Identity (4.4) indicates that a deterioration in the budget , unless it is compensated by increased saving or reduced investment will make the current account worse.

According to the balance of payment theory developed by Sachs and Dornbusch, the identities (4.3) and (4.4) reflect intertemporal choices of households, firms and government and are largely explained by shifts in investment and saving.[9] Thus it is important to know whether the disturbances to which the economy is exposed are permanent or temporary, anticipated or unanticipated. Equally important is to identify the macroeconomic linkage which affects the investment-saving decisions.

The investment-saving model predicts that an increase in the price of oil that is perceived to be permanent will not affect the current account balance because it will reduce both real income and real consumption by the same amount. A temporary increase in export demand will result in a corresponding increase in saving. By contrast, a permanent increase simply results in more imports without affecting the intertemporal decisions. So the current account will remain unchanged in that case.

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[9]Sachs [1981] and Dornbusch [1985].

In the investment-saving model, real exchange rates influence investment (business fixed investment and inventory investment) through three channels. Real exchange rates affect business fixed investment because they determine the desired capital stock by influencing user cost of capital or by affecting adjustment cost. They also affect inventory investment by influencing the cost of carrying inventories relative to the return on the goods being carried. In period of transitory exchange rate appreciation—that is an overvalued exchange rate, not matched by higher interest rate—inventory investment swells up and thus imports of raw materials and both consumer and producer goods also increase.

Exchange rate expectations are also equally important in explaining shifts in investment and saving. When the real exchange rate is overvalued, real price of imported good is low. So this would induce an increase of investment with import content because overvaluation constitutes an investment subsidy for same kind of activities. Also, an anticipated real depreciation increases the desired stock through its effect on the user cost.[10] Consequently the net effect is a transitory increase in investment with a relatively high import content. The overvaluation also implies lower adjustment costs because of the low relative price of imported good. Hence during the period of anticipated real depreciation investment will be high. An expected real depreciation of exchange rate would also cause dissaving since it would induce households to purchase imported durables.[11]

[10]We assumed that the anticipated real depreciation is not matched fully by higher interest rates.

[11]It is assumed that there is no restriction on imported durables. When restricted, the

4.3.2 Methodology

We use a very simple accounting framework so that the current account deficit can be decomposed into several factors.[12] Some of those components reflect external shocks, while the rest can be attributed to internal factors.

Consider the following definition of current account in Rs crores (D_t) for year t.

$$D_t = M_{kt} + M_{ot} + M_{jt} + M_{ct} + V_t - E_t - OF_t \qquad (4.5)$$

where

M_{kt} = Capital goods imports in rupees
M_{ot} = Imports of mineral fuels, lubricants and related material in rupees
M_{jt} = Imports of other intermediate goods in rupees
M_{ct} = Imports of consumer goods in rupees
V_t = Factor service payments in rupees on public and publicly guaranteed loans

availability of imported durables affects strongly the timing of purchases, even when the real price of imported goods is high.

[12]The methodology has been developed by Bacha [1986] and applied for analyzing the current account developments in different countries at various points by various researchers such as Bacha for Brazil, Ahluwalia [1986] for India and Park [1985] for Korea.

E_t = Exports of goods and services

OF_t = Value of other flows in rupees through the current accounts.

Define the value of imports in base year rupees as follows:[13]

$$\begin{aligned} J^*_{kt} &= M_{kt}/P_{kt} \\ J^*_{ot} &= M_{ot}/P_{ot} \\ J^*_{ct} &= M_{ct}/P_{ct} \\ J^*_{yt} &= M_{jt}/P_{jt} \end{aligned} \tag{4.6}$$

where

J^*_{kt} = Capital goods imports in base year prices

J^*_{ot} = Mineral fuels and lubricants imports in base year prices

J^*_{ct} = Consumer goods imports in base year prices

J^*_{yt} = Intermediate goods imports in base year prices

P_{kt} = Import unit value of capital goods with same base=1.0

P_{ot} = Import unit value of petroleum products with same base=1.0

P_{ct} = Import unit value of consumer goods with same base=1.0

P_{jt} = Import unit value of intermediate goods with same base=1.0

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[13]The choice of the base year is explained for convenience in the next part.

Define the import coefficients as follows:

$$\begin{aligned} J_{kt} &= J^*_{kt}/I_t \\ J_{ot} &= J^*_{ot}/Z_t \\ J_{yt} &= J^*_{yt}/Z_t \\ J_{ct} &= J^*_{ct}/Z_t \end{aligned} \tag{4.7}$$

where I_t is fixed investment in base year prices and Z_t is G.D.P. in base year. Next, define the following variables:

$$\begin{aligned} X_t &= E_t/P_{xt} \\ r_t &= V_t/NF_{t-1} \end{aligned} \tag{4.8}$$

where P_{xt} is the export unit value (with same base =1.0), X_t is the exports in base year prices and NF_{t-1} is the value of net external capital stock at the end of previous year.[14]

Substituting equation (4.6) through (4.8) into equation (4.5), we obtain:

$$\begin{aligned} D_t = {} & P_{kt}J_{kt}I_t + P_{ot}J_{ot}Z_t + P_{yt}J_{yt}Z_t + P_{ct}J_{ct}Z_t + r_tNF_{t-1} \\ & -P_{xt}X_t - OF_t \end{aligned} \tag{4.9}$$

[14]The estimation procedure for it is dealt for convenience in the next part.

Next introduce potential output (Y_t^*) in current prices as follows:

$$Y_t^* = P_{yt} Z_t^* \tag{4.10}$$

where Z_t^* is the potential output in the base year prices and P_{yt} is the implicit G.D.P. deflator with same base =1.0.

Dividing equation (4.9) by (4.10), we get

$$\begin{aligned}\left(\frac{D_t}{Y_t^*}\right) = {} & J_{kt}\left(\frac{P_{kt}}{P_{yt}}\right)\left(\frac{I_t}{Z_t^*}\right) + J_{ot}\left(\frac{P_{ot}}{P_{yt}}\right)\left(\frac{Z_t}{Z_t^*}\right) + \\ & J_{yt}\left(\frac{P_{jt}}{P_{yt}}\right)\left(\frac{Z_t}{Z_t^*}\right) + J_{ct}\left(\frac{P_{ct}}{P_{yt}}\right)\left(\frac{Z_t}{Z_t^*}\right) + \\ & r_t\left(\frac{NF_{t-1}}{Y_t^*}\right) - \left(\frac{P_{xt}}{P_{yt}}\right)\left(\frac{X_t}{Z_t^*}\right) - \left(\frac{OF_t}{Y_t^*}\right)\end{aligned} \tag{4.11}$$

Now estimate the difference between the deficit ratio in year t and the base year.

$$\begin{aligned}\Delta\left(\frac{D_t}{Y_t^*}\right) = {} & \Delta\left[J_{kt}\left(\frac{P_{kt}}{P_{yt}}\right)\left(\frac{I_t}{Z_t^*}\right)\right] + \Delta\left[J_{ot}\left(\frac{P_{ot}}{P_{yt}}\right)\left(\frac{Z_t}{Z^*}\right)\right] + \\ & \Delta\left[J_{yt}\left(\frac{P_{jt}}{P_{yt}}\right)\left(\frac{Z_t}{Z_t^*}\right)\right] + \Delta\left[J_{ct}\left(\frac{P_{ct}}{P_{yt}}\right)\left(\frac{Z_t}{Z_t^*}\right)\right] + \\ & \Delta\left[r_t\left(\frac{NF_{t-1}}{Y_t^*}\right)\right] - \Delta\left[\left(\frac{P_{xt}}{P_{yt}}\right)\left(\frac{X_t}{Z_t^*}\right)\right] - \Delta\left[\left(\frac{OF_t}{Y_t^*}\right)\right]\end{aligned} \tag{4.12}$$

Using properties of the difference equation[15], equation (4.12) after sim-

[15] $\Delta A_t B_t = A_o \Delta B_t + B_o \Delta A_t + \Delta A_t \Delta B_t$.

plification becomes:[16]

$$\Delta\left(\frac{D_t}{Y_t^*}\right) = \left[J_{k_o}\left(\frac{I_o}{Z_o^*}\right)\Delta\left(\frac{P_{kt}}{P_{yt}}\right) + J_{o_o}\left(\frac{Z_o}{Z_o^*}\right)\Delta\left(\frac{P_{ot}}{P_{yt}}\right) + J_{y_o}\left(\frac{Z_o}{Z_o^*}\right)\Delta\left(\frac{P_{jt}}{P_{yt}}\right) + J_{c_o}\left(\frac{Z_o}{Z_o^*}\right)\Delta\left(\frac{P_{ct}}{P_{yt}}\right) - \left(\frac{X_o}{Z_o^*}\right)\Delta\left(\frac{P_{xt}}{P_{yt}}\right)\right] + \left(\frac{NF_{t-1}}{Y_o^*}\Delta r_t\right) - \left(\frac{P_{x_o}}{P_{y_o}}\right)\Delta\left(\frac{X_t}{Z_t^*}\right) + \left[\left(\frac{P_{k_o}}{P_{y_o}}\right)\left(\frac{I_o}{Z_o^*}\right)\Delta J_{kt} + \left(\frac{P_{o_o}}{P_{y_o}}\right)\left(\frac{Z_o}{Z_o^*}\right)\Delta J_{ot} + \left(\frac{P_{j_o}}{P_{y_o}}\right)\left(\frac{Z_o}{Z_o^*}\right)\Delta J_{yt} + \left(\frac{P_{c_o}}{P_{y_o}}\right)\left(\frac{Z_o}{Z_o^*}\right)\Delta J_{ct}\right] + \left[J_{k_o}\left(\frac{P_{k_o}}{P_{y_o}}\right)\Delta\left(\frac{I_t}{Z_t^*}\right) + J_{y_o}\left(\frac{P_{j_o}}{P_{y_o}}\right)\Delta\left(\frac{Z_t}{Z_t^*}\right) + J_{c_o}\left(\frac{P_{c_o}}{P_{y_o}}\right)\Delta\left(\frac{Z_t}{Z_t^*}\right) + J_{o_o}\left(\frac{P_{o_o}}{P_{y_o}}\right)\Delta\left(\frac{Z_t}{Z_t^*}\right)\right] + r_o\Delta\left(\frac{NF_{t-1}}{Y_t^*}\right) - \Delta\left(\frac{OF_t}{Y_t^*}\right) + \text{second and third order differences.} \tag{4.13}$$

This equation provides a framework for measuring the relative contribution of external and internal factors to the deviation of deficit ratio (or the increase in external liabilities to potential output ratio) from base year. The different effects are highlighted below:

(a) $\Delta\left(\frac{D_t}{Y_t^*}\right)$ = Actual change in the ratio of current account

[16]The base year is denoted by subscript zero.

imbalances to potential output

(b) $J_{k_o}\left(\frac{I_o}{Z_o^*}\right)\Delta\left(\frac{P_{kt}}{P_{yt}}\right)$ = Deviations in the relative prices of imported capital goods

(c) $J_{o_o}\left(\frac{Z_o}{Z_o^*}\right)\Delta\left(\frac{P_{ot}}{P_{yt}}\right)$ = Change in the relative price of mineral fuels and etc.

(d) $J_{c_o}\left(\frac{Z_o}{Z_o^*}\right)\Delta\left(\frac{P_{ct}}{P_{yt}}\right)$ = Change in the relative price of imported consumer goods

(e) $J_{y_o}\left(\frac{Z_o}{Z_o^*}\right)\Delta\left(\frac{P_{jt}}{P_{yt}}\right)$ = Change in the relative price of other imported intermediate goods

(f) $\left(\frac{X_o}{Z_o^*}\right)\Delta\left(\frac{P_{xt}}{P_{yt}}\right)$ = Relative export price changes

The items (b)-(f) account for the price effect in the current account imbalances. Their total effects give the terms of trade effects.

Terms of Trade effects = (b) + (c) + (d) + (e) - (f).

(g) $\left(\frac{P_{k_o}}{P_{y_o}}\right)\left(\frac{I_o}{Z_o^*}\right)\Delta J_{kt}$ = Import replacement for capital goods

(h) $\left(\frac{P_{o_o}}{P_{y_o}}\right)\left(\frac{Z_o}{Z_o^*}\right)\Delta J_{ot}$ = Mineral fuels conservation efforts

(i) $\left(\frac{P_{jo}}{P_{yo}}\right)\left(\frac{Z_o}{Z_o^*}\right)\Delta J_{yt}$ = Import replacement for other intermediate goods

(j) $\left(\frac{P_{co}}{P_{yo}}\right)\left(\frac{Z_o}{Z_o^*}\right)\Delta J_{ct}$ = Import replacement for consumer goods

Import Replacement = (g) + (h) + (i) + (j).

(k) $J_{k_o}\left(\frac{P_{ko}}{P_{yo}}\right)\Delta\left(\frac{I_t}{Z_t^*}\right)$ = Change in fixed investment

(l) $J_{yo}\left(\frac{P_{jo}}{P_{yo}}\right)\Delta\left(\frac{Z_t}{Z_t^*}\right) + J_{co}\left(\frac{P_{co}}{P_{yo}}\right)\Delta\left(\frac{Z_t}{Z_t^*}\right) + J_{oo}\left(\frac{P_{oo}}{P_{yo}}\right)\Delta\left(\frac{Z_t}{Z_t^*}\right)$

= Variation in the domestic output

Demand Adjustment = (k) + (l)

(m) $\left(\frac{NF_o}{Y_o^*}\right)\Delta r_t$ = Interest rate effect

(n) $r_o\Delta\left(\frac{NF_{t-1}}{Y_t^*}\right)$ = Accumulated debt effect

(o) $\left(\frac{P_{xo}}{P_{yo}}\right)\Delta\left(\frac{X_t}{Z_t^*}\right)$= Export promotion

(p) $\Delta\left(\frac{OF_t}{Y_t^*}\right)$ = Change in the other flows through C.A.

To sum up, all the terms from (b)–(f) constitute the debt inducing effects of external shocks on the current account. The remaining terms (except (p)) should be associated with internal phenomenon, they are the consequence of internal factors or the policy reactions to external factors.

4.3.3 The Data

We have used this accounting framework for analyzing the factors underlying the current account deficits coupled with debt buildup experienced by India during the period 1973/74-88/89.[17] For analysis, the entire period has been broken into three subperiods (1974-79, 1980-85 and 1985-89) coinciding with the time frame for Five-Year Plans.[18] Note that the first two periods coincide with two post-oil shock periods and two economic regimes, namely import substitution regime and a more liberalized economic regime. The second and the third periods, on the otherhand, coincide with same economic (liberalized) regime. However the pace of liberalization differed drastically between the periods. So government's tolerance and approach to adverse current accounts differed markedly between the subperiods. In addition, same time frame of subperiods and plan periods enables us to use the Planning Commission's estimates of target outputs of each year as a

[17]The paucity of data of potential output does not allow us to analyze the year 1972-73 within this framework.

[18]The paucity of data of potential output does not allow us to analyze the year 1979/80 within this framework. Also, the limitation of data does not allow us to carry out the analysis for the full stretch of Seventh Five-Year Plan period.

proxy for the potential outputs. Since the potential output is estimated in the price of the preceding (preceding to the beginning year of the plan) year, we choose for convenience three base periods 1973/74, 1979/80 and 1984/85 in this exercise.

The sources of the data are official publications, namely various issues of R.B.I.'s *Report on Currency and Finance* and C.S.O.'s *National Accounts Statistics.*[19] The readily available *export unit value* converted to the respective base year =1.0 is used as the price index for exports.

For the measurement of capital goods imports, we have used as proxy the total *imports of machinery and transport equipments.* The *import unit value of machinery and transport equipment* is converted to the respective base year =1.0 to get the price index for capital goods.

Similarly, $M_{\alpha t}$ and $P_{\alpha t}$ constitute the *imports of mineral fuels and lubricants and related material* and corresponding *import unit value* converted to respective base year =1.0.

The items included in M_{jt} are the following:

1) crude materials except fuels

2) animals, vegetable oils, fats and waxes, other than edible oils

3) chemicals and related materials

4) manufactured goods classified chiefly by materials.

[19]Because of limitation of data, the export and import unit values of 1987/88 and 1988/89 are however taken from 'International Financial Statistics.'

The price index of intermediate goods is calculated from the import unit values of the above commodities and subsequently converted to respective base year =1.0.

The items contained in M_d are the following:

1) imports of foods and live animals chiefly for food

2) edible oil imports

3) imports of miscellaneous manufactured articles

4) imports of beverages and tobacco.

Their import unit values are used to construct the price index of imported consumer goods.

OF_t , other flows through current account, is measured by subtracting investment income (net) from invisibles (net). It constitutes the following items of the current account:

1) travel

2) transportation

3) insurance

4) government not included elsewhere

5) miscellaneous payments

6) transfer payments.

The interest payments on medium and long-term loans, including IMF credits are used as the measure of factor service payments. The data of net external capital stock at the end of the financial year were not readily available. This compels us to use the value of medium and long-term debt (including repurchase obligations to the IMF) at the beginning of the fiscal year as a proxy variable for NF_t.[20] Note that medium and long-term debt plus IMF repurchases obligations quantify practically India's total published external indebtedness.[21]

4.3.4 Analysis of Results

Period 1974-79

The oil price increase of late 1973 and 1974 dealt a severe blow to the Indian economy. As nearly 70 percent of domestic consumption of petroleum was met by imports at the end of 1973/74, the price rise caused a massive escalation in the foreign exchange expenditure on oil imports.[22] This increase in oil price concomitant with the increase in prices of cereals, fertilizers, machinery and equipment, non-ferrous metals and other imported goods severely eroded the resources. The share of food, fertilizer and oil in India's import bill jumped from 23 percent in 1972/73 to 53.2 percent

[20] Except for exchange rate variations, the two measures of debt give identical estimates.

[21] The data exclude short-term and debt arising out of defence credits.

[22] See Sixth Plan document, pp. 15.

in 1974/75.[23] Moreover the oil shock was superimposed on an economy already suffering from the economic and political trauma resulting from the very bad harvest of 1972/73 and the Pakistan/Bangladesh war in the early seventies. These adverse developments coupled with excessive monetary expansion of previous two years, provoked a steep increase in the rate of inflation between the years 1973/74 and 1974/75 (see Table 4-4).

