RESERVE BANK OF INDIA

OCCASIONAL PAPERS

VOL. 15 NO. 4 DECEMBER 1994

The Reserve Bank of India Occasional Papers contains contributions by the Staff of Reserve Bank of India. Articles, notes and reviews published in this journal do not necessarily reflect the views of the Editorial Committee or of the Reserve Bank of India. Responsibility for the views expressed and for the accuracy of statements contained in the contributions rests with the author(s).

Subscription rates for 1994 are :

Inland :	(i)	Rs. 140 (for four issues of the 1994 volume inclusive of postage).
	(ii)	Rs. 35 (for a single issue of the 1994 volume inclusive of postage).
Foreign :	(ii)	$ 100 (for four issues of the 1994 volume inclusive of registered air mail charges).
	(ii)	$ 25 (for a single issue of the 1994 volume inclusive of registered air mail charges).

There is no special rate for any category of subscribers. Subscriptions and orders, accompanied by cheques/drafts drawn on Bombay in favour of Reserve Bank of India, should be sent to :

The Director,
DRRP (Sales Section),
Department of Economic Analysis and Policy,
Reserve Bank of India,
Amar Building (Ground Floor),
Post Box No. 1036,
Bombay-400 001 (India).

All other correspondence may be addressed to the Editor, Reserve Bank of India Occasional Papers, Department of Economic Analysis & Policy, Reserve Bank of India, Post Box No. 1036, Bombay-400 023.

RESERVE BANK OF INDIA

OCCASIONAL PAPERS

VOL. 15 NO.4 DECEMBER 1994

ARTICLES **Page**

BOOK REVIEWS

INDEX

Published by A. Vasudevan for the Reserve Bank of India and printed by him at Karnatak Orion Press, 17-18, Prospect Chambers Annexe, Dr. D.N. Road, Fort, Bombay - 400 001.

Reserve Bank of India Occasional Papers
Vol. 15, No. 4, December 1994

Exchange Rate Pass Through and the Trade Balance : The Indian Experience

Michael Debabrata Patra and Sitikantha Pattanaik*

The unprecedented payments crisis of 1990-92 brought issues relating to the external sector to the very forefront of macro-economic management. A sharp downward adjustment in the exchange rate was followed by structural changes in the exchange rate regime. The desired effects of exchange rate changes on the trade balance depends critically upon the extent to which the exchange rate adjustment is transmitted to export prices denominated in foreign currency and import prices denominated in domestic currency, i.e., the degree of pass-through. Empirical estimation of pass-through in India shows that only 43 per cent of a depreciation in the exchange rate is passed on by exporters in the form of lower export prices in foreign currency, the rest being absorbed to raise exporters' profits in rupee terms. While in the immediate period exporters' rupee incomes may rise, a fuller pass through would have enabled an improvement in market share overseas and the profitability of export activity on a more durable basis. On the imports side, the coefficent is low enough to assume complete pass-through into import prices denominated in rupees. The estimate of pass-through has crucial implications for the timing and magnitude of exchange rate changes. Policy simulations show that there are time lags which extend well beyond a year for an exchange rate to have its impact on the trade balance. The results suggest that the sequence of reforms in the exchange rate regime which began since July 1991 should have been initiated from 1988-89 onwards to produce a favourable impact on the trade balance in the years of crisis i.e. 1990-91 and 1991-92. The simulations also indicate that a process of gradual depreciation is self-fulfilling as changes in domestic prices and income overtake the desired effects of exchange rate changes. Exchange rate policy in India has an important though concomitant role to play. The full benefits of exchange rate adjustments can be reaped only when they are orchestrated with other policy changes and when monetary, fiscal and other corrections are effected so as to allow the price effects of exchange rate movements to impact upon trade volumes.

Introduction

This paper is set against the background of momentous and sweeping changes in the stance and structure of economic policies in India. The

* Shri Michael Debabrata Patra is Director and Shri Sitikantha Pattanaik is Research Officer in the Department of Economic Analysis and Policy. The authors are grateful to Prof. L.M. Bhole and Dr. Himanshu Joshi for their valuable comments. Efficient typographical assistance was rendered by Smt. Vaidehi Bhagavan and Smt. L.F. Fernandes for which the authors are also grateful. The usual disclaimer applies.

unprecedented payments crisis which gripped the economy in the wake of the Gulf crisis of 1990 brought issues relating to the external sector to the very forefront of macro-economic management. The urgency attached to restoring sustainability to the balance of payments necessitated drastic and unconventional responses; the resultant sacrifice of growth and the spiralling of inflationary pressures represented the price of adjustment. Even as wide ranging reforms began to be instituted to address the structural roots of the external imbalance, the lessons of the crisis predicated the recourse to the automatic balancing mechanism embodied in a flexible exchange rate. A transitional dual exchange rate regime, one segment fixed by the monetary authority and the other floating and determined in the market, which was instituted in March 1992, paved the way for a unified exchange rate, completely market determined by March 1993. The formative experiences of the first year under the new regime strikingly resemble those of several developing economies who have had to contend with capital mobility in the wake of financial liberalisation. A distinct easing of the balance of payments constraint enabled the exchange rate to perform the role of a fixed nominal anchor for the economy rather than its conventional role in external adjustment. Policy efforts to stave off the pressure on the rupee to appreciate, prevented the erosion of exporters' nominal profits.

In the received theory of balance of payments adjustment, the exchange rate belongs to the tradition of the elasticity approach. Operating through relative prices, variations in exchange rates 'switch' resources in favour of the production of tradeables, and consumption expenditures away from them, thus bringing about improvement in the trade balance. The desired effect of the exchange rate on the trade balance is premised on the necessary and sufficient aspects of the Marshall-Lerner condition. However, the salutary effects of a change in the exchange rate on trade flows, indeed, even the operability of the Marshall-Lerner condition depends critically upon the extent to which the exchange rate adjustment is transmitted to export prices denominated in foreign currency and import prices denominated in domestic currency, i.e., the degree of pass-through. Pass-through is complete when export prices (in foreign currency terms) and import prices (expressed in local currency) rise or fall by the full amount of the exchange rate change. Conversely, if export prices in foreign currency do not change but do, in terms of domestic currency, and on the other hand, import prices in domestic currency remain stable with prices of overseas exporters bearing the burden of exchange rate change, pass-through is said to be zero.

Empirical estimation of the degree of pass-through of exchange rate movements into export and import prices in India is the theme of this paper. The subject has considerable relevance for the evaluation of recent changes in exchange rate policy and their impact on the balance of payments. The pass-through is estimated essentially in a partial equilibrium framework, though efforts are made to capture dynamic effects wherever the data (which are annual) enable the incorporation of adjustment time. The methodology adopted takes into account the identification problem which is associated with the empirical estimation of the determinants of trade flows. While this paper is devoted to the assessment of exchange rate changes on the trade balance, its framework is generally applicable to all price related measures (such as tariffs) which draw from the elasticity approach in their influence on the trade balance.

The rest of the paper is organised into five sections. The following section provides an overview of the selected contributions to the literature in relation to estimating the pass-through effects of exchange rates. Section III deals with the period of study and the sources of data. Section IV sets out the methodology adopted for the estimation of pass-through and addresses the related issue of the empirical estimation of the underlying trade elasticities. Section V presents the estimates of the pass through. The model of the trade sector which was constructed to estimate the elements of the pass-through coefficient is then simulated to test its performance and to assess the results of policy simulation. Concluding remarks are contained in the final section.

SECTION II

A Critical Review of the Literature

Empirical studies of the 1950s and 1960s tended to assume complete pass-through of exchange rate changes into export and import prices. This tendency stemmed from generalisations drawn from a prior reasoning regarding either, price-taking behaviour of a small country (in the international trade sense of the term) which derives a substantial portion of its income from export revenues or, a large country where exports are a small proportion of output, therefore with elastic supply, the country itself having considerable influence over the terms of trade.[1] Attempts at empirical verification of the proposition drew from the theoretical multilateral trade framework developed by Armington (1969). However, the Armington model was explicitly comparative static and required highly restrictive assumptions such as uniform elasticity of substitution between sources of

supply and infinite supply elasticities to make it operational. The empirical model of the trade matrix of the U.S. given by Magee (1971) employed the basic Armington framework to estimate geographical trade flows between the U.S. and fourteen countries for the period 1951-69. Magee provided probably the only econometric estimates of trade supply elasticities among studies of that period, enabling the crucial supply adjustment to the estimation of pass-through, dealt with later in this section and in the section on methodological issues. Magee's model also adjusted for the pass-through of import prices into domestic prices and real income, an issue that was later to become the centrepiece of the monetarist attack on the elasticity approach under Mundell and Laffer. A shortcoming of Magee's model was that it allowed for no price lags and thus ignored the vital issue of the timing of exchange rate adjustments. Moreover low elasticities obtained for the UK's and German demand for US exports were contrary to conventional wisdom, since both countries specialised in manufactures and could be expected to have a high degree of substitutability between domestic production and imports [Branson (1972)].

The absence of well-defined lag structures is also characteristic of contemporaneous and succeeding empirical models of trade [Rhomberg and Boissonneult (1965), Kwack and Shink (1972) and Marston (1971)]. The question of timing and therefore of careful consideration of lag structures is integrally wrought into the more fundamental issue of whether pass-through occurs or whether exporters' profits adjust to exchange rate changes, the latter event requiring lag structures which may extend beyond the conventional one-period adjustment. Broadly however, except for Grimm who is reported to have used the Almon technique to obtain the distribution of income and price coefficients for disaggregated U.S. exports and imports,[2] studies tended to focus on income and activity as determinants of trade and to ignore price lags.

Nevertheless, both Magee's empirical model as well as Branson's a priori estimates drawn from Armington's framework yielded high degrees of pass-through of the major realignment of principal exchange rates which occurred in 1971, though over a period of time, for the US and its trade partners. The observed lack of response of US import prices was attributed to German and Japanese exporters holding back some part of the exchange rate adjustment by keeping dollar prices constant and allowing home currency prices to fall. However, their conclusion conflicted directly with the observation of near full pass-through of the revaluation of the DM and the Yen (due to devaluation of the dollar) into German

and Japanese export prices respectively.[3] These results provided support to the favourable effects expected out of the 1971 realignment of currencies. A turnaround in the US trade balance towards surplus and a reduction in the trade surpluses of Japan, Germany and the UK was expected to begin within a year of the 1971 currency adjustment, with the full effects appearing by the end of 1973 [Branson (op.cit)].

The 1971 realignment spawned in its wake several alternative attempts to examine the question of pass through of exchange rates. Under the 'before-after' approach, the pass-through was measured as the change in trade prices that actually occurs (after) and the hypothetical change that would have occurred in the absence of exchange rate changes (before). Kreinin (1977) employed the control country technique whereunder the country under investigation was compared with a country (or a group of countries following Kreinin) similar in all respects to the former country except that in the latter case, exchange rates did not change.[4] Kreinin's findings corroborated Magee's and Branson's results referred to earlier. For U.S. imports, the degree of pass-through was low, around 50 per cent. For all the other countries pass-through ranged between 60 to 100 per cent, confirming the salutary effects expected of exchange rate changes of 1971.

Underlying the optimism associated with the pass-through was a strong faith in the adjustment mechanism embodied in the elasticity approach. Given the right elasticities, a floating exchange rate would always clear the foreign exchange market. The elasticities were assumed almost axiomatically to be high enough for the Marshall-Lerner condition to operate. Branson (op.cit) suggested demand elasticities in the range of -2 and -3, while Magee (op.cit) obtained supply elasticities of 10.0 for U.S. exports and 8.5 for U.S. imports.

The experience with floating exchange rates since 1973 has swung opinion in almost the opposite direction. The elasticity approach became subject to a credibility question and the floating rates seemed to have been "sold on a false prospectus".[5] During the 1970s and 1980s, large perverse movements in exchange rates have been witnessed, completely out of line with the fundamentals. Exchange rates, instead of freeing economies from the balance of payments constraint have imposed problems of volatility and inflation. Massive, often concerted, intervention by monetary authorities has been completely discounted by foreign exchange markets driven by speculative sentiments. At the same time, payments imbalances have grown unabated, impervious to exchange rate movements. Among the

industrial countries, those with trade surpluses (except Netherlands and Belgium) doubled their surpluses over the decade of the 1970s while a similar monotonic growth in deficits was noticed for the deficit countries.[6]

These developments have led to a critical assessment of the rigid assumptions of the elasticity approach, which in reality never seem to obtain. For the sake of continuity in building up this section these well known criticisms are briefly recapitulated here. To begin with, the elasticity approach or its axiom, the Marshall-Lerner condition is essentially static and assumes a given level of income. However, in the 1970s and in the 1980s, balance of payments adjustment came to be increasingly viewed in a growth perspective. Secondly, the impact of exchange rate changes on trade flows is lagged, formalised in the literature as the J-curve effect. This period of transmission is often characterised by compensating movements in domestic prices which would nullify the expected effects of the initial exchange rate change. Thirlwall (1988) pointed to "a succession of J-curves such that the foreign exchange losses from reducing the value of the currency are never recouped" unless prevented by absorption dampening policies which in turn cause a loss of growth. The monetarist/supply side hypothesis [Mundell and Laffer] developed the argument of compensating adjustment of domestic prices to point out the serious inflationary potential of fluctuating exchange rates. The ratchet effect would impose the burden of adjustment of domestic prices almost entirely upon countries undertaking devaluation. Given the law of one price, this would ultimately lead to a general increase in the price of traded goods and world-wide inflation.[7]

Furthermore, experience pointed to demand elasticities being significantly lower than earlier assumed. In the case of most developing countries, elasticities were intrinsically low, given the growth-linked nature of their import demand and primary product concentration of their export basket.[8] Even for industrial countries the elasticity pessimists outside the structuralist school [Adams and Junz (1971), Klein (1972)] turned in econometric evidence of low elasticities of both consumption and production.[9] This has led to a shift in the case for devaluation, particularly in IMF-World Bank supported adjustment programmes to supply side arguments. Thus devaluation is expected to make export sales profitable relative to sales in domestic markets, inducing resources shifts that would enable larger export production. The underlying assumption is that despite low demand elasticities the price elasticity of export supply is large enough to allow the exchange rate to play its traditional role. However, Hussain and Thirlwall (1984) investigating the supply-side approach to

exchange rate determination adopted by the IMF in the Sudan [10] found that, owing to the inflationary repercussions of devaluation and low export supply elasticity, devaluation was at best neutral in its effect on profitability in the overall sense. In specific cases it was shown that devaluation may have even reduced profitability.[11]

Finally, the passive role assigned to supply elasticities by assuming them to be infinity has been rejected even by the elasticity optimists. Even if demand elasticities sum up to exceed unity, a devaluation may not be effective because supply elasticities matter, both in themselves and as determinants of trade.[12] Branson (op.cit), setting out the analytics of exchange rate movements showed that even with elastic demand conditions, imperfectly elastic supply can blunt the effects of a devaluation by exerting a downward pressure on import prices and an upward pressure on export prices in the devaluing country. If demand is less than unity, low supply elasticities may in fact enhance the favourable impact upon the trade balance sought out of a devaluation, by raising export prices denominated in local currency and thereby, exporters' earnings. In Branson's estimates therefore, imperfectly elastic supply could reduce the expected impact of the exchange rate adjustment on the trade balance by 20 per cent. Magee's (op.cit) estimate was even larger at 35 per cent.

The recognition of the existence of low elasticities of supply has a crucial bearing on the estimation of pass-through. It implied that exporters may not, in the wake of a exchange rate change, alter the prices of their goods in foreign currencies but might instead absorb the change in profits. Although the phenomenon became the subject of an animated debate in the late 1960s and early 1970s, the consensus of opinion was that such a response would be only temporary [Branson (op.cit)]. Exporters' profit would swell in a devaluing country, drawing new entrants and resources into the sector, ultimately leading to excess profits dissipating. Thus pass-through became only a question of timing and would occur sooner or later. Kreinin's results show that exporters to the US do absorb over one half of the dollar's depreciation by lowering their prices. However, this was argued to be a short run phenomenon. For other countries pass-through is almost uniformly large, supporting the view that countries with large foreign trade sectors (relative to GDP) experience a greater degree of pass-through.

The late 1980s witnessed the flowering of several theoretical models of export pricing behaviour. In static profit-maximisation models the pass-through coefficient would depend upon specific market conditions, the

shapes of demand and cost curves jointly determining the coefficient [Knetter (1989), Mann (1986)]. In the Baldwin (1988) model the pass through effect is theorised to be hysteretic or path dependent and suitable in explaining pass-through when exchange rates move in a narrow range, consumer demand is sluggish and costs are dominated by investments. Extending this logic, the pass-through would change when evidence exists as regards a structural break brought about by violent exchange rate movements. Empirical studies of the period indicate that the pass-through coefficient is the result of conscious price setting behaviour of export firms, which can, and does extend beyond the short run. Exporters of manufacturers in the US seem insensitive to exchange rate changes and pass-through (in terms of real exchange rate changes) is almost complete. In contrast, exporters in other countries price to market by changing market prices denominated in local currency, leaving the price expressed in dollars unchanged. Ohno (1989) employed a model essentially derived from the static profit maximisation framework, operationalising it by allowing for variable mark up over cost. He defined pass-through as the elasticity of export prices (defined in importer currencies) with respect to the real exchange rate and examined export pricing behaviour of US and Japanese manufacturers. His results indicate that while US pass-through coefficients are close to unity, the Japanese coefficients are less than 0.8 and significantly different from unity.[13]

Given the prevailing ambivalence as regards the efficacy of the exchange rate instrument in balance of payments adjustment, the pass-through of exchange rate into trade prices assumes crucial relevance for the fashioning of stabilisation strategies and for determining the timing of policies. The degree of pass-through cannot emerge from *a priori* reasoning. It is clearly a question of empirical determination, the necessary estimation framework crafted to suit the specific country under study. Needless to say, such an effort may not provide any solutions to the theoretical issues that surround the question of pass-through. Therefore, the attempt underlying the narrative contained in this section was essentially to present the theoretical debate on the subject. Against this backdrop the paper now turns to the issue of estimation of pass-through of exchange rate changes in India. The section on methodological issues is preceded by a discussion on the period of study and the sources of data.

SECTION III

The Period of Study and Sources of Data

The period of study is for 23 years, i.e. from 1970-71 to 1992-93. The period marks the onset of a certain activism in India's exchange rate policy. The high order of volatility prevailing in international exchange markets in the early 1970s rendered the arrangement of pegging the rupee to either the pound sterling or the US dollar unrealistic since it preserved artificial parities even as the peg itself fluctuated widely against the SDRs and other major currencies. This imposed initially the need to periodically widen margins and later to revise the parity as the pound sterling continued to depreciate. On July 1, 1974, when the SDR began to be valued in terms of a currency basket, the age of managed floats had arrived. The rupee was delinked from the pound sterling and its external value with effect from September 24, 1975 began to be determined with reference to a weighted basket of currencies of countries which are India's major trading partners. The basket arrangement was contemporaneous with the successful adjustment to the first oil shock. It represented not merely an attempt to impart stability to the rupee; it also gave a degree of flexibility for the monetary authority to manage the exchange rate in a manner consistent with improving the international price competitiveness of exports. This in itself formed part of the overall strategy wherein export promotion was assuming a growing importance.

In the ensuing years (1975-80) however, exchange rates had little role to play. The adjustment to the first oil shock came about through a happy combination of factors, i.e., increased remittances from West Asia, part of which came in the form of deposits, larger availability of aid, financing from the IMF and a spurt in exports. Exports rode on the crest of a boom in world trade rather than benefiting from the influence of any instrumental variable. The volume of world trade grew by 11 per cent in 1976 and in the range of 5 to 6.5 per cent annually thereafter. The growth in exports at 8 per cent per annum during the period in volume terms kept well above the growth rate of world trade. The exchange rate of the rupee vis-a-vis the dollar[14] appreciated year after year following the institution of the basket arrangement up to 1980. The real effective exchange rate of the rupee however, depreciated by about 15 per cent between 1975 and 1979 as a result of anti-inflationary policies which provided an element of competitive advantage in terms of inflation differentials vis-a-vis the rest of the world [Joshi (1984)]. The basket did impart stability and realism to the external value of the rupee. However,

attendant circumstances did not warrant any active exchange rate management. By 1979-80 when the crude petroleum prices doubled into what became the second oil shock, India's current account deficit was barely 0.4 per cent of GDP and the level of reserves stood cover for over seven months of imports.

In 1980-81 the trade deficit trebled, and even the continuing strength of exports (in the face of sluggishness in world trade) and remittances were unable to contain the deterioration in the balance of payments. In the following two years, global recession began to affect exports and remittances tapered off as the Gulf migration boom moved eastwards away from India and Pakistan towards Bangladesh, Philipines and South-East Asia. The adjustment effort consisted mainly of negotiating an Extended Fund Facility with the IMF, although there was also a noteworthy step-up in the indigenous production of crude oil. The loss of reserves witnessed in 1980-81 and 1981-82 was stemmed only by the support from the IMF. The exchange rate of the rupee vis-a-vis the dollar began to slide, the annual depreciation crossing 10 per cent by 1984-85. The real effective exchange rate of the rupee appreciated sharply. By 1983-84, the REER was higher than its level in 1979-80 by 15 per cent [Joshi (ibid)]. The terms of trade shock from escalation in oil prices led to an acceleration of inflationary pressures in India, which could not be compensated for by the nominal depreciation.