Contrary to all expectations, the economy however, weathered these shocks surprisingly well. Indeed within two years, inflation came to a halt, the trade/current account deficit was turned into a surplus and reserve began to accumulate at a phenomenal pace. To examine the relative importance of different elements on the current account during the period 1974-79, the current account identity (using the methodology described earlier) has been decomposed and then its change over time is estimated. This exercise is presented in Table 4-3.

Compared with 1973/74 base period, the current account deficit as a percent of nominal potential GDP was higher (deteriorated) by only 0.2667 percentage in the year 1974/75. However as India is a low trading nation, the balance of payments difficulties were large.[24] As expected, the terms

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[23]Calculated from the data on import volume index (Cf. Economic Survey).

[24]Even in 1980, when India's economy was more liberalized than in 1973, export and import together accounted for only 14 percent of India's GDP which is lowest among developing countries with population 40 millions or more in mid-86. Separately, the shares of trade in GDP are also low—5 percent that of export and 9 percent that of import which are on the lower side of such developing countries (Cf. Table 4-10).

of trade loss accounted for the maximum deterioration: it amounted to an increase of 2.72 percentage points (which intensified in 1975/76) in the current account/potential GDP ratio. The price increases of mineral fuels and intermediate goods are primarily responsible for causing this terms of trade loss. Even though the deterioration associated with terms of trade loss persisted till 1977/78, India could improve her current account deficit ratio significantly (2.45 percentage points) in 1976/77 and sustained it (though on a lower scale) till 1978/79. This dramatic turnaround in the current account situation was partly a reflection of domestic policy and in part due to the favourable external developments.

On the domestic front, the adverse development prompted the government to pursue demand adjustment policies. Consequently, the capital goods imports in relation to fixed investment and other imports (mineral oils, intermediates) relative to GDP (import replacement element in Table 4-3) declined in the next several years. The improvement arising from import replacement was of the order 0.87896 percentage points in 1975/76 and 1.10186 percentage points in 1976/77. To minimize oil use, excise duties on oil products were also raised. Expecting oil price increase to be permanent, government intensified the search for oil, but there was only marginal increase in output during this period.[25] To mitigate current account deterioration, import restrictions were tightened. Finally, real exchange rate

[25]The share of imports to domestic consumption fell from 70.8 percent to 63.1 percent (Cf. Sixth Plan's document, pp. 15).

was also devalued.[26] Along with these measures, government's fiscal and monetary policies became restrictive to combat the inflationary pressure in the economy. The growth of the money supply was restrained, rising only by 6.9 percent in 1974/75. These measures were supported by a good 1973/74 rabi harvest and by increased food imports (5 millions). Inflation came to a halt and price actually fell in 1975/76.

Primarily due to these restrictive policies, there was large improvement on account of import replacement element during this period. Here the fall in public investment which has a higher import content than private investment is more important.[27] The capital formation in public sector declined in real terms by 23.0 percent in 1974/75, followed by a rise of 25.0 percent in 1975/76 which only restored public investment to the level of 1973/74. Though private investment peaked up in real terms in 1973/74, it was not enough to compensate for the fall in public investment. Consequently, the total capital formation declined by 3 percent in 1974/75.[28] Between the years 1973/74-75/76, total fixed capital formation rose annually by 3 percent in real terms. The other factors such as improved performance in agriculture and sluggish industrial growth also contributed (marginally) towards the improvement in import replacement element.[29] Consequently,

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[26]For a detailed discussion on this point, see Joshi & Little [1987], pp. 377.

[27]In the national accounts, private investment accounts for investment in farm, housing and the unorganized sector. All these sectors have a very small direct import content.

[28]Cf. Computed from Economic Survey.

[29]Import of foods were minimal during the period 1976-78. Between 1978/79 and 1979/80, there was a net exports of foodgrains. Industrial production rose by 6.7 percent

the volume index of imports registered a fall of 12 percent between the years 1973/74 and 1976/77[30]. The data in Table 4-3 indicates that nearly 30 percent of the deterioration associated with terms of trade loss during the period 1974-78 was compensated by the improvement arising from import replacement and demand adjustment elements. Surely, the restrictive policies, in combination, contributed towards this compensation.

On the external front, during this period three favorable developments took place. They, in their order of importance, are:

1. A positive side effect of the oil price rise was the migration of Indian labourers to Gulf countries and the resulting remittances back to India. The improvement on this account (other flows, Table 4-3) was 0.31 percentage points in 1974/75, 0.91 percentage points in 1975/76 and more than 1.1 percentage points thereafter. During this period, approximately 40 percent of the deterioration associated with the terms of trade loss was compensated by this element. In terms of rupees, these grew at an average rate of 40 percent a year for the five years following the oil price shock.[31] This was the major contributory factor in the rapid build up of India's foreign exchange reserves after 1973/74.

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per annum between the years 1973/74-76/77. To some extent, imports were liberalized in 1976-78. However, the policies were initiated in a big way only during the next period.

[30]Computed from the data on the volume index of imports, Cf. 'Economic Survey,' 1985/86.

[31]Calculated from RBI's data on balance of payments.

2. During the period 1974-78, export promotion effort contributed annually an improvement of about 0.9 percentage points.[32] In value terms, exports grew annually by more than 25 percent over the years (Table 4-4). No doubt, the dramatic increase in exports in current price gives a deceptive picture because of the global inflation and the steady depreciation in the exchange value of the rupee implicit in the trade statistics. Still, the surge in exports in real terms, as reflected in the quantity index of exports, was impressive: it rose by 34 percent in volume between the years 1973/74 and 1977/78.[33] The principal factors, underlying the upswings in exports, were the growth in grant-aided exports to Bangladesh, the commodity price boom in world market and the depreciation of the rupee. Some additional export incentives were given, but the large change in real exchange rate, a fall of 14 percent between 1973/74 to 1976/77, was more important (Table 4-4). Of course, the policy of demand restraint was conducive to the exports by reducing the pressure of domestic demand and thus increasing export availability.

3. India could easily finance the current account deficits of 1973/74 and 1974/75 with an increase in aid, low tranche drawings from International Monetary Fund (IMF) and a marginal use of reserves. The

[32]Roughly, 35 percent of the deterioration associated with the terms of trade loss was compensated by this factor.

[33]Calculated from Economic Survey's data on export indices.

finance was available on favourable terms.[34] However the large deficit in 1974/75 prompted the government into large scale borrowings from abroad (0.08 percentage points in 1975/76 and 0.06 percentage points in 1976/77). Thus when balance of payment difficulties were over by mid-70s, the aid inflow only resulted into piling up of reserves. As Table 4-4 indicates, foreign exchange reserves rose from Rs. 610 crores in 1974/75 to Rs. 4500 crores in 1977/78, equivalent to 13 months of imports (average).

These developments (reflecting favourable international environment) were the principal factors for successful adjustment to the first oil shock. Along with restrictive government's policy, these developments did not pose any threatening payments problems. As we can see from Table 4-4, India's balance of payments situations were comfortable in the post-oil shock I era and India attained current account surplus for four consecutive years.

Apparently, it seems that the adjustment policies had successfully managed the external balance. The persistent deficit on current account was eliminated and in the process, the economy came to acquire an unprecedented level of foreign exchange reserves. Even when we consider the macroeconomic perspective of growth and price stability, the policies seem to have paved off handsomely. Within two years, an inflation of more than 20 percent is curbed and the economy had grown 5.8 percent annually be-

[34]Note that there was marginal improvement (0.15 percentage points) on interest account during this period. Because the finance was available from official sources, this improvement was realized.

tween the years 1974/75 and 1978/79 (Table 4-4). The exceptional harvest of 1975/76 and good harvest of 1977/78 were the principal reasons for such rapid growth.[35] However, we have seen that the level of investment and output remained low. Consequently, the fall in public investment aggravated the supply bottlenecks of infrastructure and administrative goods in the next decade.

In retrospect, it seems that the planner's response to the crisis situation was excessively concerned with correcting the current account balance and inflation in the short run and little attention was paid to the impact of overall economic performance on the balance of payments.

Period 1980-85

The oil price increase of late seventies came at a time when India began to move from inward-oriented economic regime (based on import substitution) to a more outward-oriented (liberalized) economic regime. Moreover, the second oil shock, like the first one was imposed upon the very bad harvest of 1979/80, agricultural production falling by 15 per cent in that year.[36] These adverse developments coupled with import substitution in energy (oil and gas) and fertilizer (reflecting priorities outlined in the Sixth Plan) caused a steep rise (12 percent in volume) in imports for the next four

[35]The agricultural productions rose by 14.9 percent in 1975/76 and 14.3 percent in 1977/78 (Cf. 'Economic Survey').

[36]Cf. 'Economic Survey', various issues.

years.[37]

Contrary to the dramatic turn around from a deficit to a surplus in two years during the first oil shock, the adjustment to the second shock was nothing spectacular. The current account deficit declined only gradually from peak levels of 1.30 percent of GNP in 1980/81 and 1.57 percent of GNP in 1981/82 to a little over 1.2 percent in 1984/85. To examine the effects of the external/internal shocks on the current account during the period 1980-85, we present below a quantitative analysis of the relative importance of different elements which affected the current account. In the process, we identify the macroeconomic channels through which the external/internal compulsions were translated into current account imbalance and foreign debt accumulation. Table 4-5 shows the changes in the current account in this period, decomposed into the contribution of individual elements.

Compared with 1979/80 base period, the current account deficit as a percent of nominal potential GDP was higher (deteriorated) by more than 1.22 percentage points in 1980/81 and 1.54 percentage points in the following year. With some fluctuation, the same trend continued for the remaining years. In contrast to the large deterioration (over 2.5 percent per annum) associated with terms of trade loss during the preceding period , the deterioration on this occasion was not associated with the terms of trade effects. As Table 4-5 indicates, the deterioration associated with mineral fuels rise (roughly 1.0 percentage points in 1980-83 and marginal thereafter) was more than compensated by the improvement in other prices—capital,

[37]Cf. a) Sixth Plan document, pp. 32; b) 'Economic Survey, 1982-83.'

consumer and intermediate goods prices.[38] Consequently the net terms of trade effects improved throughout the period, rising to a peak level of 2.1 percentage points in current account/potential GDP ratio in 1983/84. The expansion of capital goods imports in relation to fixed investment and other imports (consumer, intermediate) relative to GDP (import replacement element in Table 4-5) were the significant elements in producing the imbalance in the current account. This jump, equivalent to a deterioration of 2.98 percentage points, was larger than the actual increase in the deficit in 1980/81. A similar development took place in the succeeding years. The development was principally the outcome of the strategy of adjustment pursued in the 1980s, an analysis of which is undertaken below.

The strategy of adjustment after the second oil shock differed markedly from that of the first oil shock. This reflects the shift in the macroeconomic policy from a restrictive one in the seventies decade to a more expansionary policies in the last decade. Thus in spite of the upsurge of inflation in 1979/80 (fuelled by the severe drought in 1979/80), the government's reaction to this inflation was much less fierce. Only in 1981/82, the growth of money supply was restrained. Consequently, in the following three years inflation of the wholesale price index fell to an average of about 7 percent.[39]

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[38]Contrary to the buoyant market conditions in many primary products in the post-oil shock I era, due to recession in the world economy, the prices—intermediate, consumer—declined in the post-oil shock II period.

[39]By contrast, inflation of the wholesale price index was of the order of 2 percent in the three years after 1974.

To combat inflationary pressure, government's policy on this occasion was more on removing short-term and medium-term supply bottlenecks. Thus, in contrast to a cutback in public investment in the earlier period, investment in the sectors like energy, transport and infrastructure was stepped up in the post-oil shock II era.[40] For this reason, aggregate demand adjustment element, on this occasion shows marginal deterioration (a little above 0.1 percentage points) throughout the period.[41]

As a consequence of the objective of Sixth Five-Year Plan, public investment rose rapidly after the second oil shock to carry out the import intensive adjustment programmes of import-substitution in energy and fertilizers.[42] The transitory appreciation of real exchange rate (by 14 percent between 1979-81) was certainly conducive to investment in these sectors which have a higher import content. Mostly as a reflection of increased public investment, gross fixed capital formation rose modestly to 20.21 percent of GNP in 1981/82 (from 19.8 percent in 1979/80). Table 4-6 shows that gross fixed capital formation increased from that level to 21.52 percent in 1984/85.

Along with higher capital formation, the policy of import liberalization was pursued on this occasion. Primarily as a reflection of these policy

[40]Primarily, this reflects the priorities outlined in the Sixth Five Year Plan (Cf. Sixth Plan's document).

[41]In contrast, between the years 1974-79, aggregate demand adjustment element improved by roughly 0.3 percentage points per annum.

[42]Public fixed capital formation rose annually by 27 percent during the period 1979-85. In contrast, between the years 1973-79, the same rose by 21 percent per annum. (Economic Survey).

decisions, between the years 1979-83, the volume of imports rose by 60 percent and capital goods imports by 260 percent.[43] To some extent, easy availability of imported raw materials and capital goods simply resulted in higher inventory accumulation.[44] The temporary appreciation of exchange rate also helped this development. However, the overall import total was kept in check (relatively) by the successful import substituting programme in oil. The improvement associated with fuels conservation efforts rose from 0.5 percentage points in 1981/82 to 0.9 percentage points in 1984/85. In terms of volume, imports fell by 39 percent between 1980/81 and 1983/84.[45]

The international environment was however not favourable for outward-oriented adjustment strategy. Fuelled by protectionism (in the industrialized countries) and recession in the world economy, volume of world trade remained stagnant in the post-2nd oil shock period. Thus, against the upsurge of imports, exports were relatively sluggish on this occasion. By contrast, in the earlier period, there was a rapid growth of exports. Also due to continued recession (and consequently declining oil revenues) and Iran-Iraq war, the surplus of the middle-east countries eroded (relatively)

[43]The surge of capital goods imports is also reflected in import replacement (for capital goods) element. The deterioration associated with it, increased continuously from 1.18 percentage points to 2.76 percentage points in 1983/84, equivalent to an annual deterioration of 1.8 percentage points.

[44]During this period, inventory investment rose to an all time high of 6 percent of GDP in 1981/82 (Cf. 'Economic Survey').

[45]Cf. Joshi and Little [1987].

during this period. Consequently, transfers grew (relatively) slowly during this period. Furthermore, interest rates rose historically high in nominal as well as real terms in the first half of the eighties. So, financing the current account deficit turned out to be more costly.

Table 4-5 shows that the export promotion efforts yielded an annual improvement of 0.4 percentage points in the current account/potential GDP ratio between the years 1980-85. In terms of volume, exports grew by 2.7 percent per annum in the period 1979-85. By contrast, exports rose by 8.8 percent by volume in the earlier period. The relative sluggish export performance can be attributed principally to two factors. Firstly, in the eighties, India's inflation exceeded that of its main counterparts and rival. Consequently, in comparison with the earlier phase of domestic price stability and rapid export growth, there was an erosion in the relative profitability of exports on this occasion. Note that between the years 1979 and 1981, the real exchange rate appreciated by 14 percent (Cf. Table 4-6). Secondly, due to recession, the volume of world trade stagnated during this period. Because of these developments, only 14 percent of the deteriorating elements was compensated by the export promotion efforts in the eighties.[46] By contrast, in the earlier period, export promotion efforts compensated nearly 35 percent of the deteriorating elements.

The rising levels of private transfers contributed much to the success of adjustment in the earlier period. By contrast, private transfers stagnated after the second oil shock. Compared with an annual improvement of 1.1

[46]This happened, in spite of the increase in export incentives in the eighties.

somely in growth. During the period 1980-85 India achieved an annual average rate of growth exceeding 5 percent.[49] The growth response was however not without cost. On the domestic front, the policies contributed substantial growth of current expenditures in excess that of current revenues causing in effect higher budget deficit on revenue account. Financing this deficit as well as the large expenditures on capital account necessitated substantial borrowings from domestic as well as foreign sources.[50] Consequently, internal as well as external/public debt ratio rose during this period. To facilitate this adjustment strategy, India's external debt grew by 16 percent per annum between the years 1980 and 1984. The picture is of a developing country that decided to achieve medium-term structural adjustment after the second oil shock. Having made that decision, it proceeded to adjust its balance of payments through a significant replacement of capital goods and other non-oil imports after 1979/80. Its effort to substitute domestic for foreign energy sources were commendable. However, its effort to penetrate foreign markets (for exports) were much less than required under the circumstances.[51] Also, private transfers, the (other) major contributory factor for adjustment in the earlier period, did not increase on this occasion. Hence foreign debt piled up. Continued slow growth of

[49] Cf. Economic Survey.

[50] Cf. Economic Survey.

[51] The Sixth Five-Year Plan envisaged a target of 9 percent volume growth of exports. But actual performance was much lower, only 3 percent compound growth between 1980-85.

world trade and limited access for long-term concessional flows imposed severe constraints on the economy in the second half of the eighties – an analysis of which is undertaken in the next part.

Period 1985-89

The future was not particularly good for India. On fiscal and external fronts serious macroeconomic imbalances emerged and strengthened over time. In view of large liquidity resulting from money supply growth, inflationary pressures gained momentum during the period 1985/86 and 1988/89. Though exports rose significantly in the subsequent years, it came with higher import intensities.[52] All these constraints have begun to extract some toll on overall economic performance.

The relevant facts are put together in Table 4-7. As in the previous cases, this table decomposed the variations in the current account deficit in each year of the 1985-89 period, taking 1984/85 as the base year from which changes are measured.

Table 4-7 indicates that the current account deficit/potential GDP ratio as compared to its base year value was higher (deteriorated) by 1.09 percentage points in 1985/86. Though the deterioration slowed down in the successive years, (86/87, 87/88), it rose to a high level of 1.65 percentage points in 1988/89. As in the earlier period, the deterioration was not associated with the terms of trade effects which in fact improved over the

[52] Sarma [1990].

years.[53] The expansion of capital goods imports in relation to fixed investment and other imports (intermediate) relative to GDP were the main element in producing the imbalance in the current account.[54] This jump, equivalent to a deterioration of a 2.71 percentage points was larger than the actual increase in the deficit ratio in 1986/87. A similar development took place in the succeeding years.

The economy was kept in high gear during the period, as is indicated by the positive signs and values in the 'aggregate demand adjustment' line. Each of the constituents of aggregate demand adjustment element (fixed investment and domestic output) has contributed to this trend.