Developments in the external sector during the Seventh Plan period and the intense pressures imposed upon macro-economic management by the severe payments crisis of 1990-91 and 1991-92 brought into sharp focus the need for a critical assessment of the exchange rate regime adopted since 1975 of pegging the external value of the rupee to a weighted basket of currencies of India's major trading partner countries. (p.17) The current account deficit took on a structural character, fuelled by large and persistent internal imbalances that spilled over into the external sector. The composition of financing underwent shifts in favour of costlier sources of funds. The period also saw a large use of the country's foreign exchange reserves. Incipiently, the roots of the impending crisis took hold culminating in a collapse of the capital account in the later half of 1990-91 and the first half of 1991-92.

Even as adjustment efforts were mounted, it was recognised that the recurrence of such a crisis could be prevented only through the immediate institution of fundamental reforms that addressed the very roots of such structural imbalances. The measures of reform had to be coordinated; the

tuning and magnitude were of crucial importance. Thus a tight monetary policy set the stage for a downward exchange rate adjustment which in turn, enabled sweeping liberalisation in trade, industrial and foreign investment policies, all of them supported by a strategy of fiscal correction.

The discrete downward adjustment of the rupee effected in July 1991 apart from its immediate objective of quelling destabilising expectations generated by the loss of reserves, was designed to achieve a realistic exchange rate of the rupee. Between October 1990 and March 1991, the real effective rate appreciated and the nominal depreciation, large as it was, could not counterbalance the widening inflation differentials.[15] Thus in order to restore competitiveness to the rupee in real terms, the nominal depreciation had to be large, of the order of 20 per cent. However, even as the effects of downward adjustment of the rupee were being evaluated, it was clear that the scope for such changes in the exchange rate was limited, given the response of competitor countries. Also, the experience of 1990-91 and 1991-92 left little room for drawing down of reserves to finance current account deficits. The Eximscrip, introduced in July 1991 was the first step in the move towards equilibrating the balance of payments without recourse to official settlement. The Eximscrip brought in a balancing mechanism between exports and imports, generalised the incentive structure for exports and obviated the need for budgetary support to the export sector. However, it was confined to the trade account and also carried with it the administrative hurdles and loopholes of a licence.

On the recommendations of the High Level Committee on Balance of Payments, the Liberalised Exchange Rate Management System (LERMS) came into existence on March 1, 1992. Essentially a transitional arrangement, it strengthened the balancing properties and the incentive structure of the Eximscrip and yet obviated licensing procedures by operating through the banking system. It was broader in its scope since it encompassed the current account.

The LERMS must be viewed as a system in transition operating within the framework of exchange control procedures. It was a period of learning, before the final step towards convertibility. The LERMS enabled the establishment of preconditions that determine the success of convertibility. It also enabled the development of orderly market conditions, preparatory to transferring an augmented volume of foreign exchange transactions to the market operators. The experience with the LERMS was satisfactory. The spread between the official and market rates was

around 17 per cent, except for the first half of February 1993 when the spread widened due to a flurry of speculative activity. However a dual rate system imposes an implicit export tax. It also distinguishes between remittances flowing into the current account and those coming into the capital account. In this sense, the unification of exchange rate was only logical.

The experiences in the wake of unification reopen the issue of the appropriate role of the exchange rate and in a broader sense, the choice of the exchange rate regime. In the face of a massive inflow of foreign exchange following the merging of dual exchange rates, the need to protect the competitiveness of exports has been a guiding criterion in the conduct of exchange rate policy. The strong upward pressures from currency inflows on the exchange rate have been staved off by purchases of foreign currency by the RBI from the market. While this passive intervention did provide the enabling conditions for an unprecedented export performance in 1993-94, the extent to which monetary policy action is hostage to capital inflows and the real appreciation of the exchange rate which inevitably occurs pose concerns to macro-economic management. In the ensuing period, these issues would determine the goals for which the management of the exchange rate as a policy instrument can aspire for.

The International Financial Statistics of the International Monetary Fund (IMF) was relied upon for data on world exports and unit value indices. For data on India, the Economic Survey, 1993-94 of the Ministry of Finance, Government of India was the comprehensive source.

SECTION IV

Methodological Framework

The estimation of pass-through i.e., the extent to which an exchange rate adjustment changes the prices of imports and exports depends intrinsically on the responsiveness of trade volumes to price changes. Therefore precise knowledge of the price elasticities of both demand and supply of exports and imports is a pre-condition to the measurement of pass-through.

Several empirical studies exist which provide estimates of the relevant elasticities in the Indian context.[16] However, as Goldstein and Khan (1978), Ueda et al (1983), have pointed out, trade flows are subject to

an identification problem, i.e. exports and imports as they emerge are the result of the joint operation of both supply and demand influences. Consequently, elasticities derived from functional formulations which emphasise only one set of factors are usually underestimated.[17] This is particularly true of India where though imports seem to be clearly identified as demand-induced, exports are subject to twin influences. World demand and the lure of the large domestic market exert conflicting pulls. Even within the export basket, while primary products and ores may be dominated by supply factors, the growing category of manufactures are, on a priori consideration, demand induced. Following Goldstein and Khan (ibid), Hussain and Thirlwall (op.cit), the methodology adopted here for the estimation of demand and supply elasticities consists of the simultaneous estimation of supply and demand functions for both exports and imports. This allows not only for the shedding of simultaneity bias but also for identifying the dominant influences in each category of trade flows. Accordingly, the separable influences of demand and supply factors on both exports and imports are examined within the framework of an aggregative model of the trade balance. The focus of the model is on the estimation of price elasticities which form elements in the estimation of exchange rate pass-through. The functions are specified in log linear form to allow for the direct estimation of elasticities. The speed of adjustment is incorporated wherever the estimated functions working on annual data enable the capturing of dynamic effects. A feature of the model is that exchange rate does not explicitly enter into any of the equations as an independant variable. Instead, it is introduced as a medium of translating the rupee price of exports accruing to the domestic producer into the foreign price facing the overseas buyer. Analogously, it passively transforms the foreign price into the price facing the local importer. This positioning of the exchange rate in the model is particularly suitable for the purpose of this paper as it is possible to evaluate the trade balance implications of a policy induced exchange rate change without ratchet and feedback effects.

For a small country (in the international trade sense of the term) market absorption, i.e. demand factors can be assumed to be predominant in the determination of export volumes. On the other hand, supply side factors would determine the price at which the volume of exports would be offered for sale to overseas markets. Under these assumptions, a wedge may appear between the 'demand price' and the 'supply price' if each set of influences operates independently. This provides scope for the exchange rate to operate, enabling the exporter to meet international prices, on the one hand, and on the other, conveying an incentive to the exporter to augment export production relative to sales in the domestic

market. The volume of imports can be more clearly identified as demand determined. The price of imports which is determined by market conditions abroad is usually treated as exogenous. In this model, however, an attempt is made to endogenise import prices.

The demand function for exports is specified as:

$$\log X^d_t = \log a_1 + a_2 \log WX_t + a_3 \log PX^d_t + a_4 \log PW^x_t \quad ...(1)$$

where X^d_t is the quantity of India's exports demanded by the rest of the world (quantity index), PX^d_t is the price of exports facing the foreign buyer (the index of unit value of exports deflated by a nominal exchange rate index), WX is world exports at constant prices representing economic activity in overseas markets[18] (world exports in US dollar terms deflated by world export prices also in US dollar terms) and PW^x is the world export price (unit value index in US dollar terms). India's export price and the world export price are both included as explanatory variables to capture the elasticity of substitution between sources of supply. Hereafter the subscript t denotes the time period and the superscript d denotes demand.

To capture the adjustment of exports to desired levels, a Nerlovian process can be specified as follows:

$$\Delta \log X_t = \lambda (\log X^d_t - \log X_{t-1}) \quad ..(2)$$

Δ is the adjustment coefficient and
λ a first difference operator

Substituting (2) in (1) yields

$$\log X^d_t = \log A_1 + A_2 \log WX_t + A_3 \log PX^d_t + A_4 \log PW^x_t + A_5 \log X^d_{t-1} \quad .. (3)$$

where $A_1 = \lambda a_1$, $A_2 = \lambda a_2$, $A_3 = \lambda a_3$
$A_4 = \lambda a_4$ and $A_5 = (1 - \lambda)$

In terms of the hypothesis, the supply function of exports is inverted and expressed as a export price function as follows:

$$\log PX^s_t = \log b_1 + b_2 \log Y_t + b_3 \log X^s_t + b_4 \log PD_t \quad .. (4)$$

PX^s_t is the supply price of exports (unit value index in rupee terms), Y_t is Gross Domestic Product at factor cost representing economic activity.

X^s_t is the quantity of exports supplied and PD is the domestic price (wholesale price index) which would reflect the relative profitability of exporting vis-a-vis domestic sales. The translation of PX^s_t into PX^d_t is as follows:

$$PX^s_t = PX^d_t \times e \qquad \ldots (5)$$

where e is the nominal exchange rate of the rupee vis-a-vis in the US dollar in index form.

Building an adjustment process as specified at (2) into (4) yields

$$\log PX^s_t = \log B_1 + B_2 \log Yt + B_3 \log X^s_t + B_4 \log PD_t + B_5 \log PX^s_{t-1} \ldots (6)$$

where $B_1 = \lambda b_1$, $B_2 = \lambda b_2$, $B_3 = \lambda b_3$
$B_4 = b_4$ and $B_5 = 1 - \lambda$

The value of exports (XV) can then be given as

$$XV = X^d_t \times PX^s_t \qquad \ldots(7)$$

The import demand function is specified as

$$\log M^d_t = C_1 + C_2 \log Y_t + C_3 \log (PM^d_t/PD_t) \ldots(8)$$

where PM^d_t is the price of imports facing the local importer (unit value index in rupee terms). Other variables are as specified earlier.

The dynamic form of the import demand function includes a lagged dependent variable in terms of the adjustment process referred to earlier. The price of imports translates into the foreign supply price of imports (PM^s_t) as follows:

$$PM^d_t = PM^s_t \times e \qquad \ldots(9)$$

The import supply price is estimated as:

$$PM^s_t = \log d_1 + d_2 \log M^s_t + d_3 \log M^w_t + d_4 \log PM^w_t \qquad \ldots(10)$$

where M^w_t is world imports/exports at constant prices (world exports/imports in US dollars deflated by world export/import prices in US dollar

terms) and PM^w is world import prices (unit value index in US dollar terms).

Import value (MV) is obtained as

$$MV = M^t_d \ (e.PM^t_t) \qquad ...(11)$$

The trade balance (TB) is then obtained as

$$TB = XV - MV. \qquad ...(12)$$

Estimates of price elasticities of demand and supply can be obtained as follows:

	Equilibrium Estimates	Dynamic Estimates
Exports		
Demand (dx)	A3	$A_3/(1-A_5)$
Supply (sx)	1/B3	$\frac{1}{B_3/(1-B_5)}$
Imports		
Demand (dm)	C3	C_3/λ
Supply (sm)	$1/d_2$	$\frac{1}{d_2/\lambda}$

As discussed in the preceding section, it is essential to correct for price elasticities of supply of exports and imports being less than infinity. Following Branson (op.cit), total differentiation of the equations specified would lead to the estimate of the pass-through coefficient for exports (kx) and imports (Km) as :

$$Kx = \frac{1}{1- (dx/sx)}$$

and

$$Km = \frac{1}{1- (sm/dm)}$$

where dx and sx are the price elasticities of demand and supply of exports respectively and dm and sm are similar price elasticities for imports.

Empirical Results

Estimation of the model set out in the preceding section precludes the use of Ordinary Least Squares (OLS). Asymptotically biased estimates of the structural parameters would result due to the error term being correlated with the endogenous variables - least squares bias. Furthermore with the price equations being inverted demand/supply equations, the sub-models essentially estimate the same variable in terms of two distinct sets of influences which can be assumed to be independent of each other. In fact, each of the equations is quite well identified. The variables endogenously determined in the system subscribe to two diverse kinds of interrelationships simultaneously and therefore need to be estimated simultaneously. Accordingly the equations were estimated by the method of Two Stage Least Squares (TSLS). The choice among several alternative formulations which were estimated was determined by the standard statistical criteria. In the import equations, the adjustments coefficient was insignificant. Omission of the lagged dependent variable improved the overall performance of the equation. In such cases elasticities were estimated from contemporaneous relationships.

The following table presents the preferred estimates.

Estimates of Export and Import Functions

1) Export Demand Equation

$$LX_t^d = -1.50 + \underset{(2.49)^{**}}{0.73.LWX_t} \underset{(-2.24)^{**}}{-0.89.LPX_t^d} + \underset{(2.16)^{**}}{0.55.LPWX_t} + \underset{(2.21)^{**}}{0.50.LX_{t-1}^d}$$

$R^{-2} = 0.97$, SER = 0.059, Durbins h = -5.38

2) Export Supply Equation

$$LPX_t^s = -1.17 + \underset{(2.17)^{**}}{0.47.LX_t^s} + \underset{(2.68)^{**}}{0.40.LP_t^D} + \underset{(2.03)^{**t-1}}{0.38.LPX_{t-1}^S}$$

$R^{-2} = 0.99$, SER = 0.058, Durbins h = -0.847

3) Import Demand Equation

$$LM_t^d = -5.88 + \underset{(1.97)^{***}}{0.71.LY_t} + \underset{(3.46)^{*}}{1.18.LP_t^d} \underset{(-3.29)^{*}}{-0.72.LPM_t^d} + \underset{(3.06)^{*}}{0.65.AR(1)}$$

$R^{-2} = 0.97$, SER = 0.072, DW = 1.59

4) Import Supply Equation

$$LPM_t^s = 3.72 - 0.39.LM_t^s - 0.41.LM_t^w + 1.23.PM_t^w$$
$$(-3.29)^* \quad (-2.16)^{**} \quad (10.20)^*$$
$$R^{-2} = 0.89, \quad SER = 0.066, \quad DW = 1.77$$

* Significant at 1 per cent level

** Significant at 5 per cent level

*** Significant at 10 per cent level

Note: Notations for all the variables are as explained in the earlier section and variables prefixed by L represent the log values of the corresponding variables.

The estimates are statistically robust and positive first order serial correlation is absent. The export demand equation is quite well determined according to the standard statistical criteria. In the estimated function, an adjustment process is clearly evident. The sign of the lagged dependent variable has the expected sign and is significant at the 1 per cent level. The coefficient of adjustment at 0.50 indicates that actual exports take up to two years to adjust to the level desired by demand conditions in overseas markets.Thus within a year there would always be some unsatisfied demand in the markets for Indian products. The short run elasticity of the demand for India's exports with respect to world exports at 0.73 and the long-run elasticity at 1.46 attest to the high degree of responsiveness of India's exports to the behaviour of world trade. The long run price elasticity of demand for India's exports at -1.78 by itself sufficient to ensure that an exchange rate change produces the desired effect on the trade balance - subjects the conventional elasticity pessimism view in India to serious question.[19] Simultaneous estimation of export and import functions clearly improves the elasticities which would have been yielded by OLS estimates.

In the export price/export supply function, the variable GDP at factor cost exhibited collinearity with export supply and was omitted in favour of the latter, whose inclusion is essential for the estimation of supply price elasticities. The export price function confirms the existence of adjustment periods of up to two years indicated in the export demand function. The long run price elasticity of export supply at 1.32 again reinforces the hypothesis that India's exports are indeed sensitive to price signals and that earlier estimates yielding low elasticities could be subject to least squares bias.

The elastic and positive response of import demand to variations in gross domestic product is in line with the received treatment of imports in India, given the preponderance of raw materials and intermediates in import composition. However the income elasticity of import demand estimated in this paper is lower than earlier estimates which were above unity. The elasticity of imports with respect to the price variables is quite high compared with similar elasticities derived from OLS estimates [Patra and Ranjan, (1992)], again underscoring the efficiency of estimates obtained from a simultaneous approach. The supply function estimate which embodies an attempt to endogenise import prices facing India also performs reasonably well though the large size of the intercept indicates omitted variables. The high elasticity of import prices in India with respect to world import prices provides evidence of price-taking behaviour and is indicative of a certain insensitivity of imports to price reinforcing measures such as the exchange rate. However, an apparently perverse sign is obtained for the coefficient of import quantity, clearly pointing to the predominance of demand influences on India's imports.

The estimates of the various price elasticities obtained from the estimated functions discussed above are set out below.

Estimates of Price Elasticities of Supply and Demand For India's Exports and Imports

	Exports	Imports
Demand	-1.78	-0.72
Supply	1.32	-2.56

With the knowledge of these elasticities it is now possible to estimate the pass-through coefficients given the formulae set out in the earlier section. The pass-through coefficients i.e. Kx for exports and Km for imports would lie between 0 and 1. Thus if Kx and Km equal unity, perfect market conditions exist, and the exchange rate changes would be fully passed on to foreign and domestic import prices. On the other hand, if Kx (and Km) tend to 0, it is domestic export prices and foreign import prices which adjust to exchange rate changes.

The elasticities obtained above are used to compute Kx and Km for India. The obtained values are given below :

Kx = 0.43
Km = -0.39

Thus 43 per cent of a unit change in the exchange rate of the rupee is passed on to prices of exports expressed in foreign currencies, i.e. export prices in foreign currency fall by 43 per cent of a devaluation in the rupee while export prices in rupee terms rise by 57 per cent.

Computation of Km yields an indeterminate result reflecting the perverse sign of the price elasticity of supply of imports. This is also evident in other empirical estimates of pass-through on the import side (Hussain and Thirlwall, op.cit). However, the size of the coefficient Km clearly indicates that foreign suppliers are unlikely to be affected at all by the devaluation of the rupee or by the cut-back in Indian demand. Therefore, it can be assumed that the price of imports in domestic currency rises by the full amount of the rupee's devaluation.

Model Performance

The model of the trade balance described earlier consists of four structural equations and four identities. To test the performance of the model, static simulations to capture short-run simultaneous solutions as well as dynamic simulations to observe the solution path of the endogenous variables over the entire period of simulation were conducted.

Graphs 1 to 4 present the actual and simulated path of each of the endogenous variables of the model under static simulation. Graphs 5 to 8 present the dynamic simulation results. It is observed that most of the turning points are captured. The values of Root Mean Square Error (RMSE) and Root Mean Square Percentage Error (RMSPE) indicate that the residuals are free from bias. The RMSPEs from both the static and dynamic simulations were less than 1 per cent, testifying to the robust performance of the model.

Test Parameters of the Simulated Model

	Static Simulation		Dynamic Simulation	
	RMSE	RMSPE	RMSE	RMSPE
1. Exports(Qnt.)	6.73	0.05	7.61	0.06
2. Imports (Qnt.)	15.31	0.14	21.47	0.17
3. Exports (Price)	13.39	0.08	9.96	0.05
4. Imports (Price)	6.64	0.07	8.72	0.09
5. Trade Balance	28.94	4.67	18.92	5.66

Simulations of the trade balance identity yields overshooting up to 1986 and undershooting thereafter. This is particularly so because of the compounding of errors from the four structural equations and their getting accumulated in the trade balance which is derived from the estimated (simulated) values of the four endogenous variables. The effect of gradual accumulation of errors in the dynamic simulation as against the static simulation is clearly evident from Graphs 9 and 10. The cumulative impact of errors over time reduced the overshooting/undershooting problem when the trade balance was estimated dynamically.

Given the high price elasticities estimated by the model and therefore, the testimony for the role of the exchange rate in India's foreign trade, two policy simulations were attempted without bringing about any change in the structure of the model. An important element of the adjustment to the payments crisis of 1990-91 was the restructuring of the exchange rate regime. A two step downward adjustment of the rupee was effected in July 1991[1] to correct for the overvaluation of the rupee [Rangarajan, (1994)]. This was followed by a dual exchange rate regime which exposed India's foreign trade to the partial experience of a market based exchange rate. Both, the dual rate system and the unification which was effected a year later represented effective depreciation of the rupee with positive effects for India's exports. Large and persistent current account deficits became evident from 1985-86 onwards accompanied by a depletion of the reserves. An unprecedented drought in 1987-88 was followed by a widening of the current deficit to a level which was about the same as in 1990-91, the crisis year. The deterioration in the fundamentals of the economy warranted a sharp exchange rate adjustment in 1988-89 itself. Two types of simulations are run to evaluate the effects of advancing the exchange rate adjustment over time. The first is in the nature of an exogenous shock where the July 1991 exchange rate is posited in 1988-89, the LERMS in 1989-90, the unification in 1990-91 and the exchange rate is held steady thereafter. In the second type of simulation a repeated shock is administered; the move from the level of the exchange rate in 1987-88 to the present level of the unified rate which is posited in 1992-93 is achieved through graduated depreciations, although the order of depreciation is larger than what was actually effected. The simulations consisted of allowing the model work to through its dynamic time path under ceteris paribus conditions except for the changes in the passively positioned exchange rate.

The results of policy simulations are shown in Graphs 11 and 12. While imports are by and large, impervious to the shocks, exports react

sharply. The single shock produces a massive export burst which however loses momentum after 1991. The repeated shocks also deliver an export stimulus which is albeit of a lower order. The trade balance after deteriorating in the year of devaluation records a massive improvement in succeeding years under the first simulation. Graduated depreciation tones down the improvement in the trade balance.

SECTION VI

Conclusion

Empirical exercises in the Indian context have, in general, yielded low price elasticities of demand for exports and imports. The existence of supply bottlenecks and therefore, the inflexibility of production structures in relation to price signals, the preponderance of the domestic market resulting in a strong internal demand for tradeables and finally, the commodity composition of exports and imports are 'intrinsic' arguments cited in support of the low elasticities obtained. The experience of large trade deficits persisting over the decade gone by, impervious to larger orders of nominal and real depreciation in the rupee has contributed to pessimism as regards the role of exchange rates in balance of payments adjustment in India.

The findings of the paper stress the need for a reexamination. With the elimination of simultaneous equation bias the price elasticity of demand for exports at -1.78 and the price elasticity of demand for imports at -0.72 amply satisfy the necessary condition for a depreciation to be effective in bringing about an improvement in the trade balance. The paper, however, underscores the need for due consideration of the sufficient condition of the Marshall-Lerner axiom. A proper evaluation of the efficacy of exchange rate policies in improving the trade balance is possible only after an explicit adjustment for imperfectly elastic supply. As borne out in the literature, supply elasticities less than infinity dampen the effect of high demand elasticities and blunt the desired effects of an exchange rate adjustment on the trade balance. The preconditions for exchange rate adjustment, are thus met by demand elasticities adjusted for supply conditions being higher than unity. It is therefore the degree of pass through which has a crucial bearing on the rationale, magnitude and timing of exchange rate policies, and not the existence of high elasticities, per se. An increase in the demand for exports can occur only when a depreciation (say) is passed on by exporters into prices so that lower export prices in foreign currency terms face international buyers. An in-

crease in the supply of exports can occur if, instead of foreign currency prices falling, export prices in domestic currency rise in full proportion to the depreciation. Exporters' profits rise, domestic resources move into the export sector under the inducement of higher factor prices and consumption of exportables contracts, given higher relative prices. All these factors augment supply. The exporter's reaction to an exchange rate depreciation depends on which set of factors play a predominant role. Several studies have shown that the supply response may be immediately attractive but essentially ephemeral. The rise in export prices in domestic currency would attract, besides resources, new entrants and excess profits would be competed away. Besides, much depends on the ability to control inflation failing which an exchange rate depreciation can even impair profitability of export production.

In the Indian context, the availability of large monetary, fiscal and other subventions enable the exporter to meet cost conditions so that less than 50 per cent of an exchange rate is passed through in the form of lower foreign prices. While in the immediate period exporters' incomes rise, a fuller pass-through would have allowed the exporter to improve upon his market presence given the relatively high responsiveness of the demand for exports to price changes and thus effect durable gains from trade. The Indian exporters' preference for translating the exchange rate depreciation into higher domestic income (through larger unit value realisations in rupee terms) is myopic when seen against the excess demand which is found to exist in foreign markets for India's exports. The strong relationship between India's exports and the world trade in general adds a medium term dimension to policy efforts towards export promotion. In the emerging scenario, the strengthening of price-related incentives and signals would depend on the graduated withdrawal of monetary and fiscal support. On the imports side while the pass-through is ambiguous, it is low enough to assume complete transmission into import prices denominated in domestic currency.

The estimates of pass-through suggest a time lag extending well beyond a year for an exchange rate change to work through into export volumes. It also provides reasonable ground to assume that in this period of adjustment domestic prices, bolstered by a 57 per cent pass-through into export prices and a 100 per cent pass-through into import prices (both in domestic currency) may, in fact, be rising to neutralise the initial exchange rate change. A host of non-price factors affect the trade balance, endogenous and exogenous. Exchange rate policy in India, therefore, has an important though concomitant role to play. The full benefits of an

exchange rate change can be reaped only when prices are allowed to play their true allocative role.

The policy simulations lend support to the conclusions that can be drawn from the estimate of pass through. They also highlight the crucial importance of timing an exchange rate adjustment. Given the lags imbedded in an exchange rate pass through, a major improvement in the trade balance occurs when the sequence of exchange rate reforms of July 1991 to March 1993 is shifted backwards to begin from 1988-89. The stylised facts indicate this was indeed a period of deterioration in the fundamentals and a large exchange rate change was warranted to correct the anti-export bias. The implications for the years 1990-91 and 1991-92 are significant especially in the light of the various drastic and unconventional measures resorted to tackle the payments crisis. The simulations also indicate that a process of gradual depreciation is self-fulfilling, since domestic prices and incomes as well as the movement of the exchange rate of competitors can easily overtake the gain in competitiveness that could accrue from the incremental exchange rate change.

Finally, it is important to take note of certain caveats which are in the nature of qualifications to the results obtained. The paper is concerned with the partial effects of changes in the exchange rate on the trade balance. In this sense, it is confined to the straitjacket of the elasticity approach. It does not consider the reactions in terms of income changes or variations in domestic prices which occur consequent upon a change in the exchange rate adjustment and which would easily nullify the effects sought out of a change in the exchange rate. The question of timing is also not dealt with adequately. This is unavoidable when the data are annual [Khan (1975)]; adjustment process are usually over within the period of a year. However, several explanatory variables are not available in quarterly or semi-annual series. Nevertheless if the findings of the paper are treated as indicative and not definitive, they have considerable relevance for an economy like India where exchange rate policy is invariably used in conjunction with monetary and fiscal policy to ensure a sustainable balance of payments. It is appropriate to interpret the results presented here as exogenous inputs for larger macro economic models which would then throw up estimates of the feedback effects discussed earlier.

Notes

1. See Kreinin (1977) for a full discussion on studies of the period.

2. Branson, (op.cit).

3. In general the transmission of exchange rates into prices of tradeables was clearly evident on the export side and ambiguous on the import side.

4. The use of the control country approach was stimulated by the downward bias found by Orcutt (1950) in estimates of elasticities obtained from regressions.

5. The Financial Times, February 17, 1987, reproduced in Thirlwall (1988).

6. Triffin (1978).

7. Kreinin (op.cit) has questioned the Mundell-Laffer hypothesis on the grounds that the law of one price does not hold in the case of differentiated products. Also, while the effects of devaluation can be neutralised in the long run, even the monetary approach to the balance of payments admits to transitory effects on the terms of trade.

8. Low price elasticities of export demand would also obtain for countries with diversified exports but with small shares in world exports.

9. The results of Adams and Junz are, however, subject to simultaneous equation bias.

10. The IMF's approach consisted essentially of calculating the ratio of competitiveness i.e., the ratio of foreign exchange earnings per unit of domestic resources and showing the ratio to be above the prevailing exchange rate as an indicator of profitability.

11. The methodology adopted in this paper draws considerably from Hussain and Thirlwall. See also Thirlwall (1986) for an exchange with Nashashibi and Clawson of the IMF.

12. Thirlwall (1988).

13. See Ohno (op.cit) for a review of recent theoretical and empirical models of pass-through.

14. The movements in the rupee-dollar rate are analysed given the dominant share of the US dollar in the invoicing pattern of India's exports. An aggregative indicator such as an index of nominal effective exchange rate should yield similar results. Such an index, however, should be based on currency invoicing weights rather than trade shares as is conventionally done.

15. Rangarajan C., (1991) who had a dominant influence on the formulation of exchange rate policy in India over the decade of the 1980s. The Liberalised Exchange Rate Management System and the recent unification of exchange rates in India came into being under his stewardship.

16. Rajiv Ranjan (1992) has reviewed studies on India's export function. For an overview of studies on import functions for India, see Patra and Ranjan (1992).

17. Usually termed as simultaneous equation bias.

18. A commonly used variable denoting world activity is a weighted aggregate of real income of major exporters [Nashashibi and Thirlwall (op.cit)]. Such a measure, however, is subject to errors of aggregation especially since sensitivities of imports to changes in real income differ widely across countries. Hence, the choice here devolves upon real world exports, a variable which closely describes activity with respect to international trade.

19. For an exposition of the elasticity pessimism view in India and recent econometric evidence thereof, see Sarkar (1992), Bagchi and Sarkar (1993), H.K.Pradhan (1993) and Sarkar (1994).

References

1. Adams, Gerard F. and Helen B.Junz, (May 1971), "The Effects of the Business Cycle on Trade Flows of Industrial Countries", *Journal of Finance*, Vol.26.

2. Armington, H. (July 1969), "The Geographic Pattern of Trade and the Effects of Price Changes", *IMF Staff Papers*, Vol.16.

3. Arvind Virmani (1991), "Demand and Supply Factors in India's Trade", *Economic and Political Weekly*, Vol.XXVI, No.6, Feb.9, 1991.

4. Bagchi, Amiya Kumar and Prabirjit Sarkar (1993), "Trade and Exchange Rate Policy for India", *Economic and Political Weekly*, September 18.

5. Baldwin, Richard E. (September 1988), "Hysteresis in Import Prices: The Beachhead Effect", *American Economic Review*, No.1.

6. Branson, William H. (1972), "The Trade Effects of the 1971 Currency Realignments", *Brooking Papers on Economic Activity*, No.1.

7. Goldstein M and M.S.Khan, (May 1978), "The Supply and Demand for Exports: A Simultaneous Approach", *Review of Economics and Statistics*.

8. Gujarati, Damodar N. (1988), *Basic Econometrics*, McGraw Hill Book Company.

9. Holla K.R. (December 1989), "India's Balance of Payments During Four Decades of Planning", *Reserve Bank of India Occasional Papers*, Vol.14, No.4.

10. Hussain N.N. and A.P. Thirlwall, (May 1984) "The IMF Supply-side Approach to Devaluation: An Assessment with Reference to the Sudan", *Oxford Bulletin of Economics and Statistics*, Vol.46, No.2.

11. Joshi, Vijay (June 1984), "The Nominal and Real Effective Exchange Rate of the Rupee, 1971-83", *Reserve Bank of India Occasional Papers*, Vol.5, No.1.

12. Kannan R., (June 1991), "Nominal and Real Effective Exchange Rate of Rupee, 1975-90" (Mimeo).

13. Khan, Mohsin S. (1975), "The Structure and Behaviour of Imports of Venezuela", *Review of Economics and Statistics*, Vol.LVII. No. 2, May.

14. Klein, Lawrence R. (1972), Comments and Discussions on Branson, William H. "The Trade Effects of the 1971 Currency Realignments", *Brooking Papers on Economic Activity*, No.1.

15. Knetter, Michael M. (March 1989), "Price Discrimination by US and German Exporters", *American Economic Review*, Vol.79.

16. Kreinin, Mordechai E. (July 1977), "The Effects of Exchange Rate Changes on the Prices and Volumes of Foreign Trade", *IMF Staff Papers*, Vol.XXIV, No.2.

17. Kwack, S.Y. and George R. Schink, (Feb.1972), "A Disaggregated Quarterly Model of United States Trade and Capital Flows" (Presented at the Brookings Conference on Econometric Model Building and Development).

18. Laffer Arthur B. (February 5, 1973), "Do Devaluation Really Help Trade?, *Wall Street Journal*.

19. Magee, Stephen P. (September 1971), "United States Trade and the New Economic Policy", *Studies in International Business and Economics 9*, University of California, Berkeley.

20. Mann, Catherine, L. (June 1986), "Prices, Profit Margins and Exchange Rates", *Federal Reserve Bulletin*, (Washington) Vol.72.

21. Marston, Richard (November 1971), "Income Effects and Delivery Lags in British Import Demand: 1955-61", *Journal of International Economics*, Vol.1.

22. Orcutt, Guy H. (May 1950), "Measurement of Price Elasticities in International Trade", *Review of Economics and Statistics*, Vol.32.

23. Patra M.D. and Rajiv Ranjan (June 1992), "The Structure of India's Imports: 1970-71 to 1988-89", *Reserve Bank of India Occasional Papers*, Vol.13 No.2.

24. Pradhan H.K. (May, 1993), "Exchange Rate Policy of India :1970-92", *EXIM-Bank Occasional Paper, No.22*, May.

25. Rangarajan C. (January, 1993), "India's Balance of Payments: The Emerging Dimensions (Shri Govind Ballabh Pant Memorial Lecture)", *Reserve Bank of India Bulletin*, January 1994.

26. Rangarajan C. (September 1991), "Exchange Rate Adjustments - Causes and Consequences", *Reserve Bank of India Bulletin*.

27. R.S.Pindyck and D.L.Rubinfeld (1991), "*Econometric Models and Economic Forecasts*", Mcgraw-Hill International (3rd Edition).

28. Ranjan, Rajiv (1992), "A Review of Export Demand Functions in India", (unpublished).

29. Sarkar Prabirjit (1992), "Rupee Depreciation and India's External Trade and Payments since 1971", *Economic and Political Weekly*, June 13-20.

30. Sarkar, Prabirjit (1992), "India's Balance of Payments and Exchange Rate Behaviour since 1971; A New Approach", *Economic and Political Weekly*, January 1-8.

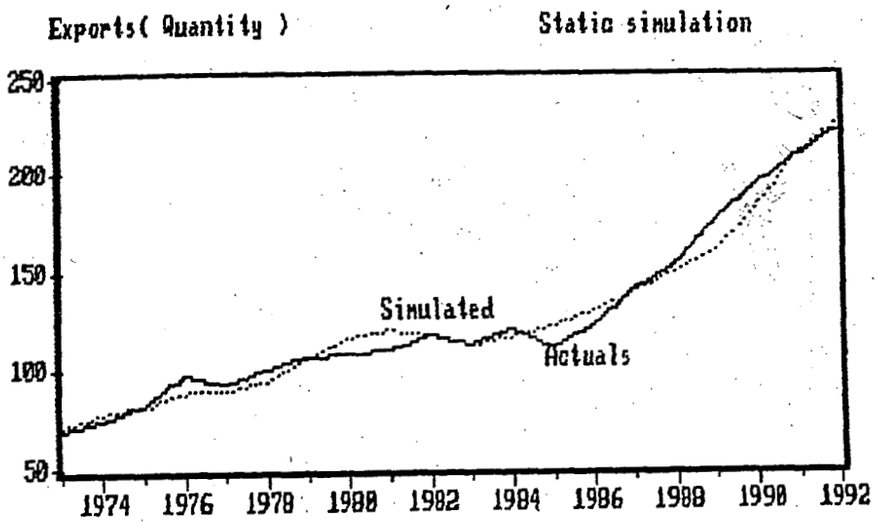
31. Thirlwall, A.P. (February 1986), Exchange with Nashashibi and Clawson on "The IMF-Supply side Approach of Devaluation: An Assessment with Reference to Sudan", in *Oxford Bulletin of Economics and Statistics*.

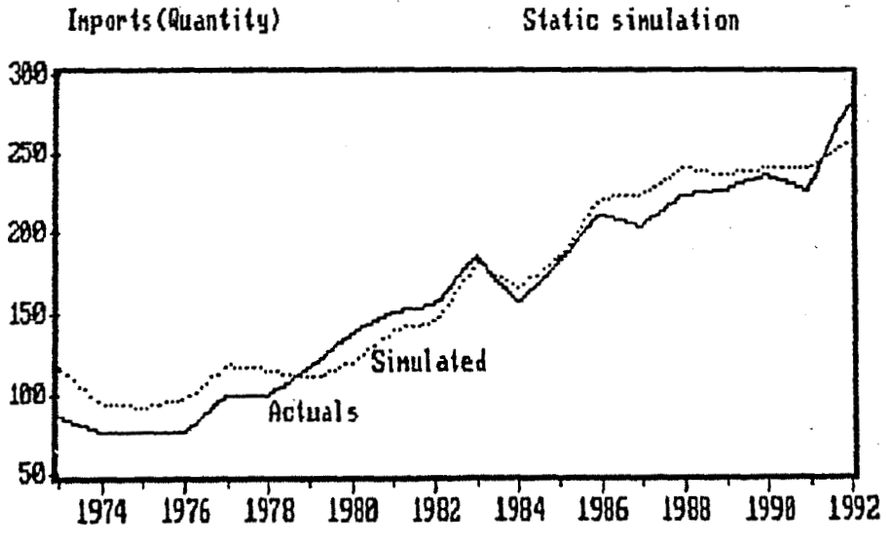
32. ———— (1988), "What is Wrong with Balance of Payments Adjustment Theory?", *The Royal Bank of Scotland Review*, No.157.

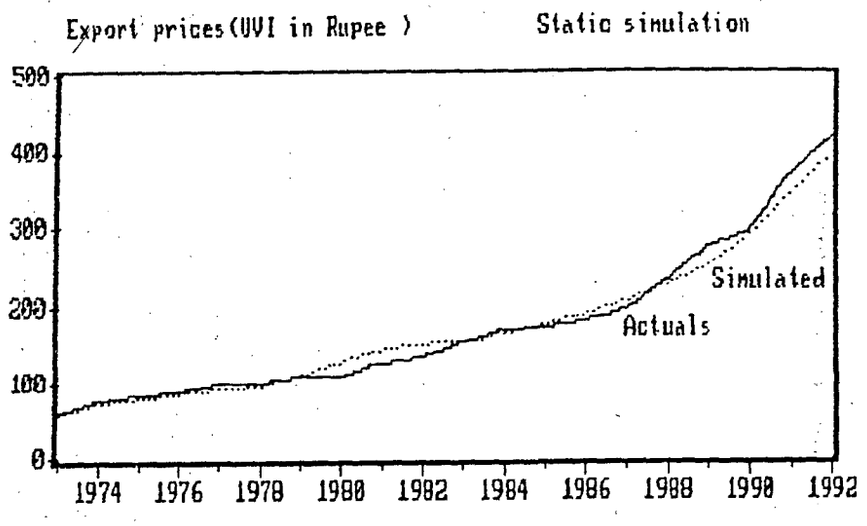
33. Triffin, R. (December 1978), *Gold and the Dollar Crisis: Yesterday and Tomorrow*, Essays in International Finance No.132, Princeton University.

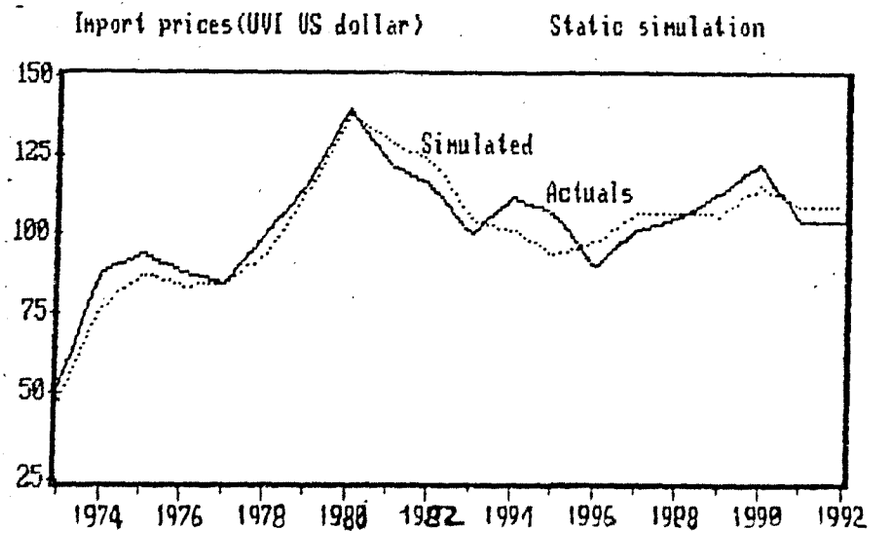
34. Ueda, Kazuo, (November 1983), "Trade Balance Adjustment with Imperfect Intermediate Inputs: The Japanese Case", *Review of Economics and Statistics*, Vol. LXV.

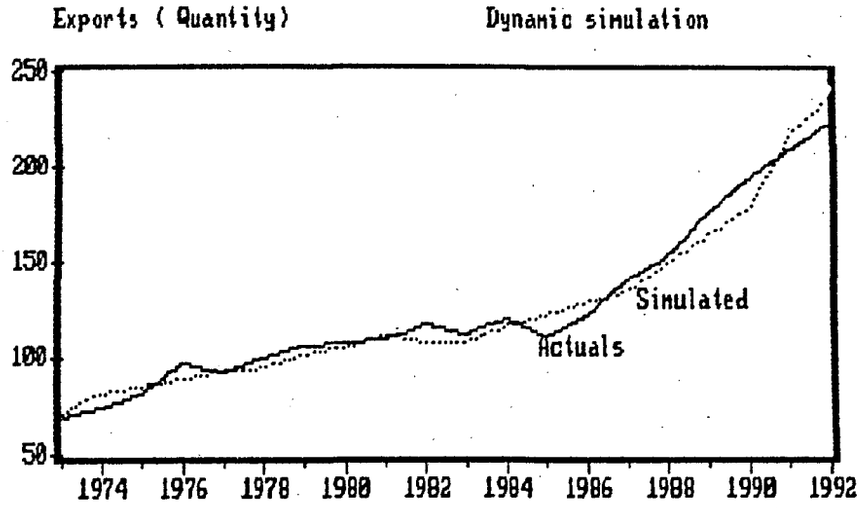
35. Wallace T.Dudley and Silver J.Leu (1988), *Econometrics: An Introduction*, Addison-Werky Publishing Company, Massachusetts.