The trend is the reflection of expansionary macroeconomic policies, which were initiated in the early eighties and were continued during the period 1985-89. Partly as a result of higher public investment, total fixed capital formation in the economy continued to remain high (about 20.5 percent of GNP per annum). However, the expansionary policies caused substantial fiscal imbalances. The deterioration in the various public finance

[53]There was an annual improvement of 1.1 percentage points on terms of trade account during the period 1985-88.

[54]Note that, except for 1987/88 and 1988/89, the deterioration associated with consumer goods imports wass marginal during the period. In 1987/88, price rise necessitated substantial edible oils imports. This explains the marginal deterioration (0.3 percent points) in import replacement (consumer) element in 1987/89. The surge of consumer goods imports in 1988/89 is the consequence of food grains imports (0.8 percent points) for replenishing foodgrains stocks, down due to 1987/88 drought.

indicators continued and deepened over time. Beginning from 1982/83, as a proportion of GDP, public saving declined, consolidated government and public sector borrowing rose and so had net RBI's credit to government.[55] In view of the large overhang of liquidity resulting from money supply (M3) growth (about 17 percent per annum in the eighties), the inflationary pressures intensified during the second half of the eighties (Table 4-8). Compared to the 3 percent annual inflation in the seventies decade, the inflation in the eighties decade is more than 6 percent per annum. Moreover, even in a good year like 1988/89, when agricultural production rose by 21 percent inflation persisted at a high level (about 7 percent).

With the launching of a new economic policy in 1984/85, the process of liberalization gained momentum in this period. Its thrust was on removing/ relaxing the system of controls, easier access to imports for production and technological upgradation, a greater role for the private sector and strengthening the export production base. Primarily as a result of the policies, import replacement element deteriorated over the years (Table 4-7). In addition, Table 4-7 also indicates that in contrast to the earlier periods, improvement arising from mineral fuels conservation efforts was missing on this occasion. Compared with base year value, the erosion on this account amounts to a decrease of 0.27 percentage points between 1986/87 and 1988/89. With no major oil discovery, in spite of intensification of oil search and steadily rising demand for oils, the erosion is expected.

On the external front, the buoyancy in world trade coupled with export

[55] Joshi and Little [1987].

promotion policies resulted in more than 7 percent volume growth of exports during the period 1985-89.[56] No doubt the favourable real exchange rate, depreciating 6 percent per annum, helped to achieve such a trend. Despite this performance, India's share in world exports is stagnating and is nowhere in comparison with performance of East Asian Exporters like Singapore, South Korea or Taiwan.[57] This happened because inspite of the exchange rate depreciation and increased export subsidies, the incentive structure was biased against exports.[58] Another disquieting trend is that the import intensities of exports are on the rise in recent years.[59] Consequently, to the extent export production pushes up the import bill, the net effect of exports on trade balance gets reduced.

With regard to the other offsetting elements (interest rate effects, other flows) in the current account, the compensation is marginal or negative. The remittances from migrants had been a major element in the success of current account adjustment in the seventies. Because of erosion (relatively) of oil surplus in the OPEC countries, since 1980, inflows had been stagnating. Furthermore, as in the earlier period, financing the current account deficit necessitated substantial commercial borrowings.[60] However, interest

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[56]Cf. Economic Survey, 1989-90.

[57]In fact, India's share in world exports declined from 5 percent in 1984 and 1985 to 4 percent in 1986 (Economic Survey, 1988-89).

[58]Cf. Jalan, pp. 167.

[59]See Sarma [1990].

[60]Approximately commercial borrowings constituted 33 percent of new borrowings (medium and long-term and IMF credits) between the years 1984/85 and 1988/89. In

rates (real) in the international capital markets continued to remain high. Consequently, the negative impact of interest rate exacerbated over the years.[61] In view of fall in India's credit-rating, further rise on this account is expected in the coming years.[62]

In view of India's efforts to penetrate foreign markets being less than the negative impacts of adjustment strategy (imports replacement, demand adjustment elements), India's debt burden (as reflected by accumulated debt burden element) increased from 0.01 percentage points in 1985/86 to 0.05 percentage points in 1988/89. Consequently Debt/GNP ratio rose to 22 percent in 1988. However compared to other developing countries, its relative position compared favourably until 1988.[63]

4.4 Causality Tests

The above discussion has shown that increased investment spending was the main factor behind recurrent imbalances on the current accounts. However, as it is not clear from the above analysis whether increased investment on

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view of tight monetary policies in the industrialized countries and continued recession in the world economy, the declining trend of the bilateral assistance continued during the second half of the eighties (Cf. Chapter 3).

[61] The deterioration from interest rate effect rose from 0.07 percentage points in 1985/86 to 0.12 percentage points in 1988/89.

[62] See Chapter 3 for detail.

[63] Cf. Chapter 3.

the private or public account has caused the current account imbalance, an attempt has been made in this section to identify their relative contributions in the Indian context.

We know that current account deficit can arise if there is a gap between investment and saving on the private account or if there is an imbalance on the government's budget. So, for our purpose, it is important to know whether investment-saving gap on the private account translates into external imbalance or growing fiscal imbalance causes external imbalance. In other words, we want to examine the causal relationships between current account deficit, budget deficit and imbalance between investment and saving on the private account. For discovering the causal relationship, the methodology that we follow is the time series technique developed by Granger [1969] and Sims [1972]. These methods are known in the literature as *test of causality* and have been used by economists as a meaningful way of looking at economic relationship.[64] The results of the causality tests in the Indian context are summarized in Table 4-9.

The results of the causality test on investment-saving gap on the private account and current account deficit does not identify any causal relationship between the two. On the other hand, the causality test on budget defict and current account deficit identifies a causal relationship running from budget deficit to current account deficit. Also, earlier we have mentioned that increased investment spending was the main factor behind recurrent imbalances on the current accounts. In view of this and the results of the

[64]The exact form of the test and the sources of data are given in the appendix.

two tests, we can possibly argue that investment on the public account was the main factor behind India's increased external imbalances.

4.5 Summary and Concluding Remarks

The purpose of this chapter has been to identify the causes for India's debt accumulation over the past fifteen years. Macroeconomic linkage between debt accumulation, government polices and overall economic management has also been highlighted. In summary, one could make several tentative conclusions.

1. In India, the accumulation of external debt is closely associated with chronic current account deficits.

2. Investment has been the motivating factor behind India's external indebtedness. Unlike some developing countries, only a small portion of aid has been utilized for importing consumption (except food) goods. As the decomposition exercise shows, much of the increase in current account deterioration and hence debt buildup can be ascribed to import intensities of intermediate and capital goods. However, it can be argued that considerable part of these imports of capital and intermediate goods in the eighties has been utilized for producing consumer (nondurable and durable) goods which cater mostly to

domestic markets.[65]

3. Our analysis indicates that increased investment on the public account has been the main factor behind India's growing external imbalance.

4. It seems that the growing surge of external indebtedness in the eighties was more an outcome of government's decision to pursue expansionary fiscal, monetary and import policies than the consequences of international environment. As the analysis shows, external shocks from terms of trade were minimal or negative in the eighties. On the otherhand, relative large positive signs and values in import replacement and demand adjustment elements were the consequences of the macroeconomic policies pursued during this period.

5. It has not been possible for the planner to achieve simultaneously all three objectives of growth, price stability and external balance. In the era of inward-oriented economic regime (i.e. till the end of seventies decade) whenever conflicts rose between the objectives, planners did not hesitate to sacrifice growth to maintain external balance and

[65]Note that RBI's statistics on industrial production suggests that the fastest growth in output is realized in the consumer durable industries in the eighties. Between 1981/82-87/88, the industrial productions in the consumer durable industries rose by 22 percent per annum. By contrast, annual output growth in consumer non-durables was 4.6 percent, capital goods 13 percent, basic goods 9 percent and intermediate goods 7 percent (Cf. RBI, vol.2). The paper by Sarma and Mehta [1990] also emphasizes this point.

price stability. In eighties, the stress is on rapid growth at the cost of external balance and inflation. But we should bear in mind, current account deficit or inflation in the Indian context is nowhere in comparison to fast growing developing countries of Asia and Latin America.[66]

6. The macroeconomic policies in the eighties have laid emphasis on import liberalization and export promotion. However, it must be noted that the openness of the Indian economy (whether measured in terms of exports and imports together or separately as a percentage of GDP) is very much on the lower side of the selected developing countries and has not changed significantly over time (Table 4-10). As Table 4-10 indicates, export and import together contributed only 15 percent of India's GDP in 1988, which is next to lowest among developing countries under review.[67] The corresponding shares even for neighbouring countries like Pakistan (34.9 percent), Bangladesh (21.83 percent) were higher. Similarly the share of export in GDP was lower than that of Pakistan (12.81 percent) and Bangladesh (6.37 percent). The same is true of import which only contributed 9.46 percent of GDP in 1988, one of the lowest among the countries under review. Note that the share did not alter significantly over the 1980s

[66]The period we have in mind is 1972-89.

[67]Because of severe debt problems, Brazil had to generate trade surplus since 1984. For this reason, its statistic on contribution of external trade in GDP does not portray the true situation.

despite the pursuances of import liberalization and export promotion policies. On the contrary, as a share of her productive capacity, both exports and imports tended to increase only marginally over time (1980-1988). Although, export's share in GDP is increasing faster than that of import, its share in world trade declined over the years.[68]

7. The higher growth scenario continued throughout the eighties. However, in the process, the strains on public finances has deepened in recent years. This could be a serious constraints for stepping up of public investment in the coming years.

8. In recent years (1985-88) repayment and servicing of commercial debt have caused marginal increase in interest and accumulated debt components in the current account decomposition exercise. However, the contributions of these negative effects in the overall current account are still marginal. In view of declining private transfers and growing intake of commercial loans, these factors will surely dominate the current account relatively more in the coming years.

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[68] Between 1980 and 1986, the latest years for which trade statistics are available, India's share in world's exports, after rising from 0.4 percent in 1980 to 0.5 percent in 1985, declined to 0.4 percent in 1986.

despite the pursuances of import liberalization and export promotion policies. On the contrary, as a share of her productive capacity, both exports and imports tended to increase only marginally over time (1980-1988). Although, export's share in GDP is increasing faster than that of import, its share in world trade declined over the years.[68]

7. The higher growth scenario continued throughout the eighties. However, in the process, the strains on public finances has deepened in recent years. This could be a serious constraints for stepping up of public investment in the coming years.

8. In recent years (1985-88) repayment and servicing of commercial debt have caused marginal increase in interest and accumulated debt components in the current account decomposition exercise. However, the contributions of these negative effects in the overall current account are still marginal. In view of declining private transfers and growing intake of commercial loans, these factors will surely dominate the current account relatively more in the coming years.

[68] Between 1980 and 1986, the latest years for which trade statistics are available, India's share in world's exports, after rising from 0.4 percent in 1980 to 0.5 percent in 1985, declined to 0.4 percent in 1986.

Appendix A

For our analysis, we will use the following version of the Granger's test based on ordinary least squares estimation of an equation of the form:[69]

$$Y_t = \sum_{j=1}^{m} \alpha_j Y_{t-j} + \sum_{j=1}^{m} \beta_j X_{t-j} + C + e_t \qquad (4.14)$$

where e_t is the random error term and Y_t, X_t represent current account deficit or government's deficit or private saving-investment gap depending on the purpose of the causality test.

By considering whether β_j's are significantly different from zero, we can determine causality in the Granger's sense: Specifically, for testing the hypothesis that X does not cause Y, we test whether $\beta_j = 0$ for $j = 1, \cdots m$. The equation (4.14) is estimated in both constrained ($\beta_j = 0; j = 1 \cdots m$) and unconstrained form to compute the following F-test statistic:

$$F = \frac{\frac{SSE_c - SSE_u}{m}}{\frac{SSE_u}{[T-(2m+1)]}} \qquad (4.15)$$

where SSE_u and SSE_c are the residual sum of square from the unconstrained and unconstrained regressions.

All the required data are obtained either from C.S.O's *National Accounts Statistics* or from R.B.I's *Report on Currency and Finance*. Because of limited data availability, namely 16 observations from 1972/73-88/89, we have estimated the restricted version of equation (4.14) with one-period time lags.

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[69]The form of the test has been taken from Granger [1969].

ble 4-1. Relative Magnitude of Direct Investment in Selected Developing Countries

ntry	DIR INV/GDP[a]		Ranks	
	1980	1987	1980	1987
	0.0	0.0011	7.5	9.5
	...	0.0039	...	6
gladesh	0.0	0.0011	7.5	9.5
istan	0.0027	0.0019	5	8.5
ippins	-0.0029	0.0054	9	5
eria	-0.0081	0.0158	10	3
t	0.0235	0.0252	1	1
land	0.0056	0.0056	4	4
key	0.0003	0.0018	6	...
il	0.0065	0.0019	3	8.5
	0.0132	0.0229	2	2
Korea	-0.0001	0.0034	8	7
	0.0	...	7.5	...

Direct investment as percent of GDP.

rce: World Development Report, 1989 and United Nation's Statistical Abstract.

able 4-3. Change in the Current Account between Each Year and Base Period
ratio to potential GDP; percent)

	74[a]	75	76	77	78
A. Imbalance/ tential output	0.266700	1.026660	-2.454000	-2.516800	-0.803500
rms of trade fect	2.722230	3.748066	2.978438	2.262604	0.939675
port price					
pital goods ice	0.196152	0.673656	0.738259	0.468460	0.885652
neral fuels	1.525893	1.692343	1.459498	1.469638	1.139358
nsumer goods	0.111983	0.421561	0.300018	0.063735	0.136386
termediate	0.793031	1.342103	0.647300	0.473990	0.473667
port price	-0.091516	0.381598	0.166637	0.212619	1.695388
terest rate fect	-0.095076	-0.194020	-0.193480	-0.149360	-0.146767
ccumulated bt effect	-0.294770	0.081056	0.062470	0.092216	-0.025237
port placement	-0.524782	-0.878960	-1.101862	-0.367458	-0.284701
pital good	-0.291854	-0.298225	-0.382752	-0.319247	-0.418264
neral fuels	-0.911951	-0.957000	-0.251789	-0.268876	-0.159469
nsumer	0.099995	0.978897	0.011873	0.021180	-0.252595
termediate	-0.081572	-0.602632	-0.479199	0.198864	0.545624
port Promotion	-0.359365	-0.646345	-1.551903	-1.230937	0.205510
gregate Demand justment	-0.907800	-0.129689	-0.234997	-0.119904	-0.196020
ed Investment	-0.094055	-0.055879	0.015146	0.058823	0.002175
estic output	-0.219746	-0.079817	-0.250143	-0.178127	0.138201
er Flows	-0.208414	-0.907857	-1.112967	1.624607	-1.542108

Refers to financial years; base period 1973-74.
e: Negative sign indicates a balance of payments improvements.

Table 4-4. Macroeconomic Developments, 1973/74-78/79

Item	73/74	74/75	75/76	76/77	77/78	78/79
GNP in constant price	4.90	1.60	9.20	1.90	7.50	5.60
price (rate of change)						
Fixed investment	15.46	15.86	17.88	19.09	19.13	19.29
gross; percent of GNP)						
Inventory investment	3.96	5.16	4.28	3.00	1.56	4.20
and (percent of GNP)						
Domestic saving	19.48	1.90	20.15	22.50	22.60	24.70
percent of GNP)						
C.A. deficit	362.60	644.40	-294.20	-1525.80	-1734.70	-172.50
(Rs crores)						
Percent of GNP	0.06	0.93	-0.40	-1.91	-1.93	-0.18
Exports (Rs crores)	2529.40	3328.80	4036.00	5142.70	5407.00	5726.00
Rate of change	28.00	31.90	21.20	27.40	5.90	12.10
Imports (Rs crores)	2955.40	4518.40	5265.00	5073.80	6020.20	6811.00
Rate of change	58.30	52.90	16.50	-3.60	18.70	13.10
Oil payments	560.00	1156.90	1256.10	1419.40	1551.00	1681.20
(Rs crores)						
Interest payments		200.00	218.40	238.50	249.70	288.90
(Rs crores)						
Bulup in Debt		608.80	925.00	692.30	899.20	1091.90
(Rs crores)						
Net terms of trade	106.00	77.00	70.00	77.00	95.00	90.00
(1978/79=100)						
Nominal exchange rate (1975=100)[a]	106.94	104.12	100.00	98.70	98.52	93.79
Real exchange rate (1975=100)[a]	105.13	107.83	100.00	89.93	90.46	82.88
Foreign exchange reserves (Rs crores)[b]	580.80	610.50	1492.00	2863.00	4500.00	5220.00
Rate of change	21.90	5.10	144.90	91.90	57.20	16.00
Budget deficit	549.00	691.00	414.00	194.00	1016.00	1852.00
(Rs crores)						
Percent of GNP	0.92	0.99	0.56	0.17	1.13	1.90
Money supply	15.50	6.90	11.30	20.30	14.70	19.80
(Rate of change)						
Wholesale price	20.20	25.20	-1.10	2.10	5.20	0.05
(rate of change)						

a. Refers to annual years.
b. Excludes gold and SDR.

Sources: 1) Ministry of Finance, "Economic Survey", various issues.
2) RBI, "Report on Currency and Finance", various issues.
3) Government of India, "National Accounts Statistics."
4) Joshi, Vijay, "The Nominal and Real Effective Exchange Rate of the Indian Rupee: 1971-1983", RBI Occassional Paper, vol 5, No 1, June 1984.