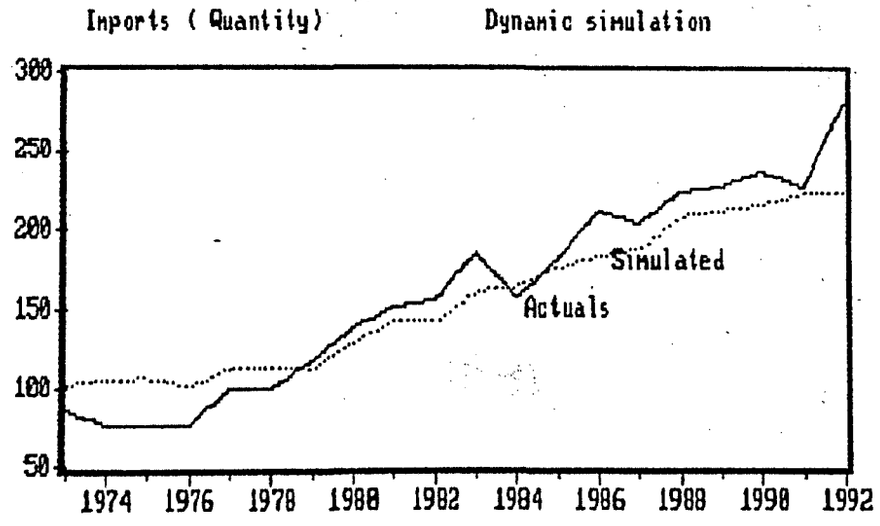

Exports(Quantity)
Static simulation
250
200
150
100
50
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

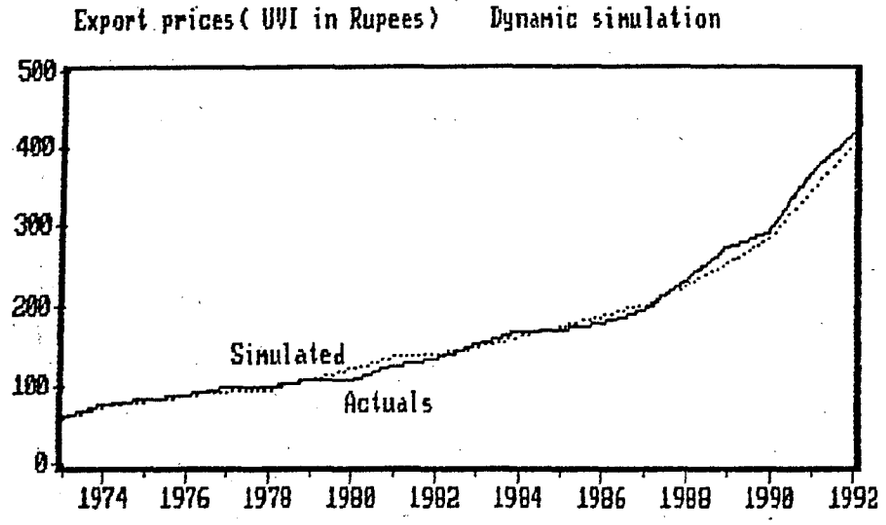

Imports(Quantity)
Static simulation
300
250
200
150
100
50
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

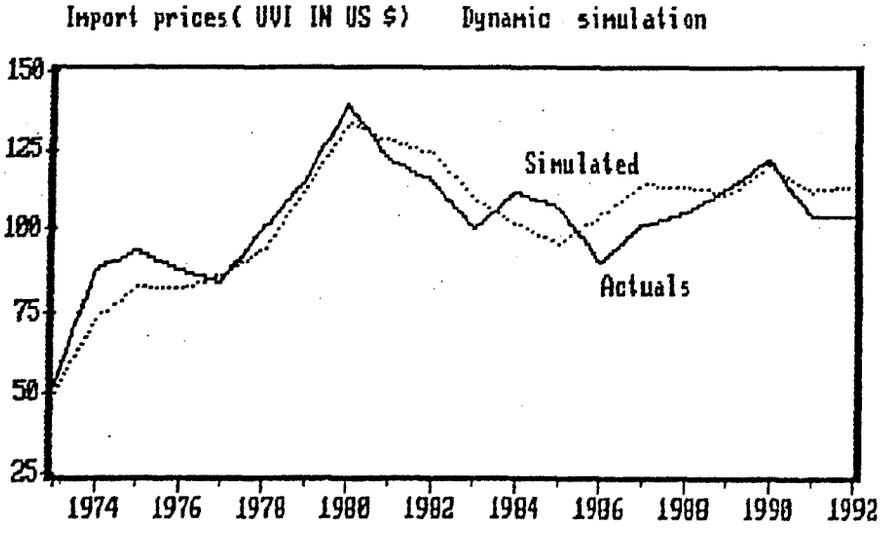

Export prices(UVI in Rupee)
Static simulation
500
400
300
200
100
0
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

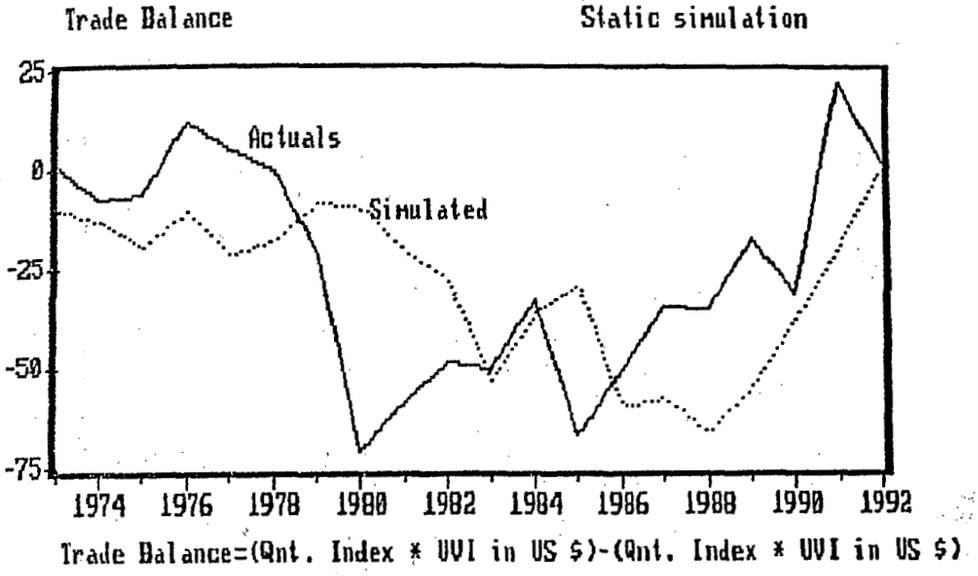

Inport prices(UVI US dollar)
Static simulation
150
125
100
75
50
25
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

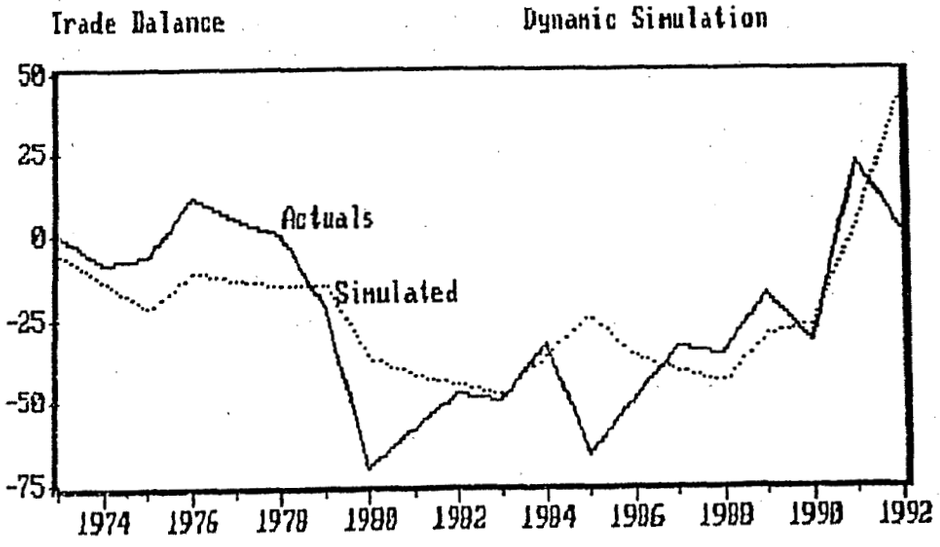

Exports (Quantity)
Dynamic simulation
250
200
150
100
50
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

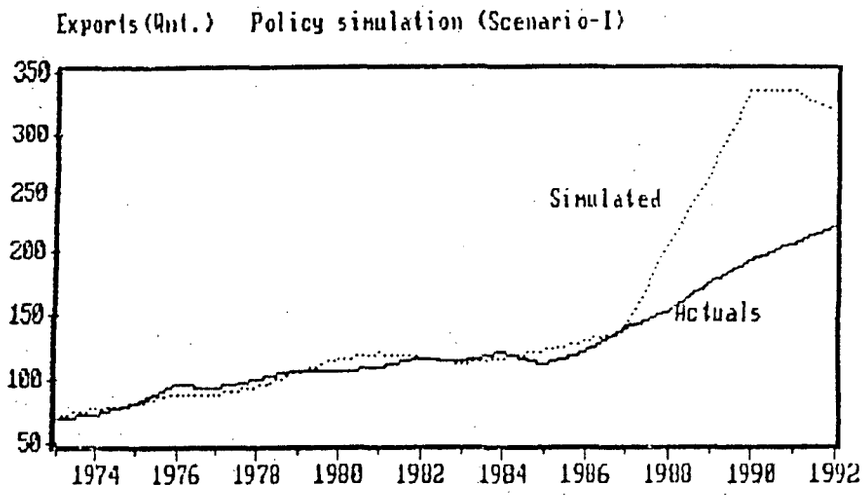

Imports (Quantity)
Dynamic simulation
300
250
200
150
100
50
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

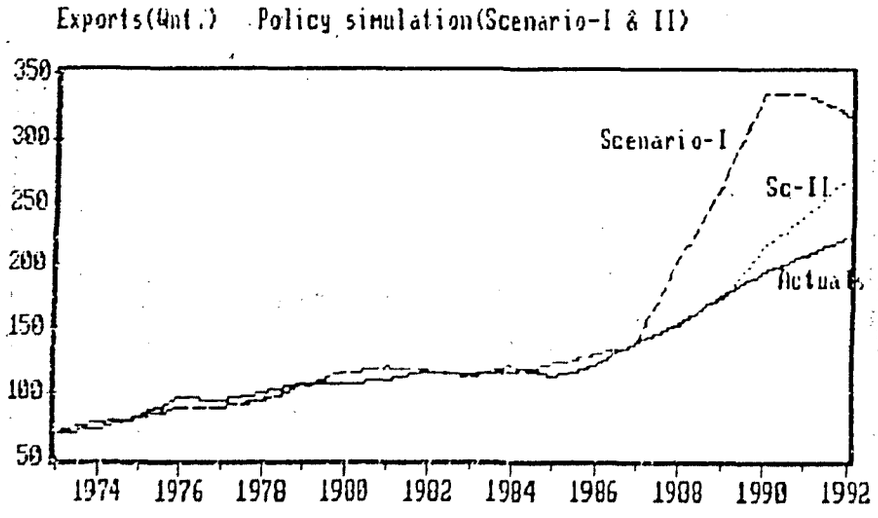

Export prices(UVI in Rupees) Dynamic simulation
500
400
300
200
100
0
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992


Import prices(UVI IN US $) Dynamic simulation
150
125
100
75
50
25
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992


Trade Balance
Static simulation
25
0
-25
-50
-75
Actuals
Simulated
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
Trade Balance=(Qnt. Index * UVI in US $)-(Qnt. Index * UVI in US $)


Trade Balance
Dynamic Simulation
50
25
0
-25
-50
-75
Actuals
Simulated
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992


Exports(Qnt.) Policy simulation (Scenario-I)
350
300
250
200
150
100
50
Simulated
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992


Exports(Qnt.) Policy simulation(Scenario-I & II)
350
300
250
200
150
100
50
Scenario-I
Sc-II
Actuals
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992

Reserve Bank of India Occasional Papers
Vol. 15, No. 4, December 1994

Resource Gap of the State Governments: Measurement and Analysis

R.K. Pattnaik*, R.D. Bangar, S.M. Pillai and Rekha Sharma

The copious literature in respect of the State Government finances does not adequately analyse the resource gap on account of over reliance on the issues relating to Centre-State financial relations. In the present context of large fiscal imbalance there is a need to measure and analyse the resource gap of the State Governments in a comprehensive and systematic manner. For any meaningful study of resource gap, it is essential to quantify the fiscal requirements, fiscal dependency and fiscal stress. The present study examines these issues with the help of an alternative measure, *viz.*, Basic Resource Gap (BRG). It is, however, pertinent to note that this measure supplements and does not supplant the existing measures. The empirical findings of the Basic Resource Gap approach reveal that the fiscal dependency ratio and fiscal stress ratio, on an average, during the 'eighties and 'nineties so far have not shown any perceptible decline. This situation not only reveals the vicious circle of State Governments dependency on exogenous factors for financing their expenditure on which they do not have any control but also exposes the dynamic *nexus* between deficit and debt. The study cautions that, in future, the budget constraints of the State Governments to meet their expenditure requirements would be severe if concerted efforts are not undertaken by them to reduce the fiscal dependency ratio and fiscal stress ratio to reasonable levels. The study, therefore,suggests that there is an urgent need to initiate budgetary reforms in the finances by State Governments as a group as well as individual level.

Introduction

In recent years the mismatch between Government expenditure and revenue has resulted in a persistent and seemingly unsustainable gap in resources. This has not only given rise to a severe fiscal stress but has also made Government financial management an increasingly difficult task. As a sequel to this development, serious research efforts have been un-

* The analytical framework of this study was conceptualised by Shri R.K.Pattnaik, Director and the study was co-authored by Sarvashri R.D.Bangar and S.M.Pillai, Assistant Advisers and Ms. Rekha Sharma, Research Officer in the Department of Economic Analysis and Policy of the Reserve Bank of India. The authors are grateful to Shri B.P.R. Vithal, Member, Tenth Finance Commission who was extraordinarily kind to go through the draft and gave his valuable comments. The authors are indebted to Dr.A. Vasudevan for guidance and encouragement in finalising this study.The computational assistance rendered by Shri V.P. Arya and Smt.Alka R. Purohit and secretarial assistance of Shri R.R. Shringarpure are thankfully acknowledged. Views expressed, however, are those of the authors and not of the institution to which they belong.

dertaken in recent years to examine the origin, implications and policy options in respect of resource gap of the Governments within the analytical framework of alternative measures of budget deficit.[1]

In the Indian context, sizeable research efforts have already been initiated in the case of Central Government finances to measure and analyse the implications of resource gap.[2] The research efforts that have been undertaken in respect of the finances of State Governments mostly relate to a budgetary transfer system which has culminated in an enormous body of literature.[3] Notwithstanding this copious literature, the measurement and analysis of resource gap have not received adequate attention. The research efforts that exist at present have mostly concentrated on the issues of vertical and horizontal fiscal imbalances and have evaluated the actual transfers that are being made to the State Governments. While this is a useful approach to analyse the finances of the State Governments, in the present context of large fiscal imbalance there is a need to measure and analyse the resource gap of the State Governments in a comprehensive and systematic manner. The present study is a step in this direction.

The study is organised as follows: Section I deals with the definition and methodology of measuring resource gap. Section II discusses the magnitude and implication of resource gap covering the period from 1980-81 to 1993-94 as the 'eighties mostly represented a period of worsening fiscal performance of the States. Relevant data are culled out from the various issues of the articles on "Finances of the State Governments" published in the Reserve Bank of India Bulletin. While Part A of Section II discusses the consolidated position, Part B covers State-wise analysis. Section III discusses the emerging issues relating to resource gap. Concluding observations are presented in Section IV.

SECTION I

Measurement of Resource Gap

There is no single criterion to measure the resource gap in the Government finances. The choice of a particular measure is, therefore, purpose specific. In the context of Indian public finance, the traditional approach while measuring the resource gap takes into consideration revenue account gap, capital account gap and overall gap. Of late, there has been a frequent mention of the concept of Gross Fiscal Deficit (GFD) by researchers while analysing the finances of the State Governments; one vari-

ant of GFD. *viz.*, primary deficit, which is analytically useful to examine the current operations of the Government finances has recently been introduced in Indian public finance. However, most of the State Governments have not yet introduced these two concepts in their budget documents. More recently, in the context of federal finances, the concept of own deficit (both unadjusted and adjusted for statutory and non-statutory transfers from the Central Government) has also been developed.[4]

Existing Measures of Resource Gap

A systematic presentation of the various measures of resource gap is set out in equations 1 through 8. The explanatory details of the symbols used in the equations are set out in Exhibit 1.

Revenue Account Gap	=	RD= (RR - RE)	...(1)
Capital Account Gap	=	CAD = (CR- CD)	...(2)
Overall gap	=	(RD + CAD)= (RR- RE) + (CR-CD)	...(3)
	=	[(RR + CR) - (RE + CD)]	...(3i)
Gross Fiscal Deficit (GFD)	=	RE+[CD -(DID+RLC+RLA)]-RR	..(4)
Net Fiscal Deficit (NFD)	=	GFD-(LAS-RLA)	...(5)
Primary Deficit1 (PD1)	=	GFD - IP	...(6 i)
Primary Deficit2 (PD2)	=	GFD-(IP -IR)	...(6 ii)
Net Primary Deficit (NPD)	=	NFD-(IP-IR)	...(6 iii)
Primary Revenue Balance1 (PRB1)	=	RD - IP	.. (6 iv)
Primary Revenue Balance2 (PRB2)	=	RD - (IP-IR)	... (6 v)
Own Deficit (Not Adjusted for Statutory transfers from Centre) (OWNA)	=	[(RR- SCT - GFC) + (CR-RLA - LAC)] - [(RE - IPC) + (CD - DID-RLC)]	..(7)
Own Deficit (Adjusted for statutory transfers from Centre) (OWAD)	=	[(RR - NSGFC) + (CR - RLA - LAC)] - [(RE - IPC)+(CD - DID - RLC)]	..(8)

EXHIBIT 1

Budgetary Operations of the State Governments - Major Heads

Revenue Account	Capital Account+
I. Revenue Receipts (RR) (i+ii)	I. Capital Receipts (CR) (a to f)
(i) Tax Revenue (TAR) (a + b)	(a) Internal Debt (ID) Of which:
a) States' own Tax Revenue (OTAR)	Market Loans (ML)
b) States' Share in Central Taxes (SCT)	(b) Loans and Advances from the Centre (LAC)
(ii) Non-tax Revenue (NTR)	(c) Recoveries of Loans and Advances (RLA)
a) States' own non-tax Revenue (ONTR)	(d) Provident Funds (PFs)
Of which: interest receipts (IR)	(e) Reserve Funds and Deposits (RFD)
b) Grants from the Centre (GFC) (b.1 + b.2)	(f) Other Capital Receipts (OCR)
b.1) Statutory Grants (SGFC)	
b.2) Non-statutory Grants (NSGFC)	
II. Revenue Expenditure (RE)	II. Capital Disbursement(CD)
(a) Economic Services (ES)	(a) Capital Outlay (CO)
(b) Social Services (SS)	(b) Loans and Advances by State Governments (LAS)
(c) General Services (GS) Of which :	
Interest payments (IP) Of which :	(c) Discharge of Internal Debt (DID) Of which : Discharge of Market Borrowings (DMB)
(i) Loans from the Centre (IPC)	
(ii) Market Borrowings (MB)	(d) Repayment of Loans to the Centre (RLC)

+ Excludes Ways and Means Advances and Cash Balances with the State Governments since they represent financing items of the conventional budget deficit.

The analytical advantages of Gross Fiscal Deficit, Primary Deficit and Own Deficit *vis-a-vis* the traditional measures are presented in the following paragraphs. **Gross Fiscal Deficit (GFD)** overcomes the limitation of the traditional concepts by putting forward a measurement of the total borrowing requirements for the State Governments. Furthermore, the decomposition of GFD into revenue deficit, capital outlay and net lending also addresses the dynamic interlinkage between revenue deficit and GFD.[5] GFD, besides quantifying the extent to which borrowed funds are used for consumption outlays of the Government, also analyses the dynamic *nexus* between deficit and debt. **Primary Deficit** defined as non-interest deficit has the advantage of examining the sustainability of deficit and debt.

However, the basic limitation of GFD is that it does not bring out the fact that there are constitutional constraints on the States' borrowing powers and their spending limits are effectively capped by their own revenues and support from the Centre. The **Own Deficit** measure is particularly significant in the context of federal finances as it quantifies the extent to which the State Governments depend upon the Central Government to finance their expenditure requirements.

New Measures of Resource Gap

The measures outlined above although useful (as alluded to earlier), they fail to capture the basic issues inherent in federal finances. This is more so, in the present *milieu*, when the finances of the State Governments are under considerable strain on account of certain existing constraints as well as emerging developments. The existing extraneous factors are : (i) Constitutional constraints on market borrowings; and (ii) Overdraft Regulation Scheme 1985 and 1993.[6] The emerging developments are essentially in the form of reduced flow of resources from the Centre on account of the ongoing fiscal stabilisation programme. Therefore, for any meaningful study of resource gap, it is essential to quantify fiscal requirements, fiscal dependency and fiscal stress. In view of this, an alternative measure, *viz.*, Basic Resource Gap (BRG) has been suggested in this study. It is, however, pertinent to note that this measure supplements and does not supplant the existing measures.

The definitional equations of BRG, considering the sources of finance available to meet a given size of expenditure requirements of State Governments, are illustrated in equations 9 through 11.