Table 4-5. Change in the Current Account between Each Year and Base Period (ratio to potential GDP; percent)

	80[a]	81	82	83	84
C.A. Imbalance/ Potential output	1.220400	1.541000	1.308400	1.084800	1.251700
Terms of trade effect	-0.290558	-0.480599	-1.098325	-2.091161	-1.652899
Import price					
Capital	-0.539895	-0.631287	-0.691200	-0.793648	-0.579729
Mineral fuels	1.013144	1.306697	0.863408	0.235083	0.389783
Consumer	-0.349960	-0.351527	-0.368443	-0.363094	-0.239721
Intermediate	-0.590380	-0.702632	-0.911784	-0.887371	-0.585942
Export price	-0.175933	0.101850	-0.009694	0.282132	0.637296
Interest rate effect	-0.029788	-0.013641	0.075395	0.101830	0.200443
Accumulated debt effect	-0.017489	-0.002000	-0.029722	0.047087	0.072993
Import Replacement	2.982266	2.784649	2.891396	3.893399	1.449833
Capital good	1.175747	1.925621	1.918444	2.757674	1.252369
Mineral fuels	0.099951	-0.541970	-0.945948	-0.894397	-0.897005
Consumer	0.851119	0.962481	0.551161	1.103429	0.502294
Intermediate	0.855449	1.038506	0.707740	0.806692	0.592165
Export Promotion	-0.571909	-0.749129	-0.704990	-1.159688	-1.044111
Aggregate Demand Adjustment	0.128934	0.211253	0.079758	0.241115	0.117214
Fixed Investment	0.010584	0.012797	0.033728	0.030936	0.015849
Domestic output	0.118350	0.198456	0.046029	0.210178	0.101965
Other Flows	0.414197	0.297768	-0.423604	-0.528625	-0.426682

[a] Refers to financial years; base period 1979-80.

Note: Negative sign indicates a balance of payments improvements.

ble 4-6. Macroeconomic Developments, 1979/80-84/85

	79/80	80/81	81/82	82/83	83/84	84/85
e in constant price	-4.90	7.20	5.80	2.50	7.90	9.80
te of change)						
ed investment	19.80	19.72	20.21	21.28	21.03	21.52
oss; percent of GNP)						
ventory investment	4.49	4.89	4.37	3.39	3.47	3.76
ercent of GNP)						
estic saving	22.95	22.98	22.70	22.78	22.28	23.06
ercent of GNP)						
deficit	294.42	1656.60	2317.28	2296.40	2262.40	2852.40
s crores)						
cent of GNP	0.22	1.30	1.57	1.30	1.10	1.24
ports (Rs crores)	6459.00	6711.00	7803.00	8803.00	9771.00	11744.00
te of change		4.30	16.30	12.80	11.00	20.20
ports (Rs crores)		12549.20	13607.60	14292.70	15891.50	17134.20
te of change		37.30	8.40	5.00	10.80	8.20
payments	3269.90	5266.50	5189.50	5621.90	4832.00	5409.00
s crores)						
erest payments	313.50	298.90	398.10	456.20	568.70	751.40
crores)						
up in Debt	1350.30	2400.00	2133.40	2689.10	3047.20	3808.00
s crores)						
ms of trade	~~92.60~~	~~88.88~~	~~89.20~~	96.80	120.00	104.60
978/79=100)						
inal exchange rate	91.81	94.19	94.50	94.81	92.88	87.96
975=100)						
l exchange rate[a]	82.66	90.32	94.44	92.34	95.15	93.82
975=100)						
eign exchange[b]	5169.70	4822.10	3354.50	4265.30	5197.90	6816.80
serves (Rs crores)						
e of change		-10.34	-30.40	27.15	21.87	31.14
get deficit	2620.00	3474.00	2412.00	2476.00	1968.00	5183.00
s crores)						
cent of GNP	2.43	2.72	1.64	1.51	1.02	2.43
ey supply	17.73	18.10	12.51	16.12	18.14	18.26
te of change)						
olesale price	17.11	17.73	9.80	2.68	9.46	6.91
te of change)						

Refers to annual years.
Excludes gold and SDR.
rces: 1) Ministry of Finance, "Economic Survey", various issues.
2) RBI, "Report on Currency and Finance", various issues.
3) Government of India, "National Accounts Statistics."
4) Joshi, Vijay, "The Nominal and Real Effective Exchange Rate of the Indian Rupee: 1971-1983", RBI Occassional Paper, vol 5, No 1, June 1984.

ible 4-7. Change in the Current Account between Each Year and Base Period
ratio to potential GDP; percent)

	85[a]	86	87	88
A. Imbalance/ tential output	1.095700	0.806500	0.679700	1.651800
rms of trade ffect	-0.058686	-1.774275	-1.864375	1.321510
port price				
pital	0.235290	0.266001	0.182060	0.166820
neral fuels	-0.081407	-1.230059	-1.104214	-1.197739
nsumer	-0.049375	-0.246093	-0.392568	-0.296084
termediate	-0.261963	-0.945208	-1.258616	-0.949277
port price	-0.309935	-0.381084	-0.708964	-0.954771
terest rate ffect	0.070370	0.159667	0.088355	0.123783
cumulated debt ffect	0.015868	-0.003011	0.053076	-0.046550
port Replacement	0.327852	2.715064	2.755528	2.554198
pital good	0.119563	0.351024	0.256917	0.173973
neral fuels	-0.995887	-0.964795	-0.062793	-0.093502
nsumer	-0.035156	0.062794	0.297343	0.795733
termediate	0.579331	2.666025	2.264062	1.677954
port Promotion	-0.697343	-0.524262	0.342920	1.522821
ggregate Demand djustment	0.157777	0.183399	0.019799	0.942305
xed Investment	0.112156	0.138965	0.058963	0.104871
mestic output	0.045621	0.044374	-0.039164	0.237434
her Flows	-0.220997	-0.483973	-0.907740	-1.309682

. Refers to financial years; base period 1979-80.
ote: Negative sign indicates a balance of payments improvements.

ble 4-8. Macroeconomic Developments, 1984/85-88/90

	84/85	85/86	86/87	87/88	88/89	89/90
P in constant price	3.70	4.90	3.90	3.90	3.80	10.60
te of change)						
xed investment	19.74	21.11	21.18	20.52	20.64	
ross; percent of GNP)						
ventory investment	2.72	5.04	3.18	2.64	3.91	
ercent of GNP)						
mestic saving	18.83	20.56	21.95	21.28	21.12	
ercent of GNP)						
A deficit	2852.42	5927.30	5830.00	6292.60		
s crores)						
rcent of GNP	1.24	2.27	2.00	1.91		
ports (Rs cr.)	11744.00	10895.00	12452.00	15741.00	20281.00	
te of change	20.20	-7.20	14.30	26.40	28.90	
ports (Rs cr.)	17137.00	19658.00	20096.00	22999.00	27693.00	
te of change	8.20	14.70	2.20	11.50	25.90	
payments	5464.00	5212.00	3029.00	4302.00	4664.00	
s crores)						
terest payments	1312.50	1700.00	2087.00	2975.00	2788.00	
s crores)						
lup in Debt		3022.00	9985.00	5723.00	252.00	
s crores)						
terms of trade	105.00	106.90	129.00			
978/79=100)						
nal exchange rate[a]	87.96	82.99	67.95	58.57	59.79	
5=100)						
l exchange rate[a]	93.82	92.44	81.41	74.72	71.80	
975=100)						
reign exchange[b]	6816.70	7384.40	7645.00	7281.00	6604.60	
serves (Rs crores)						
e of change	23.99	8.33	3.53	-4.68	-9.36	
dget deficit	5183.00	3249.00	9149.00	5582.00	8802.00	
s crores)						
rcent of GNP	2.26	1.24	3.14	1.70	2.26	
ey supply	18.90	15.90	18.60	15.90	17.70	
te of change)						
lesale price	6.91	1.85	5.43	9.74	7.30	
te of change)						

Refers to annual years.
Excludes gold and SDR.
rces: 1) Ministry of Finance, "Economic Survey", various issues.
2) RBI, "Report on Currency and Finance", various issues.
3) Government of India, "National Accounts Statistics."
4) Joshi, Vijay, "The Nominal and Real Effective Exchange Rate of the Indian Rupee: 1971-1983", RBI Occassional Paper, vol 5, No 1, June 1984.

eterminants

able 4.9. Causality tests on saving (private)-investment (private) balance, overnment's fiscal balance and the current account balance.

ull Hypothesis	F-Statistic[a]	Result	Causality
[b] $H_{C(I-S)}$	3.72	Accept	Independent[c]
$H_{(I-S)C}$	2.16	Accept	
[d] H_{CBD}	2.52	Accept	BD → C
H_{BDC}	4.75	Reject	

The test was conducted at the 5% significance level. The degrees of freed the F-statistic in all the tests are 1 and 13 respectively.

$H_{C(I-S)}$ is the null hypothesis that current account imbalance does not ause imbalance between investment and saving on the private account. $H_{(I-S)}$ s the null hypothesis that private investment-private saving imbalance does ot cause current account imbalance.

The two series are either statistically independent or related ontemporaneously but in no other way.

Similarly H_{CBD} is the null hypothesis that current account deficit does ot cause budget deficit. H_{BDC} is the null hypothesis that the budget defici oes not cause the current account deficit.

ble 4.9. Causality tests on saving (private)-investment (private) balance, vernment's fiscal balance and the current account balance.

ll Hypothesis	F-Statistic[a]	Result	Causality
b $H_{C(I-S)}$	3.72	Accept	Independent[c]
$H_{(I-S)C}$	2.16	Accept	
H_{CBD}	2.52	Accept	BD → C
H_{BDC}	4.75	Reject	

The test was conducted at the 5% significance level. The degrees of freedom the F-statistic in all the tests are 1 and 13 respectively.

$H_{C(I-S)}$ is the null hypothesis that current account imbalance does not use imbalance between investment and saving on the private account. $H_{(I-S)C}$ the null hypothesis that private investment-private saving imbalance does cause current account imbalance.

The two series are either statistically independent or related contemporaneously but in no other way.

Similarly H_{CBD} is the null hypothesis that current account deficit does cause budget deficit. H_{BDC} is the null hypothesis that the budget deficit es not cause the current account deficit.

Table 4-10. The Degree of Openness of Selected Developing Countries[a]

(Shares in percent)

Country	As Shares of G.D.P.								
	1980			1984			1988		
	Exports	Imports	External Trade	Exports	Imports	External Trade	Exports	Imports	External Trade
India	4.71	9.05	13.76	5.81	9.24	15.05	6.14	9.46	15.60
China	7.24	7.79	15.03	8.82	9.30	18.12	12.77	14.84	27.61
Pakistan	12.06	24.23	36.99	9.35	21.18	30.53	12.81	22.09	34.90
Philippins	16.84	21.77	38.61	16.60	19.60	36.20	18.04	20.81	38.85
Nigeria	28.53	16.46	44.99	19.46	14.29	33.75	25.16	21.53	46.69
Egypt	13.26	24.16	34.42	17.58	48.56	66.14	13.10	31.37	44.47
Thailand	19.45	27.54	46.92	17.67	25.07	42.74	27.27	30.85	58.12
Turkey	5.41	14.23	19.66	15.03	22.47	37.50	18.02	22.29	40.31
Brazil	8.46	10.51	18.97	14.43	8.13	22.56	10.41	4.54	14.95
Mexico	9.18	11.71	20.89	14.04	6.58	20.62	11.69	10.70	22.39
South Korea	30.13	38.27	68.40	35.36	36.78	72.14	35.43	30.24	65.67
Ethopia	9.45	14.55	24.04	9.76	19.34	29.10	7.55	22.20	29.75
Bangladesh	6.83	21.89	28.72	7.58	16.57	24.15	6.37	15.46	21.83

a. All countries with population more than 40 millions in mid-86.

Sources: World Bank, 'World Development Reports', various issues.

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Chapter 5

Impact of Foreign Borrowing

5.1 Introduction

We have focused our attention in Chapters 3 and 4 on evolution and determinants of India's external debt. The discussion in these two chapters has highlighted the composition and the differential terms of foreign loans, its (expost) effects on the macro-aggregates, choices and trade-off in policies in formulating a strategy for current account and external debt. However, the exante effect of foreign capital on the macro-aggregates is not clear from the above discussion. The point is of considerable importantce since an essential feature of the success of a debt-financed development strategy is that the borrowing must stimulate capital accumulation and thus output growth. This however depends to a large extent on the internal (govern-

ment) policies that direct (explicitly or implicitly) the inflows in the desired directions. In the literature, the implication of foreign borrowing has rightly been studied extensively by various researchers. However, the implication of the interaction between government policies and foreign borrowing on the macroeconomic variables (say growth) has got little attention in the empirical literature. It is here that this study intends to contribute.

The structure of the chapter is as follows. Section 2 sketches briefly the literature on the implication of foreign resources on the economies of LDCs. Section 3 provides a formal framework. In the following section, this framework is used for examining the impact of foreign resources on the Indian economy. The last section summaries the findings.

5.2 Survey of the Impact Studies

The macroeconomic effects of aid on the development of LDCs have largely been analyzed in the literature in terms of the Harrod-Domar model. Since it is believed that foreign capital supplements domestic savings, in this setup, foreign capital can further growth in promoting an expansion in productive capacity beyond what could be undertaken solely with national savings. However, not all writers (Griffin [1970], Griffin and Enos [1970]) in the Harrod-Domar framework arrive at an optimistic conclusion about the role of foreign aid in promoting economic development. Their arguments are:

1. Foreign aid inflow instead of being a supplement to domestic resources (either in the public or private sectors) often acts as a substitute for them. Because of its availability and low interest, LDC governments may reduce their tax effort and/or change the composition of their expenditure towards consumption. For the same reason, the low interest loans may reduce the incentive to save in the private sector. Thus, the net effect of these behaviours is that the savings rate falls as aid is increased.

2. In addition, a part of the aid is utilized for consumption purposes.

3. Aid may have the effect of raising the incremental capital-output ratio given the donor's bias towards prestige investment projects which are not necessarily the most productive from the recipient's viewpoint.[1]

The effects (1), (2) and (3) in combination, it is argued, may cause aid to have an 'immiserizing' effect.

Most of the studies on effectiveness of aid on growth or impact of aid on savings draw their conclusion from multiple (or simple) linear regression equation in which—(1) growth in the recipient country is related on a cluster of possible causal imbalances such as aid, domestic savings, etc. or (2) savings in the recipient country is related on aid. Table 5-1 summarizes the results on savings and aid. As this table shows, some of the empirical studies show a negative relationship between aid and savings whereas few

[1] Atleast, the argument holds in case of tied loans.

others indicate a positive relationship.[2] With regard to impact of aid on growth, Papanek's studies [1973, 1982] show that the 'immiserizing' effect of aid has not yet arrived for most of the countries as his studies have found that the partial regression coefficient of aid on growth is significant and positive for both the 1960s and the 1970s. Similar conclusion is also obtained from a recent study by Rana et. al. [1988]. However he argues that aid may have been used to finance projects which are unnecessarily capital intensive.

Most of the empirical literature in the Indian context have focused their attention on the relationship between aid and savings. The conclusions derived from these studies bring out conflicting results: while studies by Katz [1963], Pandya [1974], Chaudhuri [1978] found an insignificant contribution of foreign aid on domestic savings, studies by Thimmaiah [1979], Narayanan [1988] have indicated a negative relationship.

As noted before, the empirical literature draws their conclusion by regressing growth in recipient country on a cluster of possible causal variables such as aid, domestic savings, etc. This implies as if aid has some kind of straightforward 'leverage of growth': for example, it can be seen as augmenting investment within a simple Harrod-Domar model. However, at a practical level, the impact of aid is not simple: there are effects at separate

[2]Apart from these studies, Bowles' [1987] study of causality between foreign aid and domestic savings reveals that causal relationships are not common and when they exit in certain countries, the direction of causality is likely to be influenced by the share of aid from bilateral and multilateral sources.

levels to be considered. They are, according to Mosely et. al. [1987]:

1. There are direct effects of the aid disbursement, i.e. those which can be traced directly to the project to which the aid money was nominally allocated.

2. There are indirect effects of the project through production, consumption and investment multipliers.

3. Aid inflow indirectly affects the expenditure pattern of the public sector of the recipient country. This arises because anticipated capital transfer (which is true to a certain extent in the case of official assistance) will be treated as part of the total income at the time of decision making and so the usual marginal propensity to consume will apply for them. On the other hand, unanticipated capital transfer gives the government flexibility to readjust its spending programmes. If the government's budget, prior to the transfer contained any sum for the project, then the amount can be utilized for any other purposes: other capital projects; 'productive' (in terms of fostering growth) form of recurrent expenditure such as expenditure on health facilities; 'non-productive' form of recurrent expenditure such as enlarging the army, reduction in borrowing, reduction in taxing efforts. These fiscal adjustments will in turn exert an influence on the economy through production, consumption and investment multipliers.

4. In case of tied (tied to country) loan, aid inflow will exert a downward pressure on the price of those goods and services which are supplied

by the project and an upward pressure for those goods and services whose demand is augmented by the project.[3] Surely, the price change will invoke changes in private sector decision process and consequently on the whole spectrum of the recipient economy.

To capture these effects of aid, attempts have been made by Mosely et. al. [1987] and Gang et. al. [1988] to derive consistent behavioural equations by maximizing a welfare function for policy-makers. The system of equations is estimated by full system technique (3 SLS) using time series/cross-section data of developing countries.[4] However as these models essentially verify the budget constraint for the public sector, it is doubtful whether the budget constraint for the private sector is verified. Moreover, the impact of foreign aid in presence of financial and fiscal intermediation in production is not clear from these models. In addition, in these models, aid figures are mostly restricted to disbursed loans and grants from official sources.[5] For a country, the possibility may arise that the implications of official credits may differ from that of private (i.e. commercial and suppliers') credits.[6] For a country, what is more important is the impact of total capital flow on the economy, for then only, we can comment on the effectiveness of foreign borrowing in the development process. Also, these

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[3]This is also true for loan tied to project but not to country.

[4]Mosely et. al. [1987] have used cross-section data for developing countries whereas Gang et. al. have used time series data of India for estimating their system of equations.

[5]Official sources are bilateral and multilateral sources.

[6]See Takagi [1981].

studies fail to throw light on the interaction between the system of controls operating within the economy and its effect on capital inflow.

In the light of the shortcomings of the above studies, to capture the various effects of capital flow, we develop an open general equilibrium model for India extended to a non-Walrasian framework with an integrated financial market. The model has been used for analyzing the impact of capital flow on the Indian economy.

5.3 Model

5.3.1 Structure

The economy in our model is represented by 13 sectors—12 commodity sectors and 1 financial sector—and three agents: government, business and household. The government's objective function is not built into the model, so both its capital and current expenditures are specified exogenously in real terms.[7] The financing of the expenditure on the other hand, is endogenous, so long as it is done through taxation (commodity, income and custom duties), market borrowing and deficit financing. The government always balances its budget, if necessary through borrowing from the Reserve Bank

[7]The government's expenditure on export subsidies is however built endogenously into the model by specifying a uniform subsidy rate based on observed ratio in 1984-85 (Cf. Appendix C-3-e).