The explanatory details of the symbols used in the following equations are set out in Exhibit 1.

$$BRG_1 = (RE + CD) - (OTAR + ONTR) \quad ...(9)$$

$$BRG_2 = (RE + CD) - [(OTAR + ONTR) + (ID - ML) + (PFS + RFD + OCR)] \quad ...(10)$$

$$BRG_3 = (RE + CD) - [(OTAR + ONTR + SCT + SGFC) + (ID - ML) + (PFS + RFD + OCR)] \quad ...(11)$$

The above mentioned three variants of BRG reveal the extent to which there is fiscal dependency on the Central Government, RBI and other agencies once their financing items are in order.[7]

Financing of Basic Resource Gap

$$BRG_1 = SCT + GFC + CR + WMA \quad ...(12)$$
$$BRG_2 = SCT + GFC + ML + LAC + WMA \quad ...(13)$$
$$BRG_3 = NSGFC + ML + LAC + WMA \quad ...(14)$$

Among the three variants of BRG, BRG_3 which is financed by NSGFC + ML + LAC + WMA is analytically more meaningful as this measure quantifies the extent of dependency on purely exogenous factors on which States do not have any control. As BRG_1 takes into account own revenue and excludes all other forms of resources and BRG_3 takes into account all resources available except the non-statutory component, the extent of fiscal stress[8] could be quantified by working out the ratio of BRG_3 to BRG_1.

$$\text{Thus, Fiscal Stress Ratio (FSR)} = \frac{BRG_3}{BRG_1} \quad ...(15)$$

Assuming Total Expenditure (TE)[9] as the total resource requirements (TRR), the fiscal dependency ratio (FDR) could be worked from each variant of BRG as follows:

$$FDR_1 = \frac{BRG_1}{TE} \quad ....(16)$$

$$FDR_2 = \frac{BRG_2}{TE} \quad ....(17)$$

$$FDR_3 = \frac{BRG_3}{TE} \quad ....(18)$$

The **performance index**[10] of the resource gap measures for the States as a group could be worked out using the following methodology.

$$ASPIND = \Sigma \frac{ASPi}{n} \quad \text{.....(19)}$$

where ASPIND = Average Performance Index of all States.

ASP_i = Ratio of selected resource gap to its expenditure

n = Number of years

After normalising ASPIND to 1[11], the State-wise Performance Index ($PINDP_i$) could be worked out as follows :

$$PINDP_i = PIND_i/ASPIND \quad \text{.....(20)}$$

$$PIND_i = \frac{\Sigma P_i}{n} \quad \text{.....(21)}$$

Where,

$PIND_i$ = Average performance index of the i^{th} State
P_i = Ratio of selected resource gap to expenditure of the i^{th} State.
n = Number of years.

The adverse effect (AE), neutral effect (NE) and favourable effect (FE) on ASPIND could be measured as follows:

$$AE = PINDP_i > 1 \quad \text{.....(22)}$$
$$NE = PINDP_i = 1 \quad \text{.....(23)}$$
$$FE = PINDP_i < 1 \quad \text{.....(24)}$$

The analytical significance of $PIND_i$ is that the i^{th} State where $PINDP_i > 1$, the need for fiscal correction is an immediate priority as it puts adverse effect on ASPIND.

SECTION II

Magnitude and Implication of Resource Gap

As a prelude to the discussion on the implication of Basic Resource Gap an overview of the dimension and impact of some of the key existing measures of resource gap are set out below.

A. Consolidated Position

Revenue Deficit and Gross Fiscal Deficit : Dynamic Interlinkages

In practice, the dynamics of budgetary operations of the State Governments seldom abide by the ideal balanced budget rules. Evidence, on the other hand, reveals that high cost borrowed funds are used to finance persistently large revenue deficit. The trends in the composition of GFD revealed that the root problem in the finances of State Governments has been the unbridled growth in revenue deficit since 1987-88 (Table 1 and 2). It may be observed that during the period 1980-87, when the revenue account was showing a surplus, the revenue expenditure was growing at an annual rate of 20.7 per cent. Capital disbursements meant for creation of income generating assets were, at the same time, increasing on an average, at a lower rate of 12.2 per cent. Thus, the highly skewed expenditure pattern has caused the unsustainability of surplus generated during the first half of the 'eighties. Furthermore, the growth in the non-plan non-developmental expenditure and near stagnation in non-tax revenues have also worsened the revenue imbalance.[12]

The pattern of financing of GFD set out in Table 3 during the period 1980-94 indicates that the support from the Centre constituted the major source of the borrowed funds and was within the range of 42.2 per cent (1980-81) and 76.5 per cent (1985-86).

The dynamic interlinkages between revenue deficit and gross fiscal deficit have their inevitable consequences in the form of growing debt problem of the State Governments. The outstanding debt of all States is estimated to reach the level of Rs.1,58,393 crore as at end-March 1994 as against Rs.68,529 crore as at end-March 1988 and Rs.23,977 crore at end-March 1981. This increasing debt burden has contributed to the preemption of a major portion of revenue receipts in the form of interest payments which has gone up from Rs1,226 crore or 7.5 per cent of the

revenue receipts in 1980-81 to as high as Rs.16,860 crore or 16.8 per cent in 1993-94 experiencing an annual compound growth of 22.3 per cent.

This high and growing interest burden has inflicted severe pressure on the developmental expenditures. Another dimension to the debt problem is the emergence of a vicious circle of dynamic inefficiency in the finances of the State Governments as they are forced to borrow more and more to repay the past borrowings. The magnitude of debt repayment obligations has increased over the period from Rs.297 crore or 3.7 per cent of the capital disbursements during 1980-81 to Rs.4,334 crore or 22.3 per cent during 1993-94. The repayment obligations of such a magnitude put severe fiscal stress on State Governments to allocate resources for income generating expenditures, such as capital outlay and net lending.

Primary Deficit[13]

The data on primary balance are set out in Tables 4 and 5. The primary revenue balance was financing interest payments fully during the first half of 'eighties as there were revenue surplus. However, with the emergence of a deficit in revenue account since 1987-88, the primary revenue balance turned out to be inadequate to meet interest payment obligations. The gross primary revenue balance (revenue deficit *minus* interest payments), financed the interest payments within the range of 39 to 78 per cent during the period 1987-94 and the net primary revenue balance financed the net interest payments within the range of (-)0.5 to 63 per cent during the same period. The shortfall in the primary revenue balance to finance interest payments (gross as well as net) is a serious fiscal problem for the State Governments as they are using the high cost borrowed funds to meet the interest obligations.

States' Own Deficit

The own deficit measures, both adjusted and not adjusted for statutory transfers from the Centre, are given in Tables 6 and 7. The own deficit (unadjusted) which is financed by net resources transferred to the States from Centre and Ways and Means Advances by RBI (after adjusting for the cash balances) as proportion to its expenditure remained, on an average, around 39 per cent during the period 1980-87. This proportion declined to around 38 per cent during the period 1987-94. The adjusted own deficit financed by non-statutory transfers from the Centre and Ways and Means Advances from RBI as proportion to its expenditure

also declined by one percentage point during the period 1987-94 from 18 per cent during the period 1980-87. Given the level of expenditure, the one percentage point decline in both the measures of own deficit-expenditure ratio reflects that transfer of resources to the State Governments have suffered a setback since the fiscal 1991-92[14] on account of fiscal stabilisation measures undertaken by the Centre. This is also evident from the trends in the proportions of net transfer of resources (gross transfer *minus* repayments and interest payments) to aggregate receipts, as it declined to 58 per cent in the post-fiscal stabilisation programme (1991-94) from 61 per cent during the period 1980-91. Similarly, the net non-statutory transfer of resources as proportion to aggregate receipts declined to about 18 per cent from 21 per cent during the same period.

Basic Resource Gap

The details of three variants of basic resource gap are set out in Tables 8, 9 and 10 which show that, on an average, during the period 1980-87 BRG_1, BRG_2 and BRG_3 as proportions to their respective expenditures remained around 56 per cent, 46 per cent and 28 per cent, respectively. During the period 1987-94, FDR_1 (BRG_1/TE) declined by one percentage point to 55 per cent mainly on account of reduced transfers from the Centre. On the other hand, FDR_2(BRG_2/TE) increased by one percentage point to 47 per cent on account of increased reliance on market borrowings. FDR_3 (BRG_3/TE), however, remained constant, implying thereby a near stagnation in the States dependence on exogenous sources for financing their expenditures. This trend is also evident in the fiscal stress ratio (FSR) (i.e. BRG_3/BRG_1) which increased by one percentage point to 51 per cent on an average during the period 1987-94 (Table 17). This has two broad implications: (a) large reliance on resources on which States do not have statutory control, and (b) lack of concerted efforts by the State Governments either to enhance their own resources or to reduce expenditures.

B. Statewise Position[15]

Revenue Deficit and Gross Fiscal Deficit

The profile of revenue deficit and gross fiscal deficit which are indicated in Tables 12 and 13 reveals that over the period the States with deficit in their accounts have increased in numbers. As a consequence, the State-wise revenue deficit-expenditure ratio which, on an average, was around 12 per cent at maximum during the period 1980-87 increased to

about 18 per cent during the period 1987-1994. The State-wise fiscal deficit-expenditure ratio remained about on an average at 33 per cent during 1987-1994. The near stagnation in the GFD-expenditure ratio, while the revenue deficit-expenditure was on the rise would indicate that there have been cutbacks in capital disbursements by State Governments.

Primary Revenue Balance

The vicious cycle of revenue deficit-GFD-interest payments led to a situation, particularly during the period 1987-94 where financing of interest payments (gross and/or net) was rendered difficult for most of the State Governments (Table 14). On an average, 15 States could not finance their gross interest payments from the revenues during the period 1987-94 as compared with 7 States during the earlier period, 1980-87. Similarly, 15 States could not meet fully their net interest payments from their revenues during the period 1987-94 as against 6 States during the period 1980-87.

States' Own Deficit

The summary of State-wise details on own deficit is set out in Table 15. On an average, in both the periods (i.e. 1980-87 and 1987-94), the own deficit (unadjusted)-expenditure ratio of 15 State Governments was higher than the all States' ratio while in the case of adjusted one, the number increased from 11 to 14 (Table 15). The proportion with regard to the former at maximum remained at 96 per cent and 64 per cent for the latter which were significantly higher than the all States' average of 39 per cent and 18 per cent, respectively, during the first period. Given the expenditure levels of respective State Governments, the average proportions at maximum during the second period (1987-94) though declined to 90 per cent and 53 per cent on account of reduced transfers of resources from Centre, these are significantly higher than the all States' average of 38 per cent and 17 per cent in the case of unadjusted and adjusted, respectively.

Basic Resource Gap

The summary position of the performance index of FDR and FSR is given in Tables 16 and 17, respectively, which indicates that during the period 1987-94, on an average, 16 State Governments had higher FDR than the all States' average as compared with 13-14 State Governments during the period 1980-87. On an average, FDR_1 remained at a maxi-

mum of 94 per cent in both the periods. This *status quo* implies that most of the State Governments could not manage to reduce their reliance on external sources for financing their expenditures. Furthermore, on an average, increase in FDR_2 at maximum to 95 per cent from 93 per cent reflects the increased reliance on market borrowings. The declining trend in respect of FDR_3, on an average, at maximum 80 per cent to 58 per cent despite increased resort to market borrowings reflects the reduced transfers through non-statutory grants and loans from the Centre.

SECTION III

Emerging Issues

Consolidated Position

Some of the issues emerging out of the above discussion are enumerated in the following paragraphs. One of the disquieting developments in recent years is the persistence of large revenue deficit and pre-emption of high cost borrowed funds (GFD) to finance such deficit. This trend, in turn, has resulted in a vicious cycle of increased borrowings leading to a high level of debt which is seemingly unsustainable. As a corollary, interest burden has grown sizeably causing a rapid surge in non-Plan non-developmental expenditure. The substantial shortfall in primary revenue balance to meet the interest obligations vindicates the hypothesis of unsustainability of the present fiscal policy. Furthermore, given the Central Government's fiscal constraints in the context of stabilisation programme, it has become inevitable that State Governments have to finance their expenditure with reduced reliance on resource transfer from the Centre. This issue has been explained with the measure of own deficit. More effectively, the problems in the finances of State Governments have been evaluated by the Fiscal Dependency Ratio (FDR) and Fiscal Stress Ratio (FSR) with the help of Basic Resource Gap (BRG) measures.

It was found that the trends in FDR and FSR have not shown any perceptible decline over the years. Once it is recognised that the State Governments as a group should undertake concerted efforts to reduce them, the onus will be on the financing items of BRG_3 *viz.*, (i) non-statutory grants from the Centre; (ii) loans and advances from the Centre; (iii) market borrowings; and (iv) Ways and Means Advances from the RBI on which the States do not have control.

Non-statutory grants from the Centre are purpose specific and finance mainly the State Plan Schemes, Central Plan Schemes and Centrally

Sponsored Schemes. It constituted around 44 per cent of the non-tax revenue and 15 per cent of the total revenue receipts of the States during the 'eighties and moved up to 49 per cent and 16 per cent, respectively, in the first four years of the 'nineties. Considering this, any possible compression of this item of transfer by the Centre would put severe resource constraint on the States.

Loans and advances from the Centre constituted around 56 per cent of the aggregate capital receipts by the States during the 'eighties and 52 per cent in the first four years of the 'nineties. Like grants, loans and advances from Centre are also purpose-specific to meet the capital expenditure needs of the States, such as State Plan Schemes, Central Plan Schemes and Centrally sponsored Schemes.

The outstanding loans from Centre account for bulk of the States' indebtedness. As at the end of 1993-94, out of the total indebtedness aggregating Rs.1,58,393 crore, loans from the Centre accounted for 65 per cent. This has led to the complaint by the State Governments that their repayment obligations to the Centre are absorbing a large and ever increasing proportion of fresh loans. Hence there is a demand by the State Governments for relief by way of rescheduling and write off of the outstanding loans from the Centre. In principle, rescheduling of repayments and write off of debts are imprudent and, therefore, in future, rescheduling of the loans need to be avoided. At the same time, the terms on which funds are lent by the Centre to the States must be reasonable and equitable. They should have relation to the maturity period of loans obtained by the Centre, rate of interest thereon, other charges, if any, which the Centre has to bear and the gestation period of the projects to be financed.[16]

Loans against small savings collections constitute a major part of the Central loans given to the States. In recent years, due to the deceleration in the small savings collections, the proportion of this loan to the total loans has substantially declined. The State Governments very often suggest conversion of these loans into loans in perpetuity. However, this may not be desirable as it would lead to greater mismatch between the maturity of small savings instruments and the repayment of loans against small savings collection.

The fiscal stress could be acute if the capital outlays do not generate adequate returns that would enable servicing of financial liabilities and the stress will be further aggrevated if market borrowings are at less favourable terms - higher interest rates and lower maturity period.

In respect of market loans, the recent trends reveal that that the State Governments are borrowing at a comparatively higher rates with the shortening of the maturity periods. The situation would be worse once the State Governments switch over to a market related borrowing programme. In this context, the suggestion made in the RBI Annual Report 1992-93 merits attention: "consideration could be given to setting up a State Funding Corporation which would raise funds at market related rates of interest and pass on the funds at fixed rates to the States. Before such an institution is set up it would be necessary to examine the full implications of the burden of the subsidy as between the Centre and the States and between States. The modalities of such an arrangement need to be fully worked out between the Centre and the States before it is implemented."

In order to tide over the mismatch in their daily receipts and payments, RBI provides temporary accommodation in the form of Ways and Means Advances (WMA) to the States with which it has agreements. Thus WMA limits are intended to cover only day to day fluctuations and any unanticipated shortfall in receipts for meeting the disbursements of the State Governments. These limits are, therefore, not be regarded as supplementary resources for the States to finance their resource gap. On the recommendations of the Sarkaria Commission and keeping in view the pressure on the finances of State Governments with effect from November 1, 1993 normal Ways and Means Advances and Special Ways and Means Advances have been fixed at 84 times and 32 times, respectively, of the minimum balances kept with RBI. The Overdraft Regulation Scheme, 1985 and its modification with effect from November 1, 1993 requires the RBI to stop payments of the State Governments which run an overdraft for more than ten consecutive working days. Any further relaxation in these schemes in the immediate future may not be feasible. This is more so in the context of the measure announced in the Central Government Budget for 1994-95 regarding the sale of fresh Government papers in the market by the RBI if the increase in *ad hoc* Treasury Bills exceeds Rs.9,000 crore for more than ten continuous working days at any time during the year.[17]

In future, the budget constraints of the State Governments to meet their expenditure requirements would be severe if concerted efforts would not be undertaken by them to reduce the Fiscal Dependency Ratio (FDR) and Fiscal Stress Ratio (FSR) to reasonable levels. There is, therefore, an urgent need to initiate budgetary reform in the finances of State Governments as a group as well as at the individual level.

State-wise Position

Using the methodology of performance index discussed in Section 1, the States are ranked on the basis of their performance in the resource gap. The select indicators for the purpose are revenue deficit-expenditure ratio, gross fiscal deficit-expenditure ratio, three variants of fiscal dependency ratio and fiscal stress ratio. The details of these are presented in Tables 18 through 26. For analytical convenience, the State Governments are broadly categorized into special category States and non-special category States. The rank profile and rank frequency distribution are set out in Tables 24 and 25, respectively.

Once it is recognised that the State Governments as a group should initiate budgetary reforms[18] to improve the efficiency of resource use, reduce the size of non-Plan non-developmental expenditure and augment the resource base, it is instructive to analyse the performance index of individual states. The State whose performance index is relatively poor ($PIND_i > 1$) puts severe pressure on all States' performance index (ASPIND). As it is evident from the rank frequency distribution, poor performance by and large in almost all the indicators in both the time periods are evident in the case of Orissa, Punjab, Uttar Pradesh, West Bengal and Bihar. The State Governments whose dependency ratios and stress ratios are very high are Orissa, Bihar, Uttar Pradesh, West Bengal, Rajasthan and Haryana. These States would need to undertake budgetary reforms on a priority basis. Special category States whose performance index is poor vis-a-vis the all States position in respect of FDR_3 and FSR are Sikkim, Manipur, Meghalaya, Assam, Arunachal Pradesh, Jammu and Kashmir and Himachal Pradesh.

SECTION IV

Concluding Observations

Given the long experience in India under a system of fedaralism, most of the research efforts with respect to finances of State Governments concentrated more on the normative aspects of fiscal federalism. The discussions, therefore, mostly relied heavily on the issues relating to the financial relation between Centre and States, Finance Commission and States, and Planning Commission and States. As such, adequate attention has not been paid to the issues relating to self-generating revenue sources, fiscal dependency of the States and fiscal stress of the States from the dimension of a resource gap. The present study discusses these issues

under an analytical framework of a revenue and expenditure dimension of the resource gap.

It is recognised that the persistence of revenue deficit and the financing of the same by the high cost borrowed funds is at the root of the problem. This has created a situation of high borrowings resulting in high interest payments and repayment problems. Growth in indebtedness should not cause any worry if investments yield adequate returns to meet interest and amortisation charges. However, the poor performance of the State owned public enterprises results in a meagre or negative returns. As a result, the entire burden of servicing the debt contracted on the enterprises' account invariably falls on the State governments' budget. While the growing interest burden reduces the amount available for incurring important categories of revenue expenditure, repayment obligations reduce the ratio of net borrowings to gross borrowings. As no amortisation funds are established in respect of Government sector, repayment obligations tend to cut into the plan resources to a substantial extent.

According to the Ninth Finance Commission, 'the ultimate solution to the Governments debt problem lies in borrowed funds not being used for financing revenue expenditure and being used effectively and productively for capital expenditure so as to earn returns and/or increase productivity of the economy resulting in increased Governmental revenues, in order that the capital stock of the country may be maintained intact, there should be adequate depreciation provision or loans should be paid out of amortisation fund'.

Given the present constraints in the resources available from exogenous sources as well as in the self-generating or endogenous sources, there is a need to undertake fundamental reforms in the finances of the State Governments. The focus should be on the expenditure as well as revenue dimensions of the resource gap. The revenue dimension of the resource gap through the Basic Resource Gap (BRG) analysis reveals that the fiscal dependency ratio and fiscal stress ratio on an average during the 'eighties and 'nineties so far have not shown any perceptible decline. The past trends of a near stagnation in fiscal dependency ratio (FDR) and fiscal stress ratio (FSR) need to be corrected. Given the level of expenditure, the necessary condition for the State Governments to reduce fiscal dependency ratio and fiscal stress ratio is to enhance self-generating tax revenues by widening the tax base and introducing tax reform measures. They should also strive to augment self-generating non-tax revenue through upward revision of user charges on social and economic services

and ensure profitable working of the States' owned public enterprises. The sufficent condition on the part of the State governments is to reduce non-Plan non-developmental expenditures particularly on administrative services along with prioritisation of expenditure requirements. One of the important areas of expenditure restructuring is the social services. This would necessitate a national debate on the role of State Governments in financing of the social sector where the feasibility of sharing the social expenditure by the private sector could also explored.

Notes

1. See Buiter (1985), Blejer and Cheasty (edited) (1993) and Premchand, (1990 and 1993).

2. See Rangarajan *et al* (1989), Chelliah (1993), Annual Report, Reserve Bank of India; 1992-93 and 1993-94 and Economic Survey, Government of India 1992-93 and 1993-94.

3. For a discussion on Survey of research on fiscal transfers see Rao and Chelliah (1991). Also see, Srivastava and Agarwal (1993), Sato (1992) and Thimmaiah (1991).

4. See Article on 'Finances of State Governments 1993-94, Reserve Bank of India Bulletin, February 1994.

5. The decomposition of GFD is as under:

   GFD = (RR + RLA) - RE + (CD -DID - RLC)

   = RR - RE + CO + LAS - RLA (DID and RLC are netted out to make the financing items on net basis)

   = RD + CO + NL

   See Exhibit 1 for explanatory details of the symbols.

6. Under the Overdraft Regulation Scheme 1985, State Governments were not allowed to remain in overdraft with the RBI for more than seven consecutive working days. The time limit for the clearance of overdrafts by State Governments was enhanced from seven consecutive working days to ten consecutive working days from November 1, 1993. In the event of the non-compliance of the above by any State, RBI would stop payments on its behalf.

7. The adjustment in data while working out the Basic Resource Gap are as follows:

   (i) Financing of overall deficit has been decomposed into Cash Balances and Ways and Means Advances from RBI.

   (ii) Cash balances and remittances (net) have been treated as capital receipts of the States.

8. For an analytical discussion on fiscal stress see Diamond (1992) and Premchand (1993)

9. Total expenditure is taken as a proxy for State Domestic Product (SDP) due to the non-availability of consistent State-wise SDP data.

10. Performance index is an unweighted index designed to illustrate the Statewise position *vis-a-vis* the consolidated position on select resource gap measures which are set out in this study.

11. $$\text{ASPIND} = \Sigma \frac{\frac{\text{ASPi}}{\text{n}}}{\text{ASPIND}} = 1$$

12. This deterioration has taken place in two stages - first in the Plan revenue receipts and later on in non-Plan revenue receipts.

13. Net primary deficit is analytically meaningful to examine the sustainability of debt and deficit. However, since the outstanding loans and advances figures are not readily available for the State Governments, primary revenue balance has been used in this study to capture the sustainability of revenue account.

14. Reserve Bank of India Annual Report, 1991-92 and Reserve Bank of India Bulletins March, 1993 and February, 1994.

15. The State-wise detailed data could be made available by the authors on request. However, the State-wise data on select resource gap measures set out in this Study are indicated from Tables 26 to 34.

16. See Second Report of Ninth Finance Commission, Government of India.

17. As a corrective measure, it has been proposed in the Union Budget 1994-95 to phase out the Government's access to *ad-hoc* Treasury bills over a period of three years. It has been agreed with the Reserve Bank that the net issue of *ad-hoc* Treasury bills should not exceed Rs.9,000 crore for more than ten continuous working days at any time during the year. If this happens, RBI will automatically sell Treasury bills to reduce the level of *ad-hoc* Treasury bills (See Reserve Bank of India, Annual Report 1993-94).

18. See Rao (1992), Reserve Bank of India Annual Report (1991-92) and Reserve Bank of India Bulletins February, 1993 and March, 1994.

References

1. Blejer, Mario I and Cheasty, Adrienne (Ed) (1993), *How to Measure Fiscal Deficit; Analytical and Methodological Issues*, International Monetary Fund (IMF).

2. Buiter, William H (1985), 'A Guide to Public Sector Debt and Deficits', *Economic Policy*, November.

3. Chelliah, Raja J (1993), 'An Essay on Fiscal Deficit', *Artha Vijnana*, September.

4. Diamond, J (1992), 'Fiscal Stress and Structural Adjustment', Paper presented in the Seminar on *Public Expenditure Policy and Management*, Fiscal Affairs Department, IMF Institute.

5. Government of India (1989), *Second Report of Ninth Finance Commission*, December.

6. Government of India, *Economic Survey*, 1991-92, 1992-93 and 1993-94.

7. Premchand, A (Ed) (1990), *Government Financial Management: Issues and Country Studies*, IMF.

8. Premchand, A (1993),'Managing Fiscal Stress', *Public Expenditure Management*, IMF.

9. Rangarajan, C, Anupam Basu and Narendra Jadhav (1989), 'Dynamics of Interaction between Government Deficit and Domestic Debt in India', *Reserve Bank of India (RBI) Occasional Papers*, October.

10. Rao, Govinda and RJ Chelliah (1991), *Survey of Research on Fiscal Federalism in India*, National Institute of Public Finance and Policy (NIPFP), New Delhi, January.

11. Reserve Bank of India, *Annual Reports*, 1991-92, 1992-93 and 1993-94.

12. Sato, Hiroshi (1992), 'The Political Economy of Central Budgetary Transfers to States in India, 1972-84', *The Developing Economics*, Vol.XXX-4, December.

13. Srivastava, D.K and Pawan Agarwal (1993), *Some Revenue sharing criteria in Federal Fiscal Systems: Some New Insights, NIPFP, Working Paper No.6*, July.

14. Thimmaiah, G (1981), *A Critique of the Finance Commission*, Wheeler Publishing.

Table 1 : Consolidated Gross Fiscal Deficit (GFD) of State Governments

(Rs. crore)

Fiscal Year	Expendi-ture@	Receipts@@	GFD (2-3)	GFD/ Expenditure (per cent)
1	2	3	4	5
1980-81	20,006	16,293	3,713	18.6
1981-82	22,517	18,455	4,062	18.0
1982-83	26,112	21,126	4,986	19.1
1983-84	30,372	24,014	6,358	20.9
1984-85	35,624	27,425	8,199	23.0
1985-86	40,945	33,424	7,521	18.4
1986-87	47,495	38,226	9,269	19.5
1987-88	55,220	44,000	11,220	20.3
1988-89	62,093	50,421	11,672	18.8
1989-90	71,968	56,535	15,433	21.4
1990-91	85,254	66,467	18,787	22.0
1991-92	99,436	80,536	18,900	19.0
1992-93 (R.E.)	111,422	91,434	19,988	17.9
1993-94 (B.E.)	124,269	100,575	23,694	19.1

R.E.- Revised Estimates B. E.- Budget Estimates.

@ Includes revenue expenditure, capital outlay and net lending (loans and advances minus recovery).

@@ Includes revenue receipts.

Table 2 : Composition of Gross Fiscal Deficit of State Governments

(Rs. crore)

Fiscal Year	Revenue Surplus/ Deficit	Capital Outlay	Net Lending	GFD (2+3+4)
1	2	3	4	5
1980-81	-1,486	3,201	1,998	3,713
	(-40.0)	(86.2)	(53.8)	(100.0)
1981-82	-1,380	3,589	1,853	4,062
	(-34.0)	(88.4)	(45.6)	(100.0)
1982-83	-888	3,719	2,155	4,986
	(-17.8)	(74.6)	(43.2)	(100.0)
1983-84	-211	4,277	2,292	6,358
	(-3.3)	(67.3)	(36.0)	(100.0)
1984-85	924	4,910	2,365	8,199
	(11.3)	(59.9)	(28.8)	(100.0)
1985-86	-654	5,433	2,722	7,521
	(-8.7)	(72.5)	(36.2)	(100.0)
1986-87	-170	6,277	3,162	9,269
	(-1.8)	(67.7)	(34.1)	(100.0)
1987-88	1,088	6,655	3,477	11,220
	(9.7)	(59.3)	(31.0)	(100.0)
1988-89	1,807	7,077	2,788	11,672
	(15.5)	(60.6)	(23.9)	(100.0)
1989-90	3,682	7,963	3,788	15,433
	(23.9)	(51.6)	(24.5)	(100.0)
1990-91	5,309	9,223	4,255	18,787
	(28.3)	(49.1)	(22.6)	(100.0)
1991-92	5,651	10,096	3,153	18,900
	(29.9)	(53.4)	(16.7)	(100.0)
1992-93	4,117	11,132	4,739	19,988
(R.E.)	(20.6)	(55.7)	(23.7)	(100.0)
1993-94	4,511	12,773	6,410	23,694
(B.E.)	(19.0)	(53.9)	(27.1)	(100.0)

R.E.- Revised Estimates. B.E.- Budget Estimates.

Note: Figures in brackets are percentages to total borrowing requirements or (GFD).

(-) Indicates surplus.

Table 3 :Financing of Gross Fiscal Deficit of State Governments

(Rs. crore)

Fiscal Year	GFD (3+4+5)	Loans from the Centre (net)	Other* borrowings (net)	Overall Surplus/ Deficit
1	2	3	4	5
1980-81	3,713	1,567	1,249	897.0
		(42.2)	(33.6)	(24.2)
1981-82	4,062	2,000	1,042	1,020
		(49.2)	(25.7)	(25.1)
1982-83	4,986	2,735	1,431	820
		(54.9)	(28.7)	(16.4)
1983-84	6,358	3,031	2,766	561
		(47.7)	(43.5)	(8.8)
1984-85	8,199	3,580	3,181	1,438
		(43.7)	(38.8)	(17.5)
1985-86	7,521	5,757	3,452	-1688
		(76.5)	(45.9)	(-22.4)
1986-87	9,269	4,786	3,816	667
		(51.6)	(41.2)	(7.2)
1987-88	11,220	5,832	5,323	65
		(52.0)	(47.4)	(0.6)
1988-89	11,672	5,818	6,234	-380
		(49.8)	(53.4)	(-3.3)
1989-90	15,433	7,917	7,355	161
		(51.3)	(47.7)	(1.0)
1990-91	18,787	9,978	8,881	-72
		(53.1)	(47.3)	(-0.4)
1991-92	18,900	9,373	9,371	156
		(49.6)	(49.6)	(0.8)
1992-93	19,988	9,118	9,888	982
(R.E.)		(45.6)	(49.5)	(4.9)
1993-94	23,694	10,207	10,860	2,627
(B.E.)		(43.1)	(45.8)	(11.1)

R.E.- Revised Estimates.B.E.- Budget Estimates.

* Other borrowings *inter alia* consist of market borrowings, loans from the financial institutions and banks, provident funds, etc.

(-) Indicates surplus

Note: Figures in brackets are proportion to GFD.

Table 4 : Primary Deficit and Net Primary Deficit

(Rs. crore)

Fiscal Year	Gross Fiscal Deficit	Net Lending	Net Fiscal Deficit (2 - 3)	Interest Payments	Interest Receipts	Net Interest Payments (5 - 6)	Primary Deficits		Net Primary Deficit (4 - 7)
							(2 - 5)	(2 - 7)	
1	2	3	4	5	6	7	8	9	10
1980-81	3,713	1,998	1,715	1,225	824	401	2,488	3,312	1,314
1981-82	4,062	1,853	2,209	1,440	817	623	2,622	3,439	1,586
1982-83	4,986	2,155	2,831	1,705	992	713	3,281	4,273	2,118
1983-84	6,358	2,292	4,066	1,963	1,171	792	4,395	5,566	3,274
1984-85	8,199	2,365	5,834	2,466	1,266	1,200	5,733	6,999	4,634
1985-86	7,521	2,722	4,799	2,940	1,365	1,575	4,581	5,946	3,224
1986-87	9,269	3,162	6,107	4,101	1,688	2,413	5,168	6,856	3,694
1987-88	11,220	3,477	7,743	4,898	1,947	2,951	6,322	8,269	4,792
1988-89	11,672	2,788	8,884	5,935	2,387	3,548	5,737	8,124	5,336
1989-90	15,433	3,788	11,645	7,186	2,634	4,552	8,247	10,881	7,093
1990-91	18,787	4,255	14,532	8,655	2,403	6,252	10,132	12,535	8,280
1991-92	18,900	3,153	15,747	10,944	5,320	5,624	7,956	13,276	10,123
1992-93 (R.E.)	19,988	4,739	15,249	13,446	4,175	9,271	6,542	10,717	5,978
1993-94 (B.E.)	23,694	6,410	17,284	16,105	4,151	11,954	7,589	11,740	5,330

R.E.- Revised Estimates. B.E.- Budget Estimates.

Table 5 : Primary Revenue Balance of State Governments

(Rs. crore)

Fiscal Year	Revenue Surplus(+) Deficit (-)	Interest Payments	Net Interest Payments	Primary Revenue Balance		Proportion to Interest Payments (in per cent)	
				(2-3)	(2-4)	(5/3)	(6/4)
1	2	3	4	5	6	7	8
1980-81	+1,486	1,225	401	+2,711	+1,887	221.3	470.6
1981-82	+1,380	1,440	623	+2,820	+2,003	195.8	321.5
1982-83	+888	1,705	713	+2,593	+1,601	152.1	224.5
1983-84	+211	1,963	792	+2,174	+1,003	110.7	126.6
1984-85	-924	2,466	1,200	1,542	+276	62.5	23.0
1985-86	+654	2,940	1,575	+3,594	+2,229	122.2	141.5
1986-87	+170	4,101	2,413	+4,271	+2,583	104.1	107.0
1987-88	-1088	4,898	2,951	+3,810	+1,863	77.8	63.1
1988-89	-1807	5,935	3,548	+4,128	+1,741	69.6	49.1
1989-90	-3682	7,186	4,552	+3,504	+870	48.8	19.1
1990-91	-5309	8,655	6,252	+3,346	+943	38.7	15.1
1991-92	-5651	10,944	5,624	+5,293	-27	48.4	-0.5
1992-93 (R.E)	-4117	13,446	9,271	+9,329	+5,154	69.4	55.6
1993-94 (B.E.)	-4511	16,105	11,954	+11,594	+7,443	72.0	62.3

R.E.- Revised Estimates. B.E.- Budget Estimates.
Note : (+) indicates Surplus and (-) indicates Deficit.

Table 6 : States' Own Deficit (Not Adjusted) and its Financing

(Rs. crore)

Fiscal Year	States' Own Receipts@	States' Own Expenditure@@	States' Own Deficit (3-2)	Financed by		
				Net Transfer of Resources from the Centre	Overall Surplus (-)/ Deficit (+)	Own Deficit/Expenditure (in per-cent)
1	2	3	4	5	6	7
1980-81	12,440	20,525	8,085	7,188	+897	39.4
1981-82	14,192	23,322	9,130	8,110	+1,020	39.1
1982-83	16,097	26,653	10,556	9,736	+820	39.6
1983-84	19,103	30,600	11,497	10,936	+561	37.6
1984-85	21,782	35,848	14,066	12,628	+1,438	39.2
1985-86	24,607	40,551	15,944	17,632	-1688	39.3
1986-87	28,458	46,549	18,091	17,424	+667	38.9
1987-88	32,617	53,305	20,688	20,623	+65	38.8
1988-89	37,141	60,146	23,005	23,385	-380	38.2
1989-90	43,787	69,080	25,293	25,132	+161	36.6
1990-91	50,454	82,068	31,614	31,686	-72	38.5
1991-92	63,347	98,428	35,081	34,925	+156	35.6
1992-93 (R.E.)	65,553	106,740	41,187	40,205	+982	38.6
1993-94 (B.E.)	73,203	116,986	43,783	41,156	+2,627	37.4

R.E.- Revised Estimates. B.E.- Budget Estimates.

@ Receipts include aggregate receipts net of share in resources transferred to States by the Centre in the form of taxes, grants and loans.

@@ Expenditure includes aggregate disbursements net of remittances and repayment of loans and interest payments made by States to the Centre.

Table 7 : Adjusted Own Deficit and its Financing

(Rs. crore)

Fiscal Year	Unadjusted Own Deficit	Share in Central Taxes	Non-Plan (Statutory) Grants	Cash Balance & Cash Balance Investment Accounts	Total (3+4+5)	Adjusted Own Deficit (2-6)	Adjusted Own Deficit/own Expenditure (in per cent)	Financed by						
								Plan (non-Statutory) Grants	Loans from the Centre	Repayment of Loans	Interest on Loans from Centre	Net Non-Statutory Transfer [(1+2)-(3+4)]	Ways and Means Advances from RBI	Total (5 + 6)
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7
1980-81	8,085	3,789	391	587	4,767	3,318	16.2	2,231	3,022	1,458	787	3,008	310	3,318
1981-82	9,125	4,260	332	326	4,918	4,207	18.0	2,394	3,372	1,373	876	3,517	695	4,212
1982-83	10,557	4,633	456	1,643	6,732	3,825	14.4	2,925	4,165	1,430	1,013	4,647	-823	3,824
1983-84	11,495	5,008	549	323	5,880	5,615	18.3	3,544	4,903	1,871	1,196	5,380	238	5,618
1984-85	14,066	5,854	645	684	7,183	6,883	19.2	4,117	5,910	2,330	1,568	6,129	754	6,883
1985-86	15,946	7,260	1,060	-535	7,785	8,161	20.1	5,262	8,368	2,611	1,706	9,313	-1,154	8,159
1986-87	18,094	8,384	1,130	776	10,290	7,804	16.8	5,855	7,703	2,917	2,730	7,911	-110	7,801
1987-88	20,689	9,660	1,322	150	11,132	9,557	17.9	6,953	9,034	3,202	3,144	9,641	-85	9,556
1988-89	23,004	10,736	1,179	-575	11,340	11,664	19.4	8,481	9,937	3,249	3,699	11,470	195	11,665
1989-90	25,279	13,097	1,612	-103	14,606	10,673	15.5	6,893	11,259	3,341	4,388	10,423	264	10,687
1990-91	31,613	14,242	2,655	-161	16,736	14,877	18.1	9,988	13,974	3,997	5,178	14,787	90	14,877
1991-92	35,081	16,848	2,470	-56	19,262	15,819	16.1	12,756	13,069	3,695	6,522	15,608	212	15,820
1992-93 (R.E.)	41,189	20,476	2,635	1,185	24,296	16,893	15.8	15,730	13,180	4,062	7,754	17,094	-203	16,891
1993-94 (B.E.)	43,783	21,628	2,169	2,627	26,424	17,359	14.8	16,720	14,906	4,699	9,569	17,358	0	17,358

R.E.- Revised Estimates. B.E.- Budget Estimates.
(-) Indicates repayment of Ways and Means Advances.

Table 8 : Basic Resource Gap - Variant I (BRG1) and its Financing

(Rs. crore)

Fiscal Year	Expen-diture	Receipts (States' Own Receipts)	BRG1 (3-2)	Financing of BRG 1						
				Central Transfers				Market Loans	Other Capital Receipts	Ways and Means Advances
				Share in Taxes	Grants	Loans and Advances	Total			
1	2	3	4	5	6	7	8	9	10	11
1980-81	22,664	9,883	12,781	3,789	2,623	3,022	9,434	317	2,721	310
1981-82	25,170	11,468	13,702	4,260	2,726	3,372	10,358	508	2,139	695
1982-83	28,742	13,112	15,630	4,633	3,382	4,165	12,180	540	3,734	-823
1983-84	33,540	14,913	18,627	5,008	4,093	5,304	14,405	740	3,245	238
1984-85	39,856	16,810	23,046	5,854	4,762	5,910	16,526	1,164	4,606	754
1985-86	44,866	19,842	25,024	7,260	6,323	8,368	21,951	1,428	2,799	-1154
1986-87	52,315	22,858	29,457	8,484	6,985	7,703	23,172	1,431	5,064	-110
1987-88	59,878	26,066	33,812	9,660	8,275	9,038	26,973	1,801	5,126	-85
1988-89	67,003	30,025	36,978	10,736	9,660	9,937	30,333	2,246	4,206	195
1989-90	76,781	34,931	41,850	13,097	8,505	11,258	32,860	2,595	6,130	264
1990-91	91,088	39,586	51,502	14,242	12,643	13,975	40,860	2,585	7,970	90
1991-92	107,930	48,462	59,468	16,847	15,226	13,070	45,143	3,312	10,800	212
1992-93 (R.E.)	118,786	52,594	66,192	20,476	18,366	13,181	52,023	3,741	10,633	-203
1993-94 (B.E.)	131,288	60,056	71,232	21,628	18,890	14,906	55,424	3,899	11,908	0

R.E.- Revised Estimates. B.E.- Budget Estimates.
(-) indicates repayment of Ways and Means Advances

Table 9 : Basic Resource Gap - Variant II (BRG2) and its Financing

(Rs. crore)

Fiscal Year	Expen-diture	Receipts			BRG2	Financing of BRG2					
		States' Own Tax and Non-Tax	Capital Receipts	Total	(5-2)	Central Transfers				Market Loans	Ways and Means Advances
						Share in Taxes	Grants	Loans and Advances	Total		
1	2	3	4	5	6	7	8	9	10	11	12
1980-81	22,664	9,883	2,721	12,604	10,060	3,789	2,623	3,022	9,434	317	310
1981-82	25,170	11,468	2,139	13,607	11,563	4,260	2,726	3,372	10,358	508	695
1982-83	28,742	13,112	3,734	16,846	11,937	4,633	3,382	4,165	12,180	540	-823
1983-84	33,540	14,913	3,245	18,158	15,383	5,008	4,093	5,304	14,405	740	238
1984-85	39,856	16,810	4,606	21,416	18,440	5,854	4,762	5,910	16,526	1,164	754
1985-86	44,866	19,842	2,799	22,641	22,225	7,260	6,323	8,368	21,951	1,428	-1154
1986-87	52,315	22,858	5,064	27,922	24,393	8,484	6,985	7,703	23,172	1,431	-110
1987-88	59,878	26,066	5,126	31,192	28,686	9,660	8,275	9,038	26,973	1,801	-85
1988-89	67,003	30,025	4,206	34,231	32,772	10,736	9,660	9,937	30,333	2,246	195
1989-90	76,781	34,931	6,130	41,061	35,720	13,097	8,505	11,258	32,860	2,595	264
1990-91	91,088	39,586	7,970	47,556	43,532	14,242	12,643	13,975	40,860	2,585	90
1991-92	107,930	48,462	10,800	59,262	48,668	16,847	15,226	13,070	45,143	3,312	212
1992-93 (R.E.)	118,786	52,594	10,633	63,227	55,559	20,476	18,366	13,181	52,023	3,741	-203
1993-94 (B.E.)	131,288	60,056	11,908	71,964	59,324	21,628	18,890	14,906	55,424	3,899	0

R.E.- Revised Estimates. B.E.- Budget Estimates.
(-) indicates repayment of Ways and Means Advances.