(i.e. money creation).[8]

For the household sector, the budget identity is explicitly built into the model. At any given price, the income accruing to this sector is derived by subtracting income-tax from its personal income.[9] The household expenditure on goods and services is calculated using the demand equations. Whenever income is in excess of its spending, it saves in the form of physical and financial savings. Thus at all prices, the household sector balances its budget.[10]

Production in the economy is essentially carried out by the business sector. To finance the production, it looks up to the household for their direct contribution in the form of shares and debentures and to the commercial banks for credit. In our economy, commercial banks are the sources of credit, which they create on the basis of financial savings and the high-powered money in the economy. The demand for credit, on the other hand, arises only from two sources: business and government. The consumer's demand for credit is assumed to be zero. This is quite reasonable, since bank credit to consumers constitutes a small fraction of the total credit in the economy. The government takes a fixed share out of the created credit and the rest is available to the business sector.[11] When there is an excess

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[8]See Appendix C-3-e for the balancing mechanism.

[9]Personal income and income-tax, in turn, are obtained as a fixed fraction of GDP at market price and GDP at factor cost respectively (Cf. Appendix C-3-d and e).

[10]See Appendix C-3-f for the balancing mechanism.

[11]The assumption is a reasonable one since it always pre-empts its share through its various policy instruments such as the statutory liquidity rate (SLR). See Appendix B-2-d

demand for credit, bank credit to the business sector is rationed. Thus in our model economy, each class always satisfies its budget constraint.

The sectors in our economy are:[12]

Commodity sectors

1. Mining (MQ)
2. Transport and Communication (TC)
3. Crude Fertilizers and Pesticides ($FERT$)
4. Industrial Raw Materials (IR)
5. Basic Intermediates (BIG)
6. Construction (C)
7. Plant and Equipment (PE)
8. Consumer Nondurables (CND)
9. Consumer Durables (CD)
10. Services (SE)
11. Foodgrains (FG)
12. Forestry and Logging (FL)

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for the derivation of the credit demand equation.

[12]See the part 'commodity classification' in Appendix B for details of sectorization.

Other sectors

13. Credit

The intermediate goods (mining, transport and communication, crude fertilizers and pesticides, industrial raw materials and basic intermediates) cover most of the items mentioned in the paper on 'Administered Price Policy' (Government of India [1986]) as *Core Items* and the *Other Fully Administered Items* and parts of *Partially Administered Items.* Most of these goods are produced in the public sectors and their prices are administered in the economy. Production in these sectors is assumed exogenously given (reflecting capacity constraints) in the first period but endogenised in the second period by using incremental capital-output ratios and some investment allocation rules.[13] The demands for these goods, on the other hand, are derived by using fixed input-output coefficients and from net imports.[14]

For the sectors C, PE, CND, CD and SE we have econometrically estimated production as a function of own price, the input prices, volume of credit, public investment in real terms and income.[15] Production

[13]The exogenously specified productions are given in Appendix D. For convenience, the allocation rules are specified later.

[14]Apart from transport and communication, we allow trade in other intermediate goods. In the Indian economy, transport and communication is essentially a closed sector. So, transport and communication sector in this model is considered as a non-tradable sector.

[15]See Appendix C-1 for the equations.

of foodgrains is however assumed exogenously given, in view of its heavy dependence on exogenous factor such as monsoon.[16]

In the absence of capital coefficients matrix, it is not possible to derive the demand for the investment goods from the input-output table. Hence we have estimated their demand as function of their implicit prices, and income.[17] For the final goods, demand equations are also econometrically estimated. To simplify our calculations, we assume complete substitution between domestic and imported good in following sectors: plant equipment, consumer non-durable good and consumer durable good.[18] in general, depend substitutes.

Production in the economy will certainly be influenced by the volume of credit. Since in our model economy, government and business sector are both producers, we assume both these sectors finance a part of their expenses through borrowing from commercial banks. Depending on government's investment expenditures, we obtain its demand for credit.[19] The business sector's demand for credit is obtained taking into account its investment target, its own savings and its contributions from the household

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[16]See Appendix D for the exogenously specified output levels.

[17]To obtain the implicit price of any good, we divide its value of output (or value added) at current price by its value of output (or value added) at constant price. The price is then adjusted so that the price in the base year (1970-71) is 100.

[18]In India, the service sector is essentially a closed one. So in our model economy, we assume trade to be nil in the service sector.

[19]See Appendix C-2-d for detail.

sector (i.e. shares and debebtures).[20]

When credit market is perfect and interest rates are fully flexible, supply will be affected by the cost of credit and the rate of interest. However, when the rate of interest is regulated, as in the case of India, supply depends upon the banks' currency holdings subject to statutory condition such as cash-reserve ratio. Banks' currency holdings, in turn, depend upon the volume of new currency and saving propensity of the people. In our model, the supply of bank credit for this reason is estimated as a function of current account deficits and financial savings of the household's sector.[21]

All the functions are estimated by ordinary least squares using time series data for the period 1960/61-1984/85.[22] The equations with expected signs and reasonable magnitudes for income and price elasticities are selected. Frequently we have to choose between equations which are economically meaningful but econometrically inadmissible. In case of conflict, we have always chosen the former.

The structural estimates of imports and exports by commodity categories are estimated using time series data for the period 1968-69 to 1984-85.[23] While estimating the equations, we faced severe data constraints since

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[20]See Appendix C-2-d for detail.

[21]See Appendix C-1-d for detail.

[22]When the model was constructed, the data for the years upto 1984-85 were available. Recently, C.S.O. has published data for the subsequent years. However, as it is a CGE model, the exclusion of the data of the subsequent years will not change the results markedly.

[23]The data for the period 1960/61-67/78 are not used since the import/export classifi-

commodities included in calculation of unit value and quantity indices have changed over time and moreover do not match with our sectorisation. Consequently we have estimated exports and imports for only three aggregate sectors: intermediate goods-total; total consumer and consumer durable goods; plant and equipments. For other sectors, imports and exports are specified exogenously.

Assuming the supply of India's imports is infinitely elastic, the hypothesis we use to estimate an import demand function is that the volume of imports is essentially determined by real income and the relative prices.[24] The real income and relative prices capture the income effect and the price substitution effect respectively and are the basic variables of any utility maximizing neoclassical demand model satisfying the desirable homogeneity conditions.[25] In addition, in some equations we have used the level of net gold and foreign exchange reserves (with a lag) as a liquidity variable.[26]

Indian exports at the commodity level are assumed to be a joint function of lagged total exports of that commodity and a ratio of lagged world price to the domestic price. Expressed in same currency unit, the price variable captures the relative profitability rates. Since Indian exports comprise a

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cation scheme has changed from the year 1968/69 onwards.

[24]The ratio of unit value of imports to the domestic prices of competing products is used as a proxy of relative prices

[25]See Appendix C-2-e for detail.

[26]The import demand and export supply equations follow basically the studies of Marwah [1985].

very small fraction of total world trade (of that commodity), we could assume that the the market price for Indian exports is given and so an allocation specification or market penetration of commodity exports would basically be supply determined.[27]

We assume a fraction of the value of output in each sector accrues to the factors (of production) as value-added. National income at factor cost is derived as the sum of value-added in all the commodity sectors.[28]

Wage income is derived from national income using observed ratio for the year 1984-85. The observed ratio of GDP to personal income for the year 1984-85 is used to calculate personal income in our model. Household's disposable income is obtained after deducting the government's share of income tax from personal income.

Total investment is derived as the sum of the value of construction and that of machinery and equipment.[29] As already mentioned, public investment in this model is assumed to be exogenously given in real terms. Private investment is obtained by subtracting public investment from total investment.

It is assumed that the private sector invests in final goods and a part of investment goods, while public investment is allocated among remaining part of investment goods and the intermediate goods.[30] It is also assumed

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[27]See Appendix C-1-e for detail.

[28]See Appendix C-3-b for detail.

[29]The adjustment for stock is also made using fixed constant for the year 1984-85. See Appendix C-1-e for detail.

[30]The basis of this assumption is that under the industrial policy formulated and pursued

that investment in public sector in period zero gives rise to capacity in period 1. The production in private sector is however assumed instantaneous. Since supply of goods in the private sector is price-responsive, private investment is implicitly allocated according to market signals. On the other hand, investment in the public sector is allocated according to the pattern of imports.[31]

5.3.2 Adjustment Mechanism

In the intermediate goods sectors, we assume that capacity constraints exist and the exogenously specified productions are the full capacity output. For the non-intermediate goods, capacities are not constrained provided intermediate goods are sufficiently available. The *domestic availability* of an intermediate good or any good in general is defined as domestic output plus net imports of the good concerned.

In the intermediate good market, equilibrium is attained when the domestic demand is less than or equal to the domestic availability. In case excess demand exists in the economy, the adjustment mechanism can be ei-

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in India, most intermediate goods and a large part of the capital goods are earmarked for public sector production (Cf. Government of India [1986], pp. 9-11). The allocation parameter is calculated from C.S.O.'s 'National Accounts Statistics, 1984-85'.

[31]This rule is similar to the one implicit in the consistency framework adopted in the Indian plans (Cf. Government of India [1981]). However, for the non-tradable sector transport and communication, investment is allocated depending on the level of excess demand.

ther an increase in the intermediate goods prices, a rationing mechanism or an increase in imports.In the present exercise, we have used a combination of the second and the third option: for tradable sectors, excess demand is met through imports and for non-tradable sector (i.e. transport and communication), the demand is rationed.[32]

For the other commodity market, equality between demand and availability is achieved by the price mechanism. In the financial market, if there is an excess supply of credit it is defined to be an equilibrium. When there is excess demand for credit, the volume of credit to the business sector is rationed.

We assume that entire supply of exports is demanded by the rest of the world. The equilibrium in the balance of payment is achieved by capital flow which is assumed always available.

The model is solved using the fixed point routine developed by Saigol [1979]. In the base simulation, the model is solved for two periods, 1984-85 and 1985-86, using observed data of exogenous variables, various coefficients, ratios and growth rates.. The computed values in period 1 (i.e. 1984-85) are given in Table 5-2. It is interesting to note that the sectoral prices as well as the equilibrium price index are quite close to the observed values in 1984-85. The estimated macro variables, such as national income, public and private investment, imports and exports are also reasonably close to the observed figures. However, the discrepancies between the com-

[32]The rationing mechanism is a proportional rationing rule applicable to all the user industries.

puted and the actual values of the government's expenditure, revenue and budget deficit are much larger.

The closeness of the estimated variables clearly shows the explanatory power of the model. We will use this model for analyzing the impact of capital inflow in the next section.

5.4 Impact of capital inflows

In this section, an attempt has been made to analyze the implication of capital inflow on domestic economy.

The issue that comes foremost in the mind for analyzing the impact of capital inflow is the effect of the allocation of foreign loans on the economy. In other words, if foreign borrowing finances consumption spending (for example defence imports) instead of capital accumulation (say imports of capital goods), what are its implications on the economy? Note that in this case capital inflow does not add to increasing availability of goods within the economy. Instead, via interaction effect, it enhances the demand for all commodities. The rise in demand in comparison to supply situations in the economy ultimately determines the net change in the macrovariables. On the other hand, when it finances imports of capital goods, foreign borrowing stimulates capital accumulation by enhancing the supply of investment goods. This, in turn, shifts the supply curve of plant and equipment to the right and also invokes changes in the supply and the demand curve of other commodities through consumption and production multipliers. The total

impact on macrovariables will eventually depend on the relative shifts of the demand and the supply curves.

Of course, the effect of the allocation of foreign loans on the economy is also dependent on the type of capital inflow. This can be best understood in the case of intake of tied loan. As mentioned earlier, disbursement of tied loan involves matching rupee contribution on the part of government. Thus, there is a possibility that budget deficit and consequently prices may rise due to the intake of tied loan. In addition, the tied loan is mostly project designated, their use will not increase the availability of required imports of intermediate and capital goods. Moreover, the loan will exert an upward pressure on the prices of those goods whose demand is augmented by the project. This may cause surge of prices or current account deficit in this case.[33] As noted before, these disadvantages do not arise in case of untied loan. Of course, untied loan in general is more costly than tied loan. In the light of these observations, it will be worthwhile to know whether the benefits (with respect to the macrovariables) of untied loan inspite of the cost differentials outweighs that of tied loan.

In the first two simulations, we examine the effects of the allocation of foreign loans (viz.capital accumulation versus consumption spending) on the economy. Specifically, we consider the following two extreme cases:

- In simulation 1, net capital inflow is increased by 25% in the first period over the base run. However, the amount is used to finance defence imports.

[33]There are other disadvantages of tied loan. Only some of them are highlighted here.

- In simulation 2, net capital inflow is also increased by 25% in the first period over the base run and the policies ensure that the entire amount is used to finance import of investment goods (i.e. PE).

Examining the results of *simulation 1* and *simulation 2*, presented in Table 5-3, it can be observed:

1. Expectedly, inflationary pressures seem to emerge when foreign borrowing is used to finance defence imports. In contrast, allocation of capital inflow for imports of investment goods results in fall in prices in both periods.[34] The increasing availability of investment goods in period 1 leads to capital formation (a point to which we come later) which in turn, sustains the fall in prices in period 2.

2. Table 5-3 clearly indicates the differential impact on capital formation in the two cases. In simulation 1, after an initial increase in period 1, total investment declines in period 2. This trend is manifested separately for public and private investment. Thus, defense imports seem to have a long-term effect. On the other hand, when capital inflow finances imports of investment goods, (as in simulation 2) total investment increases in both periods. Note that, most of the increase comes from capital formation in the public sector.

3. Expectedly, national income registers a higher growth in simulation 2. In fact, in simulation 1, national income declines in period 2.

[34] Probably, this trend is observed due to the absence of lag in production in the private sector.

4. The significant increase in capital formation in simulation 2 obviously leads to higher import demand, in comparison to base run, in period 2.[35] However, export also receives boost from declining price situations in period 2.[36]

The results of the simulations imply that there is general improvement in all the macrovariables in period 2 when foreign borrowing stimulates capital accumulation. The near equivalent rise in imports and exports suggests that given sufficient export incentives, repayment of capital inflow will not be a problem. On the other hand, there is an allround deterioration in the macrovariables in simulation 1. This suggests that this kind of borrowing should be limited as far as possible. The principal conclusion that can be derived from these simulations is that the capital inflow contributes to development if the government utilizes the (foreign) resources in an optimal (i.e. for capital formation) manner.

The next simulations examine the other aspect of the allocation of foreign loans. To be specific, we analyze in the simulations 3 and 4 whether the inflow of tied loan affects the economy in a better way (with respect to the macrovariables) than the intake of an equivalent amount of untied loan.[37]

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[35]For the same reason, due to lower capital formation, there is savings on imports in period 2 in simulation 1.

[36]Since export functions depend on lagged prices, impact of capital inflow on exports is captured only in the results of period 2.

[37]The other things being same, we consider intake of tied loan (untied loan) of amount

Examining the results of these simulations, presented in Table 5-4, it can be observed:

1. Table 5-4 clearly indicates that in comparison to untied loan, the inflationary pressure gains momentum in case of tied loan. This may arise in the later situation due to the increased budget deficit or other factors mentioned in the above discussion.

2. The output as well as investment grows faster when the inflow comes in the form untied loan.

3. As compared to intake of untied loan, the inflow of tied loan causes higher import's growth, lower export's growth and consequently higher current account deficit.

The results clearly indicate that inflow of untied loan has distinct advantages over inflow of tied loan.

In the wake of the liberalized economic regime in the 1980s, several issues have attained importance. Specifically, they are: system of controls on trade; the role of tariff as an instrument for limiting the current account deficits and the role of exchange rate as an instrument for managing balance of payment's problems.

In the Indian context, the history of physical controls on trade and production is quite long. Indeed, the quantitative restriction on trade and

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Rs. 100 crores in the first period for analyzing the impact of types of foreign inflows.

production was the prominent feature of the era of inward-oriented development strategy which the policy-makers pursued for more than three decades. However, with the shift towards the outward-oriented (import liberalized) economic regime in the eighties, physical controls on trade were replaced (partly) by the financial ones to subject the economy increasingly to the forces of competition. Moreover, the international agencies like the World Bank, IMF have also advocated this move in the case of India and several other developing countries. In the light of these observations, it is important to know whether the capital inflow affects the Indian economy in a better way (with respect to the macrovariables) when the system of controls operating on trade shifts from the physical ones to the financial ones.

In the 1980s, several developing countries experienced upsurge in current account deficits. For controlling this surge, they have resorted to various instruments like tariff rates on trade, exchange rate adjustments, etc. for altering the incentive structures in their economies. India is no exception in this respect. In fact, since independence India has used import tariff in addition to physical contols on trade as an instrument for managing the problems on balance of payment account. For this reason, it will be of interest to examine its effect in comparison to the import liberalized regime on the domestic economy.

Unlike other developing countries, India however had not used exchange rate as an instrument for current accout management in the 1970s and the 1980s. This happened despite the advice given by the World Bank in the 1980s. However, RBI has recently (July, 1991) devalued India's official

exchange rate against dollars by 22%. In view of this development, it will be interesting to analyze the effects of devaluation on the Indian economy.

In the next two simulations, we examine the effect of the shift from physical to financial controls on the economy. The import liberalized economic regime encompassing financial controls on international trade is modelled in our economy by imposing an uniform tariff (25%) on all imports. This in effect means reduction in import tariffs (as compared to base run) on plant and equipment as well as on consumer and primary goods. For comparison, simulation 6 is undertaken where uniform tariffs (25%) on plant and equipment and primary goods are kept but the growth of consumer imports is restricted to base-run's growth.[38]

Examining simulations 5 and 6 (see Table 5-5) it can be observed:

1. In simulation 5, after a faster increase in national income than simulation 6 in period 1, the rate of growth of national income slows down in the second period. By contrast, in simulation 6, the national income grows substantially in the second period.

2. The investment also grows faster when the economy operates under a protective shell, free from international competition. When the competition is introduced in the consumer good industries, the result suggests that the domestic capital formation on this account declines causing in effect lower increase in total investment in this case (i.e.