Table 10 : Basic Resource Gap - Variant III (BRG3) and its Financing

(Rs. crore)

Fiscal Year	Expen-diture	Receipts					BRG3	Financing of BRG3				
		States' Own Tax and Non-Tax	Statutory Grants from Centre	Share in Taxes	Capital Receipts	Total	(7-2)	Central Transfers			Market Loans	Ways and Means Advances
								Non-Statutory Grants	Loans and Advances	Total		
1	2	3	4	5	6	7	8	9	10	11	12	13
1980-81	22,664	9,883	391	3,789	2,721	16,784	5,880	2,231	3,022	5,253	317	310
1981-82	25,170	11,468	332	4,260	2,139	18,199	6,971	2,394	3,372	5,766	508	695
1982-83	28,742	13,112	457	4,633	3,734	21,936	6,848	2,925	4,165	7,090	540	-823
1983-84	33,540	14,913	549	5,008	3,245	23,715	9,826	3,544	5,304	8,848	740	238
1984-85	39,856	16,810	645	5,854	4,606	27,915	11,941	4,117	5,910	10,027	1,164	754
1985-86	44,866	19,842	1,060	7,260	2,799	30,961	13,905	5,262	8,368	13,630	1,428	-1154
1986-87	52,315	22,858	1,130	8,484	5,064	37,536	14,779	5,855	7,703	13,558	1,431	-110
1987-88	59,878	26,066	1,322	9,660	5,126	42,174	17,705	6,953	9,038	15,991	1,801	-85
1988-89	67,003	30,025	1,179	10,736	4,206	46,146	20,856	8,481	9,937	18,418	2,246	195
1989-90	76,781	34,931	1,612	13,097	6,130	55,770	21,010	6,893	11,258	18,151	2,595	264
1990-91	91,088	39,586	2,655	14,242	7,970	64,453	26,635	9,988	13,975	23,963	2,585	90
1991-92	107,930	48,462	2,470	16,847	10,800	78,579	29,350	12,756	13,070	25,826	3,312	212
1992-93 (R.E.)	118,786	52,594	2,635	20,476	10,633	86,338	32,448	15,731	13,181	28,912	3,741	-203
1993-94 (B.E.)	131,288	60,056	2,169	21,628	11,908	95,761	35,526	16,721	14,906	31,627	3,899	0

R.E.- Revised Estimates. B.E.- Budget Estimates. (-) indicates repayments of Ways and Mean Advances.

Table 11 : Fiscal Dependency Ratio(FDR)and Fiscal Stress Ratio(FSR) *

(In per cent)

Fiscal Year	FDR1	FDR2	FDR3	FSR
1	2	3	4	5
1980-81	56	44	26	46
1981-82	54	46	28	51
1982-83	54	42	24	44
1983-84	56	46	29	53
1984-85	58	46	30	52
1985-86	56	50	31	56
1986-87	56	47	28	50
1987-88	56	48	30	52
1988-89	55	49	31	56
1989-90	55	47	27	50
1990-91	57	48	29	52
1991-92	55	45	27	49
1992-93 (R.E.)	56	47	27	49
1993-94 (B.E.)	54	45	27	50

R.E.- Revised Estimates. B.E.- Budget Estimates.

* Fiscal Stress Ratio (FSR) = $\frac{BRG_3}{BRG_1}$

Fiscal Dependency Ratio (FDRs) = $\frac{BRG_1}{TE}$; $\frac{BRG_2}{TE}$; $\frac{BRG_3}{TE}$

See equations 9, 10 and 11 for definitional details of BRG_1, BRG_2 and BRG_3, respectively.

Table 12 : Revenue Deficit: A profile

Fiscal Year	No. of States in Deficit (6 to10)	Consolidated Position Deficit(-) Surplus(+)	Consolidated Deficit(-)/ Surplus(+) to Expenditure Ratio	Deficit Expenditure Ratio (Range) (in per cent)	Frequency Distribution of States in the percentage range of				
					Below 5	5 to 10	10 to 15	15 to 20	20 and above
1	2	3	4	5	6	7	8	9	10
1980-81	3	+	+10.0	2.1 - 5.5	2	1	-	-	-
1981-82	3	+	+8.1	0.6 - 9.2	1	2	-	-	-
1982-83	5	+	+4.4	0.3 - 15.0	3	1	1	-	-
1983-84	7	+	+0.9	1.8 - 19.9	3	1	2	1	-
1984-85	11	(-)	-3.3	1.0 - 17.3	3	5	1	2	-
1985-86	8	+	+2.0	0.1- 7.1	5	3	-	-	-
1986-87	9	+	+0.4	0.6 - 12.5	5	3	1	-	-
1987-88	13	(-)	-2.4	1.9 - 21.1	4	4	4	-	1
1988-89	15	(-)	-3.5	0.1 - 13.1	7	7	1	-	-
1989-90	18	(-)	-6.1	0.9 - 13.5	6	5	7	-	-
1990-91	18	(-)	-7.4	0.4 - 21.6	8	3	4	2	1
1991-92	14	(-)	-6.6	0.8 - 21.9	6	2	4	1	1
1992-93 (R.E.)	14	(-)	-4.3	0.3 - 15.1	5	5	3	1	-
1993-94 (B.E.)	11	(-)	-4.3	0.3 - 19.0	6	-	3	2	-

R.E.- Revised Estimates.
B.E.- Budget Estimates.

Table 13 : Gross Fiscal Deficit: A profile

Fiscal Year	No. of States in Deficit (6to10)	Consolidated Position of GFD/ Expenditure Ratio	Deficit Expenditure Ratio (Range)	No. of States whose GFD Expenditure Ratio> Consolidated Position	Frequency Distribution of States in the percentage range of				
					≤ 25	≥25-30	≥ 30-35	35 and above	Total
1	2	3	4	5	6	7	8	9	10
1980-81	16	18.6	14.0-35.8	11	14	1	-	1	16
1981-82	22	18.0	6.7-32.0	10	18	2	2	-	22
1982-83	21	19.5	9.5-31.3	9	17	1	3	-	21
1983-84	22	20.9	8.1-37.3	6	17	1	1	1	22
1984-85	20	23.0	1.3-36.2	6	15	1	3	1	20
1985-86	20	18.4	6.3-32.6	11	17	2	2	-	20
1986-87	27	19.5	0.9-26.3	9	20	4	-	-	24
1987-88	25	20.3	5.6-35.6	10	17	4	2	2	25
1988-89	25	18.8	0.3-33.9	8	21	2	2	-	25
1989-90	24	21.4	9.1-35.4	10	18	3	2	1	24
1990-91	24	22.0	6.8-38.6	12	15	6	1	2	24
1991-92	24	19.0	.1.2-28.7	9	20	4	-	-	24
1992-93 (R.E.)	23	17.9	3.8-29.5	12	22	1	-	-	23
1993-94 (B.E.)	25	19.1	4.4-31.6	11	22	2	1	-	25

R.E.- Revised Estimates. B.E.- Budget Estimates.

Table 14 : Interest Payments as Proportion of Primary Revenue Balance

Fiscal Year	Number of States with PRB1 negative	Number of States with PRB2 negative	ASPRB1/ ASIP (In Percent)	ASPRB2/ ASNIP (In Percent)	PRB1i/ IPi < 100	Range (In Percent)	PRB2i/ NIPi < 100	Range (In Percent)
1	2	3	4	5	6	7	8	9
1980-81	-	-	221.3	470.6	3	39.1-78.9	3	24.3-75.3
1981-82	-	-	195.8	321.5	3	11.9-92.9	4	11.1-92.7
1982-83	1	1	152.1	224.5	5	(-) 12.9-97.6	6	(-) 66.4-68.6
1983-84	2	4	110.7	126.6	7	(-)121.6-62.5	5	(-) 136.2-62.5
1984-85	7	9	137.5	177.0	11	(-)800.0-64.2	8	(-)1700.0-40.2
1985-86	1	3	122.2	141.5	9	(-) 2.3-99.0	8	(-) 860.6-98.3
1986-87	1	3	104.1	107.0	9	(-) 26.1-99.8	8	(-) 80.0-99.0
1987-88	4	8	77.8	63.1	13	(-)300.0-79.7	14	(-) 372.7-78.1
1988-89	2	7	69.6	49.1	15	(-) 11.4-98.8	16	(-) 43.4-97.6
1989-90	2	9	48.8	19.1	18	(-) 30.9-94.1	17	(-) 205.1-94.1
1990-91	5	7	38.7	15.1	18	(-) 63.9-94.5	18	(-) 75.1-94.6
1991-92	2	4	48.4	-0.1	14	(-)241.8-92.8	11	(-) 167.9-92.1
1992-93	2	3	69.4	55.6	14	(-) 34.5-98.4	14	(-) 83.4-98.3
1993-94	1	1	72.0	62.3	12	(-) 53.7-97.0	12	(-) 96.2-97.0

PRB1 = Primary Revenue Balance 1=Revenue Deficit minus Interest Payments (IP)
PRB2 = Primary Revenue Balance 2=Revenue Deficit minus Net Interest Payments (NIP)
ASPRB1 = All State Primary Revenue Balance 1
ASPRB2 = All State Primary Revenue Balance 2

Table 15 : Own Deficit as Proportion of Expenditure Ratio (per cent)

Fiscal Year	ASOWD/ASEXP in Percent	OWD/EXP i i > ASOWD/ASEXP	Range in Percent	ADOWD/ ASEXP in Percent	ADOWDi/EXPi > ASADOWD/ ASEXP	Range in Percent
1	2	3	4	5	6	7
1980-81	39.4	12	40.4-60.3	16.0	9	19 - 59
1981-82	39.1	13	47.5-97.0	18.0	12	19 - 57
1982-83	39.6	11	46.9-127.8	14.0	11	16 - 59
1983-84	37.6	12	39.3-109.9	20.0	13	21 - 86
1984-85	39.2	12	39.8-85.1	19.0	11	20 - 77
1985-86	39.3	15	39.9-95.7	20.0	13	21 - 53
1986-87	38.9	17	40.9-93.9	17.0	10	20 - 59
1987-88	38.8	15	40.4-96.6	18.0	16	20 - 58
1988-89	38.2	16	40.6-94.2	19.0	15	23 - 54
1989-90	36.6	14	38.6-87.9	15.0	14	19 - 51
1990-91	38.5	17	39.9-85.8	18.0	13	20 - 47
1991-92	35.6	15	38.1-89.7	16.0	14	17 - 54
1992-93	38.6	14	38.8-89.1	16.0	14	18 - 56
1993-94	37.4	15	38.0-86.7	15.0	13	16 - 51

Column 2 gives the Own Deficit/Own Expenditure proportion for the consolidated figure of all States.

Column 3 gives the number of States with the Own Deficit/Own Expenditure proportion higher than Column 2.

The maximum and minimum range of the Own Deficit/Own Expenditure proportion for the States for which it is higher than the consolidated figure is indicated in Column 4.

ASOWD/ASEXP = All State Own Deficit(unadjusted)/Expenditure Proportion.

ASADOWD/ASEXP = All State Own Deficit (adjusted)/Expenditure Proportion.

Table 16 : Fiscal Dependency Ratio : A Profile

Fiscal Year	ASBRG1/ ASTE in Percent	BRG1i/TEi > ASBRG/ ASTE	Range per cent	ASBRG2/ ASTE in Percent	BRG2i/TE i > ASBRG2/ ASTE	Range per cent	ASBRG3/ ASTE in Percent	BRG3i/TEi > ASBRG3/ ASTE	Range per cent
1	2	3	4	5	6	7	8	9	10
1980-81	56	14	57-83	44	14	49-76	26	13	29-59
1981-82	54	13	59-95	46	13	52-86	28	12	34-63
1982-83	54	13	56-95	42	13	43-89	24	13	25-60
1983-84	56	12	58-95	46	12	48-87	29	13	32-85
1984-85	58	12	59-95	46	14	47-91	30	14	33-84
1985-86	56	13	59-96	50	15	51-96	31	14	34-88
1986-87	56	16	61-98	47	16	48-123*	28	15	31-123*
1987-88	56	17	57-95	48	16	51-89	30	16	31-58
1988-89	55	17	59-96	49	17	51-95	31	16	35-56
1989-90	55	16	56-94	47	16	49-102*	27	16	28-56
1990-91	67	17	68-121	57	17	63-101*	35	17	39-61
1991-92	55	16	57-93	45	16	49-95	27	15	28-59
1992-93	56	15	57-95	47	15	48-97	27	17	28-59
1993-94	54	15	59-94	45	16	48-89	27	16	29-56

Columns 2 gives the Basic Resource Gap1/Total Expenditure proportion for the consolidated position of all States.
Columns 5 gives the Basic Resource Gap2/Total Expenditure proportion for the consolidated position of all States.
Columns 8 gives the Basic Resource Gap3/Total Expenditure proportion for the consolidated position of all States.
Columns 3,6 and 9 give the number of States with the BRG/TE proportion higher than Columns 2,5 and 8 respectively.
The maximum and minimum range of the BRG/TE proportion higher than the consolidated figure are indicated in Columns 4,7 and 10.
* The proportion is more than 100 due possibly to negative capital receipts.

Table 17 : Fiscal Stress Ratio (FSR) : A Profile

Fiscal Year	ASFSR (Per cent)	FSRi/ASFSR > 1	Range (Per cent)
1	2	3	4
1980-81	46	13	49 - 72
1981-82	51	12	53 - 69
1982-83	44	12	46 - 78
1983-84	53	12	54 - 77
1984-85	52	11	53 -106
1985-86	56	12	57 - 92
1986-87	50	14	51 - 88
1987-88	52	15	53 - 86
1988-89	56	11	57 - 84
1989-90	50	12	51 - 75
1990-91	52	11	53 - 74
1991-92	49	11	51 - 68
1992-93	49	13	50 - 66
1993-94	50	11	52 - 76

ASFSR = Fiscal Stress Ratio of all States
FSRi = Fiscal Stress Ratio of i th State.

Table 18 : Revenue Deficit(RD) : State-wise placement in the Performance Index(PI)

PERFORMANCE INDEX 1980-87			RANK * 1980-87			PERFORMANCE INDEX 1987-94			RANK * 1987-94		
1	2	3	4	5	6	7	8	9	10	11	12
RDPI>1	RDPI=1	RDPI<1	Special Category States	Non-Special Category States		RDPI>1	RDPI=1	RDPI<1	Special Category States	Non-Special Category States	
WB,JK,Ker, As,Ori,AP, Mah,Raj = (8)	Kar = (1)	Guj,UP, TN,Pun, Bih,MP, Har,Tri, Nag,HP,Sik, Meg,Man=(13)	1 JK	1 WB	9 UP	HP,Guj,UP, WB,Ker,TN, Pun = (7)	Nil	Arp,Sik, Man,Miz, Meg,Tri,Nag HP,As,Goa Har,Jk,Kar AP,Mah,Raj, Bih,Ori = (18)	1 HP	1 Pun	10 Mah
			2 As	2 Ker	10 TN				2 JK	2 TN	11 AP
			3 Tri	3 Ori	11 Pun				3 As	3 Ker	12 Kar
			4 Nag	4 AP	12 Bih				4 Nag	4 WB	13 Har
			5 HP	5 Mah	13 MP				5 Tri	5 UP	14 Goa
			6 Sik	6 Raj	14 Har				6 Meg	6 Guj	15 MP
			7 Meg	7 Kar					7 Miz	7 Ori	
			8 Man	8 Guj					8 Man	8 Bih	
									9 Sik	9 Raj	
									10 Arp		

* : Worked out on the basis of Performance Index according to the order of ranking.

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashmir
Kar : Karnataka
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Raj : Rajasthan
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 19 : Gross Fiscal Deficit(GFD) : State-wise placement in the Performance Index(PI)

PERFORMANCE INDEX 1980-87			RANK * 1980-87			PERFORMANCE INDEX 1987-94			RANK * 1987-94		
1	2	3	4	5	6	7	8	9	10	11	12
GFDPI>1	GFDPI=1	GFDPI<1	Special Category States	Non-Special Category States		GFDPI>1	GFDPI=1	GFDPI<1	Special Category States	Non-Special Category States	
JK,Pun, UP,As,Ori, Raj,Guj, Bih = (8)	WB = (1)	Mah.,Har, MP,Kar,AP, TN,HP,Man, Tri,Sik,Nag, Meg= (13)	1 JK 2 As 3 HP 4 Man 5 Tri 6 Sik 7 Nag 8 Me	1 Pun 2 UP 3 Ori 4 Raj 5 Guj 6 Bih 7 WB 8 Mah	9 Har 10 MP 11 Kar 12 Ker 13 AP 14 TN	Pun,JK,Goa, Ori,UP,HP, Guj,Ker,Bih, Raj,WB = (11)	Nil	TN,Nag,As, Mah,MP,Har, Tri,Kar,AP, Sik,Meg,Man, Arp,Miz = (14)	1 JK 2 HP 3 Nag 4 AS 5 Tri 6 Sik 7 Meg 8 Man 9 Arp	1 Pun 2 Goa 3 Ori 4 UP 5 Guj 6 Ker 7 Bih 8 Raj 9 WB 10 Miz	10 TN 11 Mah 12 MP 13 Har 14 Kar 15 AP

* : Worked out on the basis of Performance Index according to the order of ranking.

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashmir
Kar : Karnataka
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Raj : Rajasthan
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 20 : Fiscal Dependency Ratio(FDR1) : State-wise placement in the Performance Index(PI)

PERFORMANCE INDEX			RANK *			PERFORMANCE INDEX			RANK *		
1980-87			1980-87			1987-94			1987-94		
1	2	3	4	5	6	7	8	9	10	11	12
FDR1PI>1	FDR1PI=1	FDR1PI<1	Special Category States	Non-Special Category States		FDR1PI>1	FDR1PI=1	FDR1PI<1	Special Category States	Non-Special Category States	
Man,Tri, Nag, Sik, JK, HP, As, Ori,Bih,UP,Raj, WB = (13)	Nil	MP, Ker, Pun, AP, TN, Guj, Kar,Har, Mah = (9)	1 Man 2 Tri 3 Nag 4 Meg 5 Sik 6 JK 7 HP 8 As	1 Ori 2 Bih 3 UP 4 Raj 5 WB 6 MP 7 Ker 8 Pun	9 AP 10 TN 11 Guj 12 Kar 13 Har 14 Mah	Tri, Nag, Man, Miz, Arp, Meg, JK,HP,Sik, As,Ori,Bih, UP,Raj,WB, Goa = (16)	Nil	MP, Ker Pun, TN, AP, Kar, Mah, Har = (9)	1 Tri 2 Nag 3 Man 4 Miz 5 Arp 6 Meg 7 JK 8 HP 9 Sik 10 AS	1 Ori 2 Bih 3 UP 4 Raj 5 WB 6 Goa 7 MP 8 Ker 9 Pun	10 TN 11 AP 12 Guj 13 Kar 14 MAh 15 Har

* : Worked out on the basis of Performance Index according to the order of ranking.

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashmir
Kar : Karnataka
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Raj : Rajasthan
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 21 : Fiscal Dependency Ratio(FDR2) : State-wise placement in the Performance Index(PI)

PERFORMANCE INDEX			RANK *			PERFORMANCE INDEX			RANK *		
1980-87			1980-87			1987-94			1987-94		
1	2	3	4	5	6	7	8	9	10	11	12
FDR2PI>1	FDR2PI=1	FDR2PI<1	Special Category States	Non-Special Category States		FDR2PI>1	FDR2PI=1	FDR2PI<1	Special Category States	Non-Special Category States	
Man, Meg, Nag, Tri, Sik, HO, JK,As,Ori, Bih,UP,WB, Raj = (13)	Nil	MP, AP, Ker, Pun, TN, Kar, Kar,Har, Mah = (9)	1 Man 2 Meg 3 Nag 4 Tri 5 Sik 6 AP 7 JK 8 As	1 Ori 2 Bih 3 UP 4 WB 5 Raj 6 MP 7 AP 8 Ker	9 Pun 10 TN 11 Kar 12 Guj 13 Mah 14 Har	Man, Miz, Arp, Tri, Nag, Meg, Sik, As, JK, Orii,Bih, HP<UP, Goa, WB,Raj = (16)	Nil	MP, Pun, AP, Ker, TN, Kar, Guj, Mah, Har = (9)	1 Man 2 Miz 3 Arp 4 Tri 5 Nag 6 Meg 7 Sik 8 As 9 JK 10 HP	1 Ori 2 Bih 3 UP 4 Goa 5 WB 6 Raj 7 HP 8 Pun 9 AP	10 Ker 11 TN 12 Kar 13 Guj 14 Mah 15 Har

* : Worked out on the basis of Performance Index according to the order of ranking.

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashmir
Kar : Karnataka
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Raj : Rajasthan
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 22 : Fiscal Dependency Ratio(FDR3) : State-wise placement in the Performance Index(PI)

PERFORMANCE INDEX 1980-87			RANK * 1980-87			PERFORMANCE INDEX 1987-94			RANK * 1987-94		
1	2	3	4	5	6	7	8	9	10	11	12
FDR3PI>1	FDR3PI=1	FDR3PI<1	Special Category States	Non-Special Category States		FDR3PI>1	FDR3PI=1	FDR3PI<1	Special Category States	Non-Special Category States	
Sik, Man, Meg, Nag, JK, AP, Tri As,Ori,Raj, Bih,UP,Pun, WB = (14)	Nil	AP, MP, Ker, Guj, Har, Kar, Mah,TN = (8)	1 Sik 2 Man 3 Meg 4 Nag 5 JK 6 HP 7 Tri 8 As	1 Ori 2 Raj 3 Bih 4 UP 5 Pun 6 WB 7 AP 8 MP	9 Ker 10 Guj 11 Har 12 Kar 13 Mah 14 TN	Sik, Arp, Meg, As, Man, Nag, Tri,Miz,JK, Ori,AP,Pun, UP,Goa,Bih, Raj,WB = (17)	Nil	Ker, MP, AP, Guj, TN, Kar, Har, Mah, = (8)	1 Sik 2 Arp 3 Meg 4 As 5 Man 6 Nag 7 Tri 8 Miz 9 JK 10 HP	1 Ori 2 Pun 3 UP 4 Goa 5 Bih 6 Raj 7 WB 8 Ker 9 MP	10 AP 11 Guj 12 TN 13 Kar 14 Har 15 Mah

* : Worked out on the basis of Performance Index according to the order of ranking.