[38]This, in effect, captures the inward-oriented economic regime encompassing physical controls on international trade.

simulation 5).[39]

3. Expectedly, the growth of import is faster in simulation 5 than in simulation 6. On the other hand relatively slower growth in exports is realized in the second period in simulation 6. This happened because the lagged price differential (determining exports) between domestic and world is lower in simulation 6 than in simulation 5 in the second period.

The analysis has shown that replacement of financial controls by physical controls on international trade has, relatively speaking, favourable effects on the economy. Our next exercises analyze the role of tariff as an instrument for managing balance of payment's problems. Specifically, we model the schemes in our economy as follows:

- In simulation 7, we assume that there is an uniform tariff (30%) on all imports.

- In simulation 8, we assume that there is a tariff of 30% on imports of primary goods, 45% on imports of plant and equipments and a physical control on growth of consumer imports.[40]

Examining the results of simulation 7 and 8 (see Table 5-6), it can be observed:

[39] Also, note that, though private investment declines in both the simulations (5 and 6), the decline is sharper in simulation 5.

[40] The growth of consumer imports is restricted to base-run's growth.

1. Table 5-6 clearly indicates the differential impact on national income in the two cases. In simulation 7, after a faster increase (marginal) in national income than simulation 8 in period 1, the rate of growth of national income slows down in the second period. By contrast, in simulation 8, the national income grows substantially in the second period.

2. We can also observe from Table 5-6 that investment grows faster in simulation 8 than simulation 7.

3. Along with these improvements, we find that the economy experiences lower current account deficit and imports in simulation 8.

The above results indicate that in the Indian context, the capital inflow affects the economy in a better (relatively) way when there is physical controls concomitant with differential tariffs on international trade in selected industries.

Finally, we focus our attention in the next simulation on the effects of third instrument—viz. exchange rate devaluation— on the Indian economy. In our economy, we model it by adjusting the exogenously specified import and export unit values by 22%. Along with it, we abolish the subsidies on exports as government has also abolished the same recently.

Examining simulation 9 (Table 5-7), the following conclusions can be drawn:

1. As expected, exports increases sharply in simulation 9. Along with it, devaluation also arrests the growth of demand of imports. Thus

the net effect of devaluation is significant improvement in the current account deficit.

2. Quite expectedly, the general price index (GPI) increases with devaluation. However, the rise in price index is only marginal in the first period. However, note that the rate of inflation increases in the second period. This may retard growth, investment and exports in the long-run.

3. The output as well as investment increases marginally when India's official exchange rate is devalued by 22% in the first period. Note that devaluation retards investment in the public sector while boosts private investment in both periods.

4. The budget deficit also increases sharply after an initial improvement in the first period. The sharp fall in imports and consequential decline in government's revenue from import duties is mainly responsible for this trend.

The results indicate that devaluation has a mixed effect on the economy. On the one hand, there is sharp improvement in current account deficit; on the other hand, there are deleterious effect on the fronts of prices, government's budget defict and capital formation in the public sector.

5.5 Conclusion

The purpose of this chapter has been to analyze the implications of foreign capital and its interlinkages with the government's policies. To be specific, in this chapter, we have examined four issues relating to the impact of capital inflow on the economy. They are: a) the effect of the allocation mechanism of foreign loans on the economy; b) the implications of inflow of tied loan vis-a-vis untied loan on the economy; c) effect of the shift from physical to financial controls on trade in presence of capital inflow; d) effect of exchange rate devaluation, shift in tariff structure (on trade) on the economy. In view of the shortcomings of the earlier impact studies, we have constructed a C.G.E. model for India for analyzing its effects on the domestic economy. The following conclusions can be derived from the results of our analysis:

1. The foreign capital can contribute to development provided the foreign resources are utilized for capital formation. Thus, in the Indian context, capital accumulation via foreign borrowing can be a desirable policy option.

2. Our exercises indicate that untied loan affects the economy in a better way than tied loan.

3. Our study of modes of controls on international trade indicate that in presence of capital inflow, the desirable policy option is a mixture of physical restriction on import's growth in selected commodities and differential import's tariff in other commodities.

4. Our study indicates that devaluation has a mixed effect on the economy. On the one hand, current account sharply due to devaluation; on the other hand, there are deleterious effect on the fronts of prices, government's budget defict and capital formation in the public sector. Thus, depending on the relative priorities of the two, the policy-maker has to evaluate the effect of exchange rate devaluation.

Table 5-1. The effect of Resource Inflows on Savings or Investment[a]

Studies	No of observation	Time series or Cross-country	Saving or Investment	Effect of foreign inflows on savings or investment
Griffin and Enos	92	C	S	-0.73
Griffin				
Rahman	91	C	S	-0.25
Areskong	22	T	I[b]	+0.40[b]
Weisskopf	38	T	S	-0.23[c]
Chenenery (1970a)	16	T	S	+0.64[d] to -1.15
Chenery (1970b)	90	C	S	-0.49
Chenery (1970c)	90	C	I[b]	+0.11[b]

a. The table is taken from Papanak, G. (1972), 'The effect of Aid and other Resources Transfers on Saving and Growth in LDCs', in Oxford Bulletin of Statistics and Economics. The data set varies across studies.

b. Since savings in all calculations is defined as investment minus foreign inflows, a 0.40 increase in investment is equivalent to a 0.60 decrease in savings and vice versa.

c. According to Weisskopf, this is a minimum estimate and the reduction in savings is probably greater.

d. 12 out of 16 countries show a negative relationship.

Table 5-2. Computed Values for 1984-85

Variable	Unit	Computed Value	Actual Value
1. Price Indices	Index with base 1970-71=100.0		
FG	"	285.4	276.2
CND	"	291.4	302.4
CD	"	314.9	321.9
C	"	485.9	475.1
PE	"	309.1	319.6
SE	"	368.1	348.0
2. General Price Index	"	346.8	342.8
3. GDP at Factor Cost (Nominal)	Rs.crores	194399.9	190888.0
4. Disposable Income of Households in Current Prices	"	177262.0	173421.0
5. Household Savings in Current Prices	"	46402.1	44838.0
6. Wage Income in Current Prices	"	75363.0	74002.0
7. Private Investment Current Prices	"	29574.1	27822.0
8. Public Investment Current Prices	"	26286.9	26022.0
9. Government Expenditure in Current Prices	"	73616.2	85644.0
10. Government Revenue in Current Prices	"	67980.6	80462.0
11. Government Budget Deficit	"	5635.6	5183.0
12. Demand of Bank Credit	"	22553.4	19813.0
13. Supply of Bank Credit	"	29291.8	
14. Imports	"	18510.1	18680.0
15. Exports	"	11728.0	11592.0
16. Deficit on Current Account	"	2933.4	2845.0

Table 5-3. 25 percent Increase in Net Capital Inflows: *Effects on Macro-variables*

(ij'th entry indicates the percentage change in the i'the variable under j'th simulation)

Variable	Simulation 1[a]	Simulation 2[b]
Period 1		
1. GDCF in constant prices	0.003	0.291
2. PBI in constant prices	0.002	3.396
3. PRI in constant prices	0.006	-2.470
4. General price index	0.003	-0.520
5. GDP in constant prices	0.000	0.057
6. Imports	25.000	25.000
7. Exports	0.000	0.000
Period 2		
1. GDCF in constant prices	-0.021	1.705
2. PBI in constant prices	-0.005	2.567
3. PRI in constant prices	-0.094	0.949
4. General price index	0.089	-0.410
5. GDP in constant prices	-0.083	0.247
6. Imports	-0.263	0.499
7. Exports	0.000	0.475

a. In simulation 1 , entire increase in capital inflows is used to finance defence imports.

b. In simulation 2, increase in capital inflows finances only imports of plant and equipments.

Impact

Table 5.4. Impact of same amount of tied loans vis a vis untied loans
(ij'th entry indicates the percentage change in the i'the variable
under j'th simulation)

Variable	Simulation 3[a]	Simulation 4[b]
Period 1		
1. GDCF in constant prices	0.046	0.047
2. PBI in constant prices	0.316	0.316
3. PRI in constant prices	-0.196	-0.196
4. General price index	0.289	0.053
5. GDP in constant prices	-0.015	-0.016
6. Budget deficit in current prices	0.870	0.913
7. Imports	0.402	0.400
8. exports	0.000	0.000
9. Current Account deficit	0.259	0.257
Period 2		
1. GDCF in constant prices	0.035	0.036
2. PBI in constant prices	0.901	0.288
3. PRI in constant prices	-0.182	-0.108
4. General price index	0.255	0.054
5. GDP in constant prices	0.001	0.009
6. Budget deficit in current prices	0.623	-0.917
7. Imports	0.424	0.355
8. Exports	0.012	0.013
9. Current Account deficit	1.762	1.467

a. In simulation 3, other things being same, there is an inflow of tied loan of amount Rs. 100 crores in the first period.

b. In simulation 4, other things being same, there is an inflow of untied loan of amount Rs. 100 crores in the first period.

Impact

Table 5-5. Impact of Capital Inflows under Import Liberalisation Policies (ij'th entry indicates the percentage change in the i'the variable under j'th simulation)

Variable	Simulation 5[a]	Simulation 6[b]
Period 1		
1. GDCF in constant prices	0.388	0.423
2. PBI in constant prices	5.323	5.369
3. PRI in constant prices	-4.002	-3.973
4. General price index	-1.677	-1.355
5. GDP in constant prices	0.217	0.157
6. Imports	7.988	6.783
7. Exports	0.000	0.000
Period 2		
1. GDCF in constant prices	0.214	3.481
2. PBI in constant prices	4.751	10.034
3. PRI in constant prices	-3.765	-2.265
4. General price index	-1.482	-2.117
5. GDP in constant prices	0.151	0.271
6. Imports	8.553	8.043
7. Exports	1.130	0.972

a. In simulation 5, there is an uniform tariff of 25 percent on all imports.

b. In simulation 6, there is also an uniform tariff of 25 percent on imports of plant and equipments and primary goods. But the growth of consumer imports is restricted to base run growth.

Impact

Table 5-6. Impact of Capital Inflows under Alternative Tariff Policies
(ij'th entry indicates the percentage change in the i'the variable
under j'th simulation)

Variable	Simulation 7[a]	Simulation 8[b]
Period 1		
1. GDCF in constant prices	0.402	0.249
2. PBI in constant prices	4.860	3.386
3. PRI in constant prices	-3.559	-2.538
4. General price index	-1.219	-0.755
5. GDP in constant prices	0.136	0.106
6. Current Account deficit	39.367	24.400
7. Imports	6.742	4.916
8. exports	0.000	0.000
Period 2		
1. GDCF in constant prices	0.244	2.038
2. PBI in constant prices	4.343	6.049
3. PRI in constant prices	-3.559	-1.476
4. General price index	-1.072	-1.119
5. GDP in constant prices	0.096	0.328
6. Current Account deficit	28.190	19.707
7. Imports	7.212	5.000
8. Exports	0.915	0.573

a. In simulation 7, there is an uniform tariff of 30 percent on all imports
b. In simulation 8, there is a tariff of 30 percent on imports of primary goods, 45 percent on imports of plants and equipments. But the growth of consumer imports is restricted to base run's growth.

Table 5-7. Impact of Devaluation[a] on the Indian economy (Simulation 9)
(ij'th variable indicates the % change in the i'th variable under j'th period)

Variable	Period 1	Period 2
1. GDCF in constant prices	-0.234	0.199
2. PBI in constant prices	-1.526	-1.486
3. PRI in constant prices	1.255	1.641
4. General price index	0.089	0.472
5. GDP in constant prices	0.149	0.144
6. Budget deficit in current prices	-0.461	3.408
7. Imports	-6.700	-6.728
8. Exports	0.000	9.040
9. Current account deficit	-42.000	-51.200

a. In this simulation, we assume that there is a 22 percent devaluation of India's official exchange rate in the first period. Simultaneously, we assume that the subsidies on export are abolished.

Appendix A

Notations

Superscript

C	Financial sector
F	Final goods block
I	Intermediate goods block
IV	Investment goods block
M	Imports
X	Exports

Subscript

AD	Administrative department
endo	Endogenous Variable
exo	Exogenous Variable
i	ith commodity sector
ND	Non-departmental enterprise
t	Time

Others

INTINV	Investment on Intermediate Goods
ICOR	Incremental capital output ratio
BIG	Other Basic and Intermediate Goods
BONDS	Shares and Debentures purchased by the household

c	Consumption coefficient
C	Construction
CASH	Cash Balances with the households
CBE	Consumer, beverages and tobacco and edible oils
CD	Consumer Durables
CF	Consumer and foods
CFM	Convertion factor for imports
CFX	Convertion factor for exports
CND	Consumer non-durables
CR	Demand for bank credit by the business sector
CRD	Total Demand for bank credit
CRD_{t-1}	Total Demand for bank credit, lagged
CRG	Demand for bank credit by the government
CRP	Demand for bank credit by the private sector
Cfat	Conversion factor from quantity to value
DEFCA	Deficit on current account
DEFS	Deficit on current account and government budget
DEFCIT	Deficit in the government budget
D	Demand
DT	Rate of income tax
DTR	Revenue from income tax
DY	Disposable income of the household
FERT	Fertilizer and pesticides

FG	Foodgrains
FININV	Investment on non-intermediate goods
FINSAV	Savings of the household on financial assets
FL	Forestry and logging
GCE	Government consumption expenditure on goods
GDCF	Gross domestic capital formation (nominal)
GDCFR	Gross domestic capital formation (real)
GDPFC	Gross domestic product at factor cost (nominal)
GDPFR	Gross Domestic product at factor cost (real)
GDPMP	Gross domestic product at market price (nominal)
GDPMPR	Gross domestic product at market price (real)
GK	Govenment expenditure (nominal)
GKR	Government expenditure (real)
GFR_{t-1}	Gold and foreign exchange reserves, lagged
GNP	Gross national product (nominal)
GNPR	Gross national product (real)
GPI	General price index
GR	Government revenue (nominal)
GRIND	Government revenue from indirect taxes
GRR	Government revenue (real)
IV	Investment
ICOR	Incremental capital-output ratio

INFR	Infrastructure
INVS	Invisibles earnings in current account
IR	Industrial raw materials
M	Imports
mt	Import duty
MTR	Revenue from import duties
MPR	Imports, primary commodities
MCBE	Imports: consumer, beverages and edible oils
MPE	Imports, plant and equipments
MQ	Mining and quarrying
P	Price index
P_{t-1}	Price index, lagged
PBI	Public investment (nominal)
PBIR	Public investment (real)
PE	Plant and equipments, total
PEP	Plant and equipments, private
PET	Plant and equipments plus transport equipments
PERINC	Personal income
PHYSAV	Saving of the household on physical assets
PR	Primary goods
PRI	Private investment (nominal)
QI	Quantity index
QI_{t-1}	Quantity index, lagged
R.B.I.	Reserve bank of India
S	Production

S^x	Export supply
SAV	Households savings
SA	Domestic net availability
SK	Services
TK	Transport equipments
TC	Transport and communication
t	Rate of excise tax
U.V.	Unit value
$U.V._{t-1}$	Unit value, lagged
VAA	Value-added in agriculture
VAC	Value-added in construction
VAI	Value-added in intermediate goods block
VAS	Value-added in service sectors
VAFL	Value-added in forestry and logging
v	Value-added coefficient
VO	Value of output at current price
WY	Wage income
X	Exports
XSUBD	Exports subsidy
XR	Exports subsidy rate
XR_{t-1}	Exports subsidy rate, lagged
Y	Gross domestic product at market prices
w^x_{ij}	Weight of jth good exported in ith aggregated export sector

W^{M}_{ij} Weight of jth good imported in the ith aggregated import sector

r_i Rate of growth of ith variable (in percent)

W^{FA}_{i} Fraction of foreign loans allocated to sector i.

APPENDIX B

Commodity Classification

The commodities are aggregated in our model into 12 sectors from the 50 x 50 *Commodity x Industry Transaction Table 1984-85* prepared by the C.S.O. in the following way:

Sector	Corresponding Sectors in the I-O Table
1. MQ	11-15
2. TC	45,46,49
3. FERT	30,31
4. IR	5,6,7
5. BIG	27-29, 32-37, 47
6. C	48
7. PR	38-40, 43
8. FG	1-4, 8, 10
9. CND	16-22, 24, 26
10. CD	23, 25, 41, 42, 44
11. Services	50
12. FI.	9

Data

1. Intermediate Goods

Domestic Production of intermediate goods are assumed to be exogenously given at the actual level of production for 1984-85. The value of outputs for *fertiliser and pesticides* and *basic intermediate*

goods are the inter-industry flows given in the Input-output Table, 1984-85. For MQ and IR, the value of output is taken from the *National Accounts Statistics*. For TC, the value-added from the *National Accounts Statistics* is used as proxy for the value of output.

Price indices for these goods are taken either from the various issues of *Report on Current and Fianane* or computed (as implicit) from the *National Accounts Statistics*.

2. Investment Goods

Domestic Production of C is estimated using the gross domestic capital formation deflated by its prices indices. For PE, machinery and equipments in private sector is only estimated using gross domestic capital formation in private sector deflated by its price index. The estimates of demand of PE is based on *net availability figures*. Data are taken from *Monthly Abstract of Foreign Trade, Statistical Abstract and National Accounts Statistics*.

Price indices for these sectors are computed as the gross domestic capital formation in current prices as a percentage of gross domestic capital formation in constant prices. Data are obtained from various issues of *National Accounts Statistics*.

3. Final Goods

For FG, production is exogenously fixed at the production level in 1984-85. Demand equation are estimated by using the net availability (= domestic production + net imports - stocks) figures

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from the various issues of *Economic Survey*. Price indices are from *Chandlok (1978)*.

For CND and CD, value added deflated by its price is used for the estimation of production functions. Data are taken from the *National Accounts Statistics*. For the period 1976/77-84/85, data from *National Accounts Statistics* have been adjusted for our sectorisation using sector coefficients from *Annual Survey of Industries*. Price indices are derived from *Chandlok (1978)* and *Report on Currency and Fiance*. The demand equations of CND, CD are however based on *net availability figures*. Data are taken from *Monthly Abstract of Foreign Trade, Statistical Abstract and National Accounts Statistics*.

For SK, output is estimated using value-added deflated by the price index. Implicit deflators are used for price indices. The source of data is *National Accounts Statistics*.

For FL, the output is exogeneously fixed at its 1984-85 level.

4. Credit

Total credit in the economy is defined as the sum of RBI's credit to the *government and the commercial sector* and *other bank' credit to the government and the commercial sector*. The source of data is *Report on Currency and Fianance*. Financial saving of the household and deficit figures, used in the credit supply function, are however, taken from *National Accounts Statistics* and *Report on Currency and Finance*.

5. Exports and Imports

For exports and imports, supply is estimated using respective quantity index (base 1968-69). Their unit values (base 1968-69) are used as proxy for the price indices. The source of data is *Statistical Abstract.*

For PR, export is estimated based on quantity indices of following commodities: crude materials, inedible except fuels; mineral fuels and lubricants etc; animal vegetable oils and fats; chemicals; manufacturers of metal and iron steel. Import demand on the otherhand, is estimated using the computed quantity index and price index of crude materials inedible except fuels, mineral fuels etc, chemicals, iron and steel and manufacture of metal.

Exports supply of CF is estimated based on the following commodities: food and live animals, beverages and tobacco and miscellaneous manufactured goods. On the otherhand import demand of CF is based on the following commodities: food and live animals, beverages and tobacco, edible oils and miscellaneous manufactured products.

Supply of exports of PKT is estimated using the quantity index, prices index of machinery and transport equipments. Import demand of PK is estimated on the basis of quantity index and price index of electrical and non-electrical machinery.

Finally, exports supply and imports demands are distributed into the sectorisation using the fraction computed from the foreign trade data, 1984/85-85/86. For those commodity which are excluded from our

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estimation, we have used actual value of exports and imports to derive the supply and the demand origining in the foreign sector.

APPENDIX C

Equations

1. PRODUCTION FUNCTIONS

a. Intermediate Goods

The prodiuction vector is assumed to be exogenously given:

$S^I = (S_i^I)$, i = MQ, TC, FERT, IR, BIG

The values of $\bar{S}^I$ are given in Appendix D.

b. Investment Goods

$S^{IV} = (S_i^{IV}(\cdot))$, i = C, PEP

$S_i^{IV}(\cdot)$ are estimated equations as given below:

$$\log (S_C^{IV}) = 2.0035 + 0.2100 \log (P_C) + 0.0891 \log (PBIR)$$

$$(1.79)^1 \qquad (0.33)$$

$\bar{R}^2 = 0.71$, DW = 0.29.

$$\log (S_{PEP}) = -0.9201 + 0.0796 \log \left(P_{PE}/P_I\right) + 0.2346 \log (CRD)$$

$$(1.03) \qquad (12.37)$$

$$+ 0.2645 \log (INFR)$$

$$(2.74)$$

$\bar{R}^2 = 0.92$, DW = 0.91.

---

1. The figures in parenthesis indicate t values.

c. Final Goods

$S^F = (S_i^F(\cdot))$, i = FG, CND, CD, SE, FL

$S_i^F(\cdot)$ are estimated as follows:

S_{FG} : Exogenous

$$\log(S_{CND}) = 2.1550 + 0.1121 \log(P_{CND\ t-1}) + 0.0989 \log(CRD) - 0.0638 \log(P_{PE})$$

(2.60) (3.44) (-0.89)

$\bar{R}^2 = 0.73$, DW = 1.17.

$$\log(S_{CD}) = 2.3780 + 0.3124 \log(P_{CD\ t-1}) + 0.2488 \log(CRD_{t-1}) - 0.4659 \log(INFR)$$

(1.08) (2.86) (-3.10)

$\bar{R}^2 = 0.92$, DW = 0.79.

$$\log(S_{SE}) = 1.076 + 0.2195 \log(P_{SE}) + 0.1343 \log(INFR) + 0.1318 \log(CRD)$$

(2.48) (3.20) (3.81)

$\bar{R}^2 = 0.98$, DW = 0.95.

d. Credit

$$S^c = S^c \text{ (DEFCA, FINSAV)}$$

where DEFCA denotes the deficit on current account and FINSAV denotes the financial savings of the household.

S^c (·) is estimated as follows:

$$S^c = -220.7041 + 1.0659 \text{ FINSAV} + 0.3485 \text{ DEFCA}$$

$$\bar{R}^2 = 0.97, \text{ DW} = 1.03. \qquad (21.52) \qquad (1.53)$$

e. Exports

$$\log (S^x_{PR}) = 0.4542 + 0.9225 \log \left(QI_{PR\ t-1}\right) \quad (7.00)$$

$$+ 0.6014 \log \left[\left(XR_{t-1} + P^x_{PR\ t-1}\right) / P_{PR\ t-1}\right] \quad (2.09)$$

$$\bar{R}^2 = 0.77, \text{ DW} = 2.14.$$

$$\log (S^x_{CF}) = 1.1691 + 0.7620 \log \left(QI_{PR\ t-1}\right) \quad (6.07)$$

$$+ 0.3908 \log \left[\left(XR_{t-1} + P^x_{CF\ t-1}\right) / P_{CF\ t-1}\right] \quad (1.57)$$

$$\bar{R}^2 = 0.79, \text{ DW} = 1.95.$$

$$\log (S^x_{PET}) = 0.3391 + 0.9707 \log \left(QI_{PET\ t-1}\right) \quad (8.09)$$

$$+ 0.9241 \log \left[\left(XR_{t-1} + P^x_{PET\ t-1}\right) / P_{PET\ t-1}\right] \quad (1.70)$$

$$\bar{R}^2 = 0.86, \text{ DW} = 2.16.$$

2. DEMAND FUNCTIONS

a. Intermediate goods

The demand for intermediate goods (D^I) are derived from the production vector (S) of all goods by using the input-output matrix A and net imports in the following way:

$D^I = (D^I_i)$ where i is one of the five intermediate goods,

$D^I = A^1 S + M - X$

where $M_{5 \times 1}$, $X_{5 \times 1}$ are respectively the import and export vector of intermediate goods,

$S = \begin{pmatrix} S^I \\ S^{IV} \\ S^F \end{pmatrix}$ is the production vector, A^1 is the 5 x 12 submatrix of A containing the rows corresponding to the intermediate goods.

Other goods

The demand equations of other goods are estimated from net imports and domestic productions in the following way:

Let $X_{6\times1}$, $M_{6\times1}$ be the exports supply and imports of investment and final goods. If $D_{6\times1}(=(D_i))$, $S_{6\times1}(=(S_i))$, $P_{6\times1}(=(P_i))$ be the demand, production and domestic price vector respectively, then

Value of demand = Value of production - Value of exports + Value of imports

or $P_i D_i = P_i S_i - X_i + M_i$.

Dividing demand in value terms by prices we obtain demand in quantities. However in case of goodgrains we have estimated demand directly on the basis of net domestic availability. For SE, C we assume imports and exports to be nil.

b. Investment Goods

$D_i^{IV} = (D_i^{IV}(\cdot))$, i = C, PE

D_i^{IV} are estimated as below:

$$\log (D_C) = -1.4730 - \underset{(-7.59)}{0.9720 \log (P_C)} + \underset{(9.69)}{1.0008 \log (DY)} + \underset{(3.27)}{0.8400 \log (WY/DY)}$$

$\bar{R}^2 = 0.95$, DW = 0.92.

$$\log (D_{PE}) = 0.3616 - \underset{(-4.23)}{0.7508 \log (P_{PE})} + \underset{(0.18)}{0.0390 \log (P_{CD})} + \underset{(6.66)}{0.7907 \log (PBI)}$$

$\bar{R}^2 = 0.97$, DW = 1.61.

c. Final goods

Let $D^F = (D_i^F(\cdot))$, i = FG, CND, CD

D_i^F are estimated as below:

$$\log (D_{FG}) = 1.9812 - 0.2656 \log (P_{FG}) + 0.3274 \log (DY) + 0.4291 \log (GCR)$$
$$(-2.46) \quad (2.46) \quad (0.50)$$

$\bar{R}^2 = 0.90$, DW 2.33.

$$\log (D_{CND}) = -1.2593 - 0.9859 \log (p_{CND}) - 0.4519 \log (P_{FG}) + 1.1941 \log (DY)$$
$$(-3.68) \quad (-2.73) \quad (7.19)$$

$\bar{R}^2 = 0.88$, DW=0.90.

$$\log (D_{CD}) = -4.0042 - 1.0484 \log (P_{CD}) + 1.1606 \log (DY)$$
$$(-3.86) \quad (6.75)$$

$\bar{R}^2 = 0.92$, DW = 1.08.

$$\log (D_{SE}) = 0.9941 - 0.1526 \log (P_{FG}) - 0.0576 \log (P_{SE}) + 0.5713 \log (GDPMP)$$
$$(-2.81) \quad (-2.65) \quad (18.36)$$

$\bar{R}^2 = 0.99$, DW = 1.43.

d. Credit

The demand for credit (D^C), is given by the following relation:

(1) $$D^C = CRG + CR$$

where CRG, CR denotes the credit demanded by the government and business sector respectively. Since RBI's defination of public sector differs from that of C.S.O, we distinguish between the administrative departments and non-departmental enterprises, while dealing with the R.B.I.'s data on credit. In our model, similar to R.B.I.'s

definition, credit to the government is treated as credit to the administrative Departments. Since credit is demanded for investment purposes we have to separate out the investments of the administrative departments ($GDCF_{AD}$) and the non-departmental enterprises ($GDCF_{ND}$). Now,

$$PBI = GDCF_{AD} + GDCF_{ND} , \tag{2}$$

where PBI is the total public investment. Alternatively

$$GDCF_{AD} = \lambda_1 PBI \tag{3}$$

$$GDCF_{ND} = \lambda_2 PBI$$

where $\lambda_1 + \lambda_2 = 1$. Since only a part of the total investment is financed from bank credit, the demand for credit by the administrative departments (CRD_{AD}) and the same by the non-departmental enterprises (CRD_{ND}) may be written as:

$$CRD_{AD} = b_1 GDCF_{AD} = b_2 \lambda_1 PBI \tag{4}$$

$$CRD_{ND} = b_2 GDCF_{ND} = b_2 \lambda_2 PBI$$

where $b_1, b_2 \leq 1$.

By RBI's definition, $CRG = CRD_{AD}$. In our model, we assume public investment is exogenously specified. So private investment (PRI) is:

$$PRI = GDCF - PBI.$$

Only a fraction $(1-b_9)$ of PRI is financed from own saving; so that the rest (b_9) is financed out of contributions and borrowing from other sectors. Therefore, the net demand for bank credit by the private

sector (CRP) is given by:

(5) $$CRP = b_3(PRI - PHYSAV) - BONDS$$

or $$CRP = b_3 (GDCF - PBI - PHYSAV) - BONDS$$

According to RBI's definition, the business sector includes the non-departmental government enterprises and the private sector. Accordingly, demand for credit by the business sector (CR) in our model is modified as:

(6) $$CR = CRD_{ND} + CRP$$

Using (4) and (5), (6) can be rewritten as:

(7) $$CR = b_2 \lambda_2 PBI + b_3 (GDCF - PBI - PHYSAV) - BONDS$$

or using (2)

(8) $$D^C = b_1 \lambda_1 PBI + b_2 \lambda_2 PBI + b_3 (GDCF - PBI - PHYSAV) - BONDS$$

The fraction b_1, λ_1, b_2, λ_2, b_3 are computed from observed data for 1984-85.[2]

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2. The values are given in appendix.

e. Imports

$$\log (D^{M}_{PR}) = 2.6010 - 0.2447 \log \left(P^{M}_{PR} / P_{PR}\right) \quad (-1.18)$$

$$+ 0.3549 \log (GFR_{t-1}) \quad (5.77)$$

$\bar{R}^2 = 0.74$, DW = 0.75.

$$\log (D^{M}_{CBE}) = -0.2000 - 0.9509 \log \left(P^{M}_{CBE} / P_{CBE}\right) \quad (-3.24)$$

$$+ 0.7864 \log (GFR_{t-1}) \quad (11.01)$$

$\bar{R}^2 = 0.91$, DW = 1.67.

$$\log (D^{M}_{PE}) = -4.9729 - 1.2360 \log \left(P^{M}_{PE} / P_{PE}\right) \quad (-16.24)$$

$$+ 1.7100 \log (GDPMP / P) \quad (13.66)$$

$\bar{R}^2 = 0.98$, DW = 1.82.

3. EXPLANATORY NOTES ON CERTAIN CALCULATION

a. General Price Index (GPI)

The GPI is obtained as weighted sum of following sectoral prices:

$$GPI = 0.11 \times P_{FG} + 0.11 \times P_{IR} + 0.24 \times P_{CND} + 0.02 \times P_{CD} + 0.01 \times (P_{C} + P_{PE}) + 0.25 \times P_{SE} + 0.07 \times P_{TC} + 0.17 \times P_{I}$$

where

$$P_I^1 = 0.45 \times P_A + 0.16 \times P_B + 0.26 \times P_C + 0.07 \times P_D + 0.05 \times P_E,$$

1) P_A is the price of minerals, fuel, power, light and lubricant

2) P_B is the price of iron, steel and ferro alloys

3) P_C is the price of chemicals

4) P_D is the price of non metallic mineral products

5) P_E is the price of non ferrous metal and alloys.

b. Income

Gross Domestic Product at factor cost (GDPFC) is computed as the sum of value added in agriculture (VAA), forestry and logging (VAFL), manufacturing excluding the intermediate goods (VAM), the intermediate goods (VAI) and services (VAS), i.e.,

$$GDPFC = VAA + VAFL + VAM + VAI + VAC + VAS.$$

Denoting value of output as VO,

$$VAA = 0.86 \times VO_{IR} + 0.67 \times (VO_{FG} + 18216.18)^3$$

$$VAFL = 1537.12 \text{ (exogenous)}$$

$$VAM = VO_{CND} + VO_{CD} + 0.26 \times VO_{PE} \times (1+0.8)^4$$

$$VAI = \sum_{i=1}^{4} V_i \times VO_i, \quad i = MQ, TC, FERT, BIG;$$

V_i are value-added coefficients taken from the input-output table.

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3. The constant is added to make up for livestock and fishing.

4. The constant is added to make up for the adjustment for stocks.

$$VAC = 0.34 \times VO_C (1 + 0.09)^5$$

$$VAS = VO_{SE} + 21201.0^6$$

c. Wage Income

$$WY = \alpha \times GDPFC. \quad \alpha = 0.39 \text{ for } 1984\text{-}85.$$

d. Disposable Income

$$DY = PERINC - DTR,$$

where $PERINC = \mu\ GDPMP$, $\mu = 0.83$ for 1984-85.

e. Government's Budget Constraints

The government always meets its budget constraints because it can resort to deficit financing whenever the need arises. So,

$$DEFICIT = GE - GR$$

where

$$GR = GR_{exo} + GR_{endo},$$

$$GR_{endo} = DTR + GRIND_{endo} + CRG,$$

$DTR = DT \times GDPFC$, DT is the rate of direct taxation,

$$GRIND_{endo} = MTR + \sum_i t_i \times VO_i, \quad i = BIG, PE, CND, CD$$

$$MTR = mt_{PR} \times MPR + mt_{cbe} \times MCBE + mt_{PE} \times MPE,$$

where mt_i is the ratio of import tax revenue in the ith sector to imports.

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5. The constant is added to make up for the adjustment for stocks.

6. The constant is added to make up for the public administration defence and other service.

For the simulation, the following tax rates are used:

$$DT = 0.0240,\ t_{BIG} = 0.0826,\ t_{PE} = 0.0929,\ t_{GND} = 0.0515,$$

$$t_{CD} = 0.0801,\ mt_{PR} = 0.3384,\ mt_{CBE} = 0.4884,\ mt_{PE} = 0.9592$$

Government expenditure, GE is given by:

$$GE = GE_{exo} + GCE + GE_{endo},$$

$$GE_{endo} = PBI + XSUBD,$$

where export subsidy, XSUBD = XR x X, XR is the export subsidy rate.

f. Household Savings

The household is a net lender to the other sectors of the economy. Whatever income it gets in the form of value-added, it either spends on consumption of goods and services or saves. So

$$\text{Savings} = DY - EP$$

$$EP = \sum_{i=1}^{12} C_i \times VO_i,$$

where C_i is the ratio of household consumption to the value of output in the i-th sector. These ratios (C_i) are derived from the input-output table.

g. Income (at market price)

GDP at current market price (GDPMP)

$$= GDPFC + GRIND - XSUBD$$

h. Balance of payment (Current Account)

Current Account Deficit (DEECA) = M - X - XINV

where XINV is the net invisible earnings.

i. Exports

$$X = X_{exo} + X_{endo}$$

where

$X_{exo} = \sum X_i$, i is any commodity vector other than construction, transport and communication;

$$X_{endo} = X_{PR} + X_{CF} + X_{PET} \text{ where } X_i = cfat_i^x \times S_i^x .$$

Now

$$X_{PR} = \sum w_i \times X_{PR}, \quad i=CND, MQ, FERT, IR, BIG, FG$$

$$X_{CF} = \sum w_i \times X_{CF}, \quad i= CND, CD, FG$$

$$X_{PET} = \sum w_i \times X_{PET}, \quad i = CD, PE.$$

j. Imports

$$M = M_{exo} + M_{endo}$$

$$M_{exo} = \sum M_i$$

i is any commodity sector other than construction, transport and communication;

$$M_{endo} = M_{PR} + M_{CBE} + M_{PE},$$

$$M_i = cfat_i^m \times D_i .$$

Now

$$M_{PR} = \sum w_i \times M_{PR}, \quad i = CND, MQ, FERT, IR, BIG, FG$$

$$M_{CBE} = \sum w_i \times M_{CBE}, \quad i = CND, CD$$

APPENDIX D

EXOGENOUS VARIABLES

1. GCE_{84-85}	= 2548.21	Rs crores in 1970-71 price
2. $GE_{exo\ 84-85}$	= 10909.99	"
3. $GR_{exo\ 84-85}$	= 8180.02	"
4. $GRIND_{exo\ 84}$	= 2559.86	"
5. $INFR_{70}$	= 5517.00	"
6. PBI_{70}	= 7579.96	"
7. $P_{MQ\ 84-85}$	= 832.20	price index with base 7071 = 100.0
8. $P_{TC\ 84-85}$	= 275.90(implicit)	"
9. $P_{FERT\ 84-85}$	= 276.75	"
10. $P_{IR\ 84-85}$	= 330.60	"
11. $P_{BIG\ 84-85}$	= 423.80	"
12. $P_{I\ 84-85}$	= 466.30	"
13. $P_{I\ 83-84}$	= 441.10	"
14. $P_{FL\ 84-85}$	= 543.51 (implicit)	"
15. $P_{TE\ 83-84}$	= 307.30	"
16. $P_{FG\ 83-84}$	= 273.80	"
17. $P_{CND\ 83-84}$	= 276.80	"
18. $P_{CD\ 83-84}$	= 307.30	"
19. $P_{PE\ 83-84}$	= 299.50	"
20. $P_{IR\ 83-84}$	= 281.46	"
21. $P^{x}_{PR\ 83-84}$	= 455.30	Price index with base 1968-69 = 100.0
22. $P^{x}_{CF\ 83-84}$	= 338.08	"

23. $P^{X}_{PET\ 83-84}$	= 270.00	"
24. S_{FG}	= 145.50	Million tonns of foodgrains
25. S_{FG}	= 130.48 (availability)	"
26. S_{MQ}	= 7528.18	Rs. crores in 1984-85 prices
27. S_{TC}	= 12275.00	"
28. S_{FERT}	= 4220.55	"
29. S_{IR}	= 28473.00	"
30. S_{BIG}	= 52873.00	"
31. S_{FL}	= 1537.00	"
32. $S_{CR\ 83-84}$	= 14587.00	Rs crores in 1983-84 prices
33. $S^{X}_{PR\ 83-84}$	= 190.27	Qty. index with base 1968-69 = 100.0
34. $S^{X}_{CF\ 83-84}$	= 160.41	"
35. $S^{X}_{PET\ 83-84}$	= 448.21	"
36. $P^{M}_{PR\ 84-85}$	= 564.33	Price index with base 1968-69 = 100.0
37. $P^{M}_{CBE\ 84-85}$	= 365.80	"
38. $P^{M}_{PE\ 84-85}$	= 268.76	"
39. X_{exo}	= 1515.00	Rs crores in 1984-85 prices
40. M_{exo}	= 3951.48	"
41. INVS	= 3848.50	"
42. GFR	= 5723.40	Rs crores in 1983-84 prices
43. $W^{X}_{PR\ FG}$	= 0.0090	
44. $W^{X}_{PR\ CND}$	= 0.0808	
45. $W^{X}_{PR\ MQ}$	= 0.4700	
46. $W^{X}_{PR\ FERT}$	= 0.0040	
47. $W^{X}_{PR\ IR}$	= 0.0877	

48. $w^{X}_{PR\ BIG} = 0.1539$

49. $w^{X}_{CF\ FG} = 0.1430$

50. $w^{X}_{CF\ CND} = 0.4187$

51. $w^{X}_{CF\ CD} = 0.1867$

52. $w^{X}_{CF\ IR} = 0.2516$

53. $w^{X}_{PFT\ PE} = 0.7293$

54. $w^{X}_{PLT\ BIG} = 0.2707$

55. $w^{M}_{PR\ FG} = 0.0090$

56. $w^{M}_{PR\ CND} = 0.0444$

57. $w^{M}_{PR\ MG} = 0.4800$

58. $w^{M}_{PR\ FERT} = 0.1159$

59. $w^{M}_{PR\ IR} = 0.0111$

60. $w^{M}_{PR\ BIG} = 0.4139$

61. $w^{M}_{CBE\ CND} = 0.7816$

62. $w^{M}_{CBF\ CD} = 0.2178$

63. $cfat^{X}_{PR} = 17.7668$

64. $cfat^{X}_{CF} = 33.1126$

65. $cfat^{X}_{PET} = 1.2069$

66. $cfat^{M}_{PR} = 39.8245$

67. $cfat^{M}_{CBE} = 2.5530$

68. $cfat^{M}_{PE} = 12.0271$

69. $XR_{84\text{-}85} = 0.0510$

70. $XR_{83\text{-}84} = 0.0570$

71. $ICOR_{MG} = 4.6664$

72. $ICOR_{TC} = 8.1983$

73. $ICOR_{FERT}$ = 5.1603

74. $ICOR_{IR}$ = 3.7102

75. $ICOR_{BIG}$ = 4.1772

76. $SEEXO_{84-85}$ = 21201.0 Rs. crores in current prices

77. $FGEXO_{84-85}$ = 18216.18 "

78. $r_{PBI_{70}}$ = 8.9

79. $r_{GCE_{70}}$ = 9.0

80. $r_{INFR_{70}}$ = 12.5

81 $r_{GE_{exo}}$ = 15.0

82. $r_{GR_{exo}}$ = 19.0

83. $r_{GRIND_{exo}}$ = 19.0

84. r_{SEEXO} = 17.1

85. r_{FGEXO} = 30.9

86. r_{INVS} = 5.7

87. r_{GFR} = 23.4

88. $r_{X_{exo}}$ = 3.2

89. $r_{M_{exo}}$ = 23.3

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Chapter 6

Conclusion

In the post-World War II era, the world saw the birth of many new nations. Mostly, they were the colonies of the industrialized countries and were developed only to supply raw materials to the colonizing country. Rightly, attention was focused to develop the economies of these countries. The earlier studies of the economic problems of developing countries has focused on a lack of capital, both physical and human. Rapid progress in solving these problems is seen to be hindered by a number of constraints—domestic savings, foreign exchange and human skills. In this setup, external finance can promote growth by an expansion in productive capacity beyond what could be undertaken solely with national savings. Consequently, the policy-makers in most of the developing countries accepted foreign capital for acclerating growth and industrialization.

During this period (1950s to 1970s), the industrialized countries increased the volume of their credits along with the concessionality of their loans. Apart from finance at favourable terms, developing countries also gained in the 1950s and the 1960s from a relatively stable world trading system of fixed exchange rates, preferential trading arrangements and an increasing number of commodity agreements within GATT. For the developing countries, these developments were more than a compensation for the deterioration of their terms of trade. During this period, most of the developing countries experienced moderate to strong growth performances.

In the first half of the seventies decade, two shocks hit the international system. They were the collapse of the Bretton Woods system of fixed exchange rates (ocurred in August 1971) and the quadrupling of oil prices at the end of 1973.

The former development ushered in a new international monetary regime, viz. the system of flexible exchange rate. Since the new monetary regime could expose the economies of the developing countries to international price fluctuations, this system proved particularly problematic for many developing countries.

The later development, first oil shock, led to current account deficits of the oil importing developing countries and to parallel surpluses of the oil-exporting countries. The latters' preferences for depositing the surpluses in the euro-banks prompted the banks to recycle the petro-dollars to the oil importing developing countries. To minimize the risks associated with inflationary fluctuations, the variable interest rates were introduced. As the increase in the demand for credit was more than offset by an inflow of

credit into the markets, until late 1970s, spreads (above that of LIBOR) were generally falling, real interest rates were barely positive and credit conditions in the international capital markets tended to favour borrowers.

The adjustment to these shocks took time or was partially postponed leading to increased indebtedness from private and official sources. Because the developing countries could gain simultaneously from rising prices in many primary products, the overwhelming consensus in the 1970s was that increased indebtedness would not pose any long-term danger.

However, before developing countries could adjust to these shocks, the second oil shock hit the developing countries in 1978. This again forced them to either finance adjustment or to postpone it, this time, however, at higher price and debt levels.

At the same time, to counter the inflationary impact of oil price rise, a restrictive economic policy was adopted in most industrialized countries. Further, due to continued recession and unemployment, protectionist trend emerged in the industrialized countries. As a result of these developments, the volume growth of world trade fell sharply in the 1980s. Consequently, the volume as well as the values of the developing countries exports declined sharply in the 1980s. Simultaneously, interest rate in the capital markets rose to historically high level in nominal as well as real terms. As a result of rising service payments and declining export prices and quantities, the servicing of debt proved particularly problematic for the developing countries.

To prevent world-wide debt defaults, under the leadership of IMF, a number of packages were introduced in the post-1982 period. In the pro-

cess, IMF through its debt packages, has placed the burden of making that possible squarely on the debtors. Thus before the completion of the development process, developing countries have become capital exporters transferring resources to the developed countries at an abnormal scale. As capital surpluses have been generated foregoing consumption and investment potentials, the adjustment to debt servicing carries vast domestic cost.

In the Indian context, this pattern is slightly different. In the post-independence period and till late 1970s, India followed an inward-oriented development strategy encompassing quantitative restriction on international trade and domestic production, controls on foreign exchange mobility. This kept her demand for foreign capital for capital accumulation (in the form of capital imports) low and could be financed solely by loans from official sources.

However begining from 1978 onwards, India's development strategy shifted from inward orientation to outward orientation, moderately at first and then more aggressively since 1984. The opening of the economy expectedly meant that initially her demands of foreign capital would be high. Since the availability of loans from official creditors was limited, India had to look for additional finance from the euro-banks. However, conditions in the international loan markets were no longer favourable. Consequently in the 1980s, when market conditions deteriorated and real interest rates turned out to be positive, India began to borrow in a big way (compared to the Indian standard), increasing her exposure to official as well as commercial loans.

When developing countries, as a whole, are facing reverse transfers, declining per capita incomes and high interest rates, India's growing debt burden has rightly received the attention of the analysts. In this background, this study intends to investigate the process through which this has come about and also the policy corrections needed to avoid the situations that other countries now face.

To be specific, for our study, we have selected the following three key issues—growth, determinant and impact—for analysis in the Indian context. The various components of growth and its burden, their extent of changes and India's position in relation to other developing countries are analyzed with a view to identify the causes of rising debt burden. In the determinant part, we analyze the sectoral uses of foreign capital, its effects on the macro aggregates and the role of internal and external compulsions for the rising debt burden. In the impact part, we analyze the exante effect of foreign capital on the macro-aggregates, its interlinkages with the allocation and type of foreign capital and the government policies. The study of the these three issues together will identify the shortfalls of the past macroeconomic policies and the policy corrections required for successful development strategy.

To analyze the changing composition of debt, its terms of finance and its debt burden, we have adopted a variant of decomposition methodology. Another decompostion exercise is used for analyzing the determinants of India's external debt. The impact of external debt was however analyzed with the help of a CGE model. This was done because of the shortcomings of the earlier studies on impact of capital inflow.

In an international setting, the aggregate size of India's external debt or its cumulative growth rate during the last two decades stood out to be low. This happened despite the fact that the pace of external borrowing in comparison with the seventies decade increased sharply in the 1980s. However, it must be noted that India borrowed aggressively during that period when the real interest rates in the international loans markets were not particularly favourable to the developing countries.

Coupled with the surge of external debt, two developments took place in the 1980s. They were the upsurge of defence debt and capital flight. The defence debt means that the associated capital inflow will not stimulate capital accumulation. In other words, the burden of debt will increase, though there is no associated increase of debt servicing capacity. The same is true of capital flight. Thus, unless the government is able to limit their growth, the very purpose of the aggresive borrowing strategy will be lost.

It must be noted that India's debt structure has altered significantly in the last decade. Prior to the 1980s, nearly entire India's external debt had come in the form of long-term public/publicly guaranteed loans from official creditors. Since 1980, NRI deposit liability, loans from private creditors (guaranteed and non-guaranteed), IMF obligations and short-term debt have played a greater role (relatively) in our debt buildup. The interest rate on most of these loans (except IMF obligations) is revised periodically in the light of recent changes in world interest rates. Consequently, intake of such loans means that our servicing burden will be exposed to variations in world interest rates. Further, the maturity period of these loans are substantially lower than loans from official creditors. So, they have, in

effect, shortened the maturity structure and consequently have raised the repayment burden.

The increased dependence on IMF obligations and short-term debt has profound implications. As noted before, due to the quicker maturity period of short term debt, its use on a regular basis may cause balance of payments crisis if liquidity is not adequate. As regards IMF loans, it must be noted that their use generally leads to IMF's intrusion in macro-management.

No doubt, the shift towards private creditors has caused changes in the terms of finance of external loans. However, it must be noted that the indicators of terms of finance for long-term loan, though deteriorated against its own past, did not fare so bad in the 1980s (i.e. for the period under study). This is true whether one looks in an intertemporal setting or in a cross-section setting. However, because of the faster pace of amortization than disbursement, the net availability of funds from long-term loans declined substantially, particularly in the 2nd half of the 1980s.

We find that the shift in the debt structure raised sharply India's debt service ratio (as a percentage of exports of goods and services) in the 2nd half of the 1980s. This is primarily due to the amortization of earlier IMF loans and servicing burden of short term loans and partly due to the intake of commercial loans. The steep rise in debt service ratio also caused hardening in the lending rate of Indian loans in the financial markets in the late-1980s. With the fall in credit-rating and increased difficulties in raising commercial loans, India's had to increase her exposure to short-term debt which ultimately led to the crisis in the subsequent period.

With regard to the determinants of India's external debt, we find that

investment has been the motivating factor behind India's external indebtedness. Unlike some developing countries, only a small portion of aid has been utilized for importing consumption (except food) goods.

Our analysis shows that the growing surge of external indebtedness in the eighties was more an outcome of government's decision to pursue expansionary fiscal, monetary and import policies than the consequences of international environment. As the analysis shows, external shocks from terms of trade were minimal or negative in the eighties. On the otherhand, relatively large positive signs and values in import replacement and demand adjustment elements were the consequences of the macroeconomic policies pursued during this period. The study also shows that the imbalance in the government' budget and not the saving-investment gap on the private account was the principal factor for the surge of current account deficits (and consequently debt buildup) in the 1980s

The investment did result in higher growth. However, though the policies had emphasized rapid export promotion, our efforts to translate this growth in exports markets were much less than required under the circumstances. Consequently, the burden of debt (as measured by the debt indicators) increased sharply in the second half of the eighties decade. Simultaneously, due to successive years of money supply growth, inflation (compared to the Indian standard) also rose in the 1980s. This further affected the export growth.

Although it is outside the study period, it may be mentioned that in the post-1988 period, India's balance of payments situation deteriorated substantially. This happened because the effort effective to correct the

imbalance was thwarted by electoral concern, political and social turmoil and the conflict in the gulf. All these developments have eroded sharply the international confidence in India's economic viability. As a result, the availability of funds from commercial loans as well as short-term loans have diminished further. In addition, the developments have adversely affected inflow of funds from non-residents Indians. To avert the imminent debt defaults, India took recourse to IMF loans under compensatory and contingency fund facility in 1991. However, India's bargaining power, in contrast to the earlier occasion (i.e. 1981) was weak this time.

Considering the historical role/type of capital inflows and the changing scenarios, we have devised simulations for analyzing the implications of foreign capital on domestic capital. Specifically, two kinds of issues are considered for analysis. The first kind of issues examines the effect of the allocation rule of foreign loans and their types on the economy. The second kind of issues are those which have attained importance in the wake of the liberalized economic regime in the 1980s. Specifically, they are: system of controls on trade; the role of tariff as an instrument for limiting the current account deficits and the role of exchange rate as an instrument for managing balance of payment's problems.

Our analysis shows that the foreign capital can contribute to development provided the foreign resources are utilized for capital formation. Further, we find that the beneficial effects of untied loan outweigh that of tied loan.

Our study of modes of controls on international trade indicates that in presence of capital inflow, the desirable policy option is a mixture of phys-

ical restriction on import's growth in selected commodities and differential import's tariff in other commodities.

With regard to the impact of exchange rate devaluation, we find that there are merits and demerits of exchange rate devaluation. On the one hand, current account improves sharply due to devaluation; on the other hand, there are deleterious effect on the fronts of prices, government's budget defict and capital formation in the public sector. Thus, depending on the relative priorities of the two, the policy-maker has to evaluate the effect of exchange rate devaluation.

In the coming years, two issues need to be tackled. They are: sustaining the present crisis and generating adequate growth. To fulfill the twin objectives, it is not possible to suggest a clearcut policy recomendation. Instead, one can only suggest a package of programmes for implementation in short, medium and long-term for overcoming the present crisis.

Firstly, during the last two decades, we have relied mainly on one kind of foreign capital, viz. debt finance. In the process, we have practically ignored the other kind of foreign capital, viz. foreign investment. However, one distinct disadvantage of debt finance over foreign investment is that it creates fixed debt servicing obligations. Moreover, if borrowing agency (private or public entity) fail to discharge loans, the government has to eventually come to their rescue for mantaining the credibility of the country. By contrast, in case of foreign investment, equity needs to be serviced only after profits are made. Of course, there are some disadvantages—such as tariff jumping, sharpening dualism, etc—of foreign investment. However, since their share in the economy is small, the negative effects will be

can be solved. Some new schemes such as 'gold bank'could be a possibe policy initiative.[2]

Fifthly, in the long run, our performance in the export markets has to improve in order to arrest the deterioration in the debt indicators. Of course, the international environment is not favourable for increasing the exports. However, in view of India's marginal share in the world trade and a diversified export structure, it is not an impossible task. It is possible only if the profitability of exports is maintained along with improvement in quality through technological upgradation. In the late 1980s, attempts have been made to increase the profitability of exports. Still, it can be argued that India's incentive structure is biased towards domestic sales. In view of the severity of the balance of payments problems, it is necessary to shift the export-import policies in favour of exports against domestic sales. If not, liberalized import policies will lead to imports of raw materials, components for industries catering to domestic markets. To some extent, this happened in the 1980s when maximum growth was realized in the consumer durable industries.[3] The import intensities of these industries are high and their exports potentials are neglible.

Of course, there is further scope for improvement of the present research. In the present study, we have not analyzed, in detail, the utilization pattern of past loans. A cost-benefit analysis of the utilization of loans will let us know whether the net benefits of the loans were positive over the years.

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[2]Cf. Sarma, Hindustan Times, Aug. 1991.

[3]Cf. Chap. 4

This is necessary for the success of the development strategy in the long run. So, it will be worthwhile to analyze the cost and the benefits of the disbursed loans.

Also, our study does not explicitly look at India's ability to carry debt. In other words, it does not answer questions like, what is the likelihood of falling into debt trap. In the coming decade, the availability of foreign funds will most probably be reduced. So, the relevant question is whether the country will be able to generate enough internal savings to compensate for the fall of foreign savings and thus produce the necessary flow of investment to sustain an adequate rate of growth. It will be interesting to construct a model which can answer the above questions.