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashmir
Kar : Karnataka
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Raj : Rajasthan
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 23 : Fiscal Stress Ratio(FSR) : State-wise placement in the Performance Index(PI)

PERFORMANCE INDEX 1980-87			RANK * 1980-87			PERFORMANCE INDEX 1987-94			RANK * 1987-94		
1	2	3	4	5	6	7	8	9	10	11	12
FSRPI>1	FSRPI=1	FSRPI<1	Special Category States	Non-Special Category States		FSRPI>1	FSRPI=1	FSRPI<1	Special Category States	Non-Special Category States	
Sik, HP, JK, As, Pun, Meg, Man, Nag,Tri, Har,WB, Ori = (13)	Mah = (1)	AP, Ker, Guj, Bih, UP, Kar, MP,TN = (8)	1 Sik 2 HP 3 JK 4 As 5 Meg 6 Man 7 Nag 8 Tri	2 Pun 2 Raj 3 Har 4 WB 5 Ori 6 Mah 7 AP 8 Ker	9 Guj 10 Bih 11 UP 12 Kar 13 MP 14 TN	Pun, Sik, As, Har, Meg, Arp, Ori,Goa, Man,UP, AP = (11)	Raj = (1)	Ker, Guj, Nag, WB, Tri, JK, Mah, Kar,AP,Miz, MP,Bih,TN = (13)	1 Sik 2 As 3 Meg 4 Arp 5 Man 6 Nag 7 Tri 8 JK 9 HP 10 Miz	1 Pun 2 Har 3 Or 4 Goa 5 UP 6 AP 7 Raj 8 Ker 9 Guj	10 WB 11 Mah 12 Kar 13 MP 14 Bih 15 TN

* : Worked out on the basis of Performance Index according to the order of ranking.

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashmir
Kar : Karnataka
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Raj : Rajasthan
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 24 : State-wise Ranking on the basis of Perfomance Index

S.No	States	RD		GFD		FDR1		FDR2		FDR3		FSR	
		I	II	I	II	I	II	I	II	I	II	I	II
Non-Special Category States													
1	Andhra Pradesh	4	11	13	15	9	11	7	9	7	10	7	6
2	Bihar	12	8	6	7	2	2	2	2	3	5	10	14
3	Goa	-	14	-	2	-	6	-	4	-	4	-	4
4	Gujarat	8	6	5	5	11	12	12	13	10	11	9	9
5	Haryana	14	13	9	13	13	15	14	15	11	14	3	2
6	Karnataka	7	12	11	14	12	13	11	12	12	13	12	12
7	Kerala	2	3	12	6	7	8	8	10	9	8	8	8
8	Madhya Pradesh	13	15	10	12	6	7	6	7	8	9	13	13
9	Maharashtra	5	10	8	11	14	14	13	14	13	15	6	11
10	Orissa	3	7	3	3	1	1	1	1	1	1	5	3
11	Punjab	11	1	1	1	8	9	9	8	5	2	1	1
12	Rajasthan	6	9	4	8	4	4	5	6	2	6	2	7
13	Tamil Nadu	10	2	14	10	10	10	10	11	14	12	14	15
14	Uttar Pradesh	9	5	2	4	3	3	3	3	4	3	11	5
15	West Bengal	1	4	7	9	5	5	4	5	6	7	4	10
Special Category States													
1	Arunachal Pradesh	-	10	-	9	-	5	-	3	-	2	-	4
2	Assam	2	3	2	4	8	10	8	8	8	4	4	2
3	Himachal Pradesh	5	1	3	2	7	8	6	10	6	10	2	9
4	Jammu and Kashmir	1	2	1	1	6	7	7	9	5	9	3	8
5	Manipur	8	8	4	8	1	3	1	1	2	5	6	5
6	Meghalaya	7	6	8	7	4	6	2	6	3	3	5	3
7	Mizoram	-	7	-	10	-	4	-	2	-	8	-	10
8	Nagaland	4	4	7	3	3	2	3	5	4	6	7	6
9	Sikkim	6	9	6	6	5	9	5	7	1	1	1	1
10	Tripura	3	5	5	5	2	1	4	4	7	7	8	7

Note : I represents the period 1980-87. II represents the period 1987-94.

Table 25 : Rank Frequency Distribution : State-wise Performance

Items	Non Special Category States 1-5 I	1-5 II	6-10 I	6-10 II	11-15 I	11-15 II	Special Gategory States 1-5 I	1-5 II	6-10 I	6-10 II
RD	WB,Ker, Ori,AP, Mah.	Pun,TN Ker,WB,UP.	Raj,Kar, Guj,UP, TN.	Guj,Ori Bih,Raj, Mah.	Pun,Bih, MP,Har.	Arp,Kar, Har,Goa, MP.	JK,Ass, Tri,Nag. HP	HP,JK, Nag,Ass, Tri.	Sik,Megh, Mani.	Megh,Miz, Mani,Sik, AP.
GFD	Pun,UP, Ori,Raj, Guj.	Pun,Goa, Ori,UP, Guj.	Bih,WB, Mah,Har, MP.	Ker,Bih, Raj,WB, TN.	Kar,Ker, AP,TN.	Mah,MP, Har,Kar. AP.	JK,Ass, HP,Mani, Tri	JK,HP, Nag,Ass, Tri.	Sik,Nag, Megh.	Sik,Megh, Mani,AP, Miz.
FDR1	Ori,Bih, UP,Raj, WB	Ori,Bih, UP,Goa, WB	MP,AP, Ker,Pun, TN	Goa,MP, Ker,Pun, TN	Kar,Guj, Har,Mah.	AP,Guj, Kar,Mah, Har.	Mani,Tri, Nag,Megh, Sik.	Tri,Nag, Mani,Mi AP.	JK,HP, Ass.	Megh,JK, HP,Sik, Ass.
FDR2	Ori,Bih, UP,WB, Raj.	Ori,Bih, UP,Goa, WB.	MP,AP, Ker,Pun, TN	Raj,MP, Pun,AP, Ker.	Kar,Guj, Mah,Har.	TN,Kar, Guj,Mah, Har.	Mani,Megh Nag,Tri, Sik.	Mani,Mi AP,Tri, Nag.	HP,JK, Ass.	Megh,Sik, Ass,JK, HP.
FDR3	Ori,Raj, Bih,UP, Pun.	Ori,Pun, UP,Goa, Bih.	WB,AP, MP,Ker, Guj.	Raj,WB, Ker,MP, Guj.	Har,Kar, Mah,TN.	Guj,TN, Kar,Har, Mah.	Sik,Mani, Megh,Nag, JK.	Sik,AP, Megh,As Mani.	HP,Tri, Ass.	Nag,Tri, Miz,JK, HP
FSR	Pun,Raj, Har,WB, Ori.	Pun,Har, Ori,Goa, UP.	AP,Raj, Ker,Guj, Bih.	AP,Raj, Ker,Guj, WB	UP,Kar, MP,TN.	Mah,Kar, MP,Bih, TN	Sik,HP, JK,Ass, Megh.	Sik,Ass Megh,ArP Mani.	Mani,Nag, Tri.	Nag,Tri, JK,HP, Miz.

Note: See note on Table 24

AP : Andhra Pradesh
Arp : Arunachal Pradesh
As : Assam
Bih : Bihar
Goa : Goa
Guj : Gujarat
Har : Haryana
HP : Himachal Pradesh
JK : Jammu and Kashimir
Ker : Kerala
MP : Madhya Pradesh
Mah : Maharashtra
Man : Manipur
Meg : Meghalaya
Miz : Mizoram
Nag : Nagaland
Ori : Orissa
Pun : Punjab
Sik : Sikkim
TN : Tamil Nadu
Tri : Tripura
UP : Uttar Pradesh
WB : West Bengal

Table 26 : State-wise Revenue Surplus/Deficit

(Rs. crore)

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1 Andhra Pradesh	-104	-80	-132	89	169	8	189	-37	-33	238	157	170	195	74
2 Arunachal Pradesh							-39	-50	-93	-31	-100	-158	-168	-3
3 Assam	-165	37	44	137	136	5	-61	84	62	137	144	-270	-303	-153
4 Bihar	-59	7	38	-72	-107	-298	-346	-190	-277	34	566	885	606	318
5 Goa							1	7	-12	10	-7	10	1	-11
6 Gujarat	-122	-120	-66	-139	-68	70	309	286	126	126	703	576	245	-68
7 Haryana	-59	-50	-44	-76	-29	-106	-163	-17	2	95	20	32	-17	-34
8 Himachal Pradesh	-104	-22	-9	-33	-38	-108	-70	-41	70	61	95	-10	78	188
9 Jammu and Kashmir	15	-3	1	46	71	-7	-42	107	64	123	91	-104	-267	-144
10 Karnataka	-59	-165	-42	-73	144	85	-79	111	38	147	79	179	-105	-384
11 Kerala	28	-96	-27	58	14	74	152	195	164	250	422	364	485	477
12 Madhya Pradesh	-118	-229	-188	-176	-79	-71	-35	59	146	-98	201	44	-305	-483
13 Maharashtra	-121	-147	-210	-71	212	317	1	-74	241	374	55	276	574	357
14 Manipur	-41	-10	-21	-25	-37	-70	-50	-72	-65	-33	-89	-74	-96	-90
15 Meghalaya	-30	-8	-12	-24	-31	-48	-58	-66	-77	-50	-42	-36	-16	-8
16 Mizoram						2	-22	52	-43	-64	-157	-79	-51	-53
17 Nagaland	-52	-7	-6	3	-38	-61	-34	-23	-42	46	5	-6	13	-31
18 Orissa	-81	-28	23	0	74	60	20	75	108	105	20	188	184	36
19 Punjab	-18	-63	-102	-59	9	-7	-90	228	244	221	544	481	499	761
20 Rajasthan	-65	-34	-55	-44	76	2	60	356	219	30	-168	-49	47	245
21 Sikkim	-7	-7	-13	-7	-18	-14	-32	-28	-36	-19	-31	-27	-46	-44
22 Tamil Nadu	-128	-82	-102	-52	-17	-188	-103	283	274	479	553	1,904	1,009	1,385
23 Tripura	-36	-6	-16	-5	-37	-41	-42	-20	-16	-7	2	-16	-27	2
24 Uttar Pradesh	-183	-354	-192	106	147	-175	177	-252	605	1,031	1,228	725	923	1,371
25 West Bengal	23	88	243	206	371	-83	188	115	138	477	1,019	646	659	804
All States	-1,486	-1,379	-888	-211	924	-654	-169	1,088	1,807	3,682	5,310	5,651	4,117	4,512

(-) Indicates Surplus.

Table 27 : State-wise Gross Fiscal Deficit

(Rs.Crore)

	1980-81	1981-82	1982-83	1983-84	1984-84	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1 Andhra Pradesh	222	243	172	493	591	435	804	568	673	972	967	1,125	1,321	1,366
2 Arunachal Pradesh							23	38	1	75	26	-20	-13	178
3 Assam	-28	172	200	328	367	154	243	421	303	528	567	255	111	406
4 Bihar	335	408	435	328	396	326	461	825	535	994	1,595	1,617	1,331	1,521
5 Goa							61	72	64	95	96	125	108	108
6 Gujarat	246	254	376	398	520	514	900	976	735	952	1,798	1,876	1,052	1,087
7 Haryana	112	102	190	133	236	230	170	216	289	393	385	375	423	454
8 Himachal Pradesh	-36	57	74	58	80	35	89	129	254	226	279	224	316	430
9 Jammu & Kashmir	144	135	142	198	248	247	244	417	410	524	661	449	204	575
10 Karnataka	226	117	280	287	564	550	514	518	497	625	558	918	1,043	1,471
11 Kerala	179	61	123	299	232	323	440	448	412	604	799	803	912	1,011
12 Madhya Pradesh	337	238	291	367	493	516	561	725	871	723	1,019	984	854	871
13 Maharashtra	464	489	552	739	1,050	1,234	1,065	1,014	1,277	1,844	1,611	1,657	2,453	2,569
14 Manipur	-6	28	17	26	15	-9	32	17	33	71	40	69	-1	22
15 Meghalaya	-8	16	14	11	2	-8	5	0	10	31	41	72	123	163
16 Mizoram						41	-22	102	11	-3	-94	5	46	47
17 Nagaland	-26	21	29	40	-6	-12	30	60	48	141	102	96	138	84
18 Orissa	135	142	212	193	329	326	372	506	550	574	616	913	856	921
19 Punjab	160	178	183	263	479	566	343	968	833	909	1,242	1,150	1,179	1,497
20 Rajasthan	207	327	274	298	363	343	467	903	736	581	545	792	1,049	1,388
21 Sikkim	6	5	-2	7	-1	12	1	9	11	30	20	41	42	34
22 Tamil Nadu	211	213	327	364	398	365	454	660	654	919	1,126	1,300	1,603	2,028
23 Tripura	-9	25	17	34	12	15	15	62	84	89	86	94	61	156
24 Uttar Pradesh	551	452	582	1,082	1,493	1,058	1,410	1,014	1,802	2,482	3,068	2,837	3,569	3,825
25 West Bengal	290	379	498	413	338	259	587	551	579	1,055	1,634	1,144	1,208	1,483
All States	3,712	4,062	4,986	6,359	8,199	7,520	9,269	11,219	11,672	15,434	18,787	18,901	19,988	23,695

Table 28 : State-wise Primary Revenue Balance (1)

(Rs.crore)

	States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1	Andhra Pradesh	186.00	177.00	244.00	34.00	323.00	183.00	107.00	350.00	406.00	233.00	432.00	525.00	661.00	938.00
2	Arunachal Pradesh							50.00	82.00	103.00	48.00	116.00	179.00	190.00	62.00
3	Assam	195.00	5.00	11.00	-76.00	234.00	98.00	207.00	101.00	157.00	128.00	118.00	363.00	584.00	721.00
4	Bihar	166.00	91.00	86.00	222.00	73.00	520.00	628.00	536.00	655.00	544.00	188.00	119.00	635.00	917.00
5	Goa							20.00	26.00	28.00	16.00	37.00	47.00	60.00	83.00
6	Gujart	191.00	202.00	166.00	256.00	78.00	118.00	-64.00	25.00	266.00	344.00	-172.00	141.00	688.00	1101.00
7	Haryana	96.00	95.00	96.00	135.00	52.00	204.00	296.00	167.00	159.00	111.00	222.00	290.00	383.00	468.00
8	Himachal Pradesh	114.00	34.00	26.00	51.00	-13.00	139.00	112.00	90.00	-1.00	27.00	15.00	158.00	114.00	38.00
9	J&K	18.00	34.00	41.00	11.00	139.00	98.00	144.00	8.00	134.00	89.00	128.00	490.00	626.00	536.00
10	Karnataka	121.00	236.00	120.00	171.00	279.00	77.00	283.00	137.00	253.00	202.00	357.00	336.00	705.00	1056.00
11	Kerla	18.00	153.00	88.00	34.00	135.00	53.00	25.00	18.00	80.00	43.00	-81.00	119.00	48.00	174.00
12	Madhaya Pradesh	195.00	331.00	301.00	262.00	-59.00	204.00	293.00	232.00	251.00	531.00	312.00	564.00	1055.00	1341.00
13	Maharashtra	231.00	293.00	378.00	269.00	464.00	-7.00	440.00	601.00	392.00	383.00	826.00	883.00	785.00	1204.00
14	Manipur	46.00	16.00	26.00	32.00	-25.00	81.00	66.00	90.00	84.00	52.00	120.00	105.00	140.00	137.00
15	Meghalaya	32.00	10.00	15.00	27.00	-25.00	55.00	67.00	76.00	88.00	61.00	60.00	58.00	43.00	42.00
16	Mizoram						6.00	31.00	-39.00	45.00	65.00	190.00	92.00	78.00	85.00
17	Nagaland	55.00	11.00	12.00	5.00	-28.00	74.00	51.00	46.00	69.00	-10.00	38.00	60.00	45.00	94.00
18	Orissa	131.00	95.00	57.00	96.00	175.00	66.00	152.00	132.00	196.00	205.00	345.00	293.00	401.00	644.00
19	Punjab	80.00	137.00	186.00	149.00	161.00	154.00	264.00	-67.00	-25.00	13.00	-212.00	-120.00	-80.00	181.00
20	Rajasthan	145.00	147.00	169.00	171.00	245.00	196.00	195.00	-57.00	158.00	407.00	667.00	665.00	696.00	650.00
21	Sikkim	7.00	8.00	13.00	8.00	-16.00	19.00	35.00	32.00	41.00	26.00	41.00	42.00	65.00	66.00
22	Tamil Nadu	219.00	174.00	203.00	179.00	129.00	350.00	302.00	-44.00	31.00	-113.00	-97.00	-1347.00	-259.00	-484.00
23	Tripura	39.00	10.00	21.00	12.00	-31.00	52.00	55.00	43.00	37.00	35.00	36.00	66.00	89.00	64.00
24	Uttar Pradesh	340.00	531.00	407.00	148.00	485.00	496.00	366.00	946.00	210.00	11.00	51.00	985.00	1212.00	1132.00
25	West Bengal	86.00	29.00	-73.00	-22.00	615.00	358.00	145.00	279.00	311.00	53.00	-392.00	181.00	366.00	343.00
	All States	2,711	2,819	2,593	2,174	3,390	3,594	4,270	3,810	4,128	3,504	3345	5,294	9,330	11,593

Table 29 : State-wise Primary Revenue Balance (2)

(Rs. crore)

	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1 Andhra Pradesh	62.00	38.00	122.00	-117.00	143.00	0.00	-84.00	161.00	-162.00	-160.00	-27.00	-114.00	69.00	248.00
2 Arunachal Pradesh							50.00	78.00	101.00	47.00	114.00	176.00	186.00	59.00
3 Assam	195.00	4.00	8.00	-79.00	233.00	93.00	196.00	96.00	156.00	125.00	117.00	361.00	582.00	719.00
4 Bihar	165.00	83.00	83.00	221.00	72.00	515.00	623.00	530.00	649.00	538.00	181.00	112.00	628.00	899.00
5 Goa							19.00	25.00	25.00	11.00	31.00	41.00	58.00	82.00
6 Gujart	96.00	124.00	38.00	101.00	-111.00	-60.00	-305.00	-184.00	-21.00	-128.00	-252.00	-361.00	218.00	781.00
7 Haryana	61.00	55.00	49.00	82.00	-16.00	130.00	215.00	5.00	82.00	-3.00	95.00	150.00	288.00	359.00
8 Himachal Pradesh	112.00	33.00	25.00	49.00	-15.00	135.00	107.00	84.00	-8.00	22.00	9.00	152.00	111.00	34.00
9 J&K	6.00	20.00	25.00	-3.00	122.00	81.00	123.00	-18.00	105.00	57.00	97.00	442.00	576.00	477.00
10 Karnataka	33.00	143.00	11.00	49.00	137.00	-68.00	111.00	-50.00	47.00	-45.00	121.00	105.00	345.00	614.00
11 Kerla	9.00	149.00	78.00	24.00	104.00	29.00	-11.00	-20.00	54.00	25.00	-102.00	100.00	21.00	139.00
12 Madhaya Pradesh	145.00	262.00	221.00	169.00	-70.00	184.00	213.00	142.00	108.00	380.00	186.00	510.00	711.00	1112.00
13 Maharashtra	131.00	173.00	232.00	90.00	237.00	-284.00	99.00	207.00	-73.00	-171.00	167.00	100.00	-118.00	188.00
14 Manipur	46.00	16.00	26.00	31.00	-25.00	79.00	64.00	88.00	82.00	51.00	120.00	103.00	139.00	136.00
15 Meghalaya	31.00	10.00	14.00	26.00	-27.00	53.00	64.00	72.00	83.00	54.00	54.00	52.00	40.00	40.00
16 Mizoram						6.00	31.00	-41.00	45.00	65.00	188.00	91.00	77.85	84.80
17 Nagaland	55.00	11.00	12.00	5.00	-28.00	74.00	51.00	46.00	69.00	-10.00	38.00	59.00	44.00	93.00
18 Orissa	122.00	88.00	44.00	74.00	153.00	55.00	139.00	123.00	181.00	199.00	337.00	259.00	325.00	608.00
19 Punjab	60.00	113.00	148.00	108.00	110.00	92.00	203.00	-138.00	-94.00	-61.00	-280.00	-1564.00	-182.00	69.00
20 Rajasthan	100.00	84.00	93.00	83.00	175.00	118.00	110.00	-185.00	41.00	285.00	550.00	383.00	213.00	225.00
21 Sikkim	7.00	8.00	12.00	8.00	-17.00	19.00	34.00	32.00	40.00	25.00	38.00	40.00	64.00	65.00
22 Tamil Nadu	85.00	126.00	155.00	127.00	70.00	284.00	228.00	-127.00	-8.00	-201.00	-187.00	-2118.00	-459.00	-679.00
23 Tripura	38.00	10.00	21.00	12.00	-31.00	50.00	53.00	41.00	36.00	35.00	35.00	65.00	88.80	63.76
24 Uttar Pradesh	258.00	441.00	281.00	-3.00	324.00	316.00	152.00	650.00	-25.00	-271.00	-251.00	686.00	809.00	731.00
25 West Bengal	70.00	11.00	-97.00	-54.00	584.00	328.00	97.00	246.00	268.00	1.00	-437.00	143.00	320.00	294.00
All States	1,887	2,002	1,601	1,003	2,124	2,229	2,582	1,863	1,741	870	942	-27	5,154.65	7,441.56

(-) Indicates Deficit.

Table 30 : State-wise Own Deficit (Unadjusted)

(Rs. crore)

States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1 Andhra Pradesh	569	585	636	836	1,013	1,023	1,299	1,116	1,345	1,568	2,168	2,443	2,750	2,860
2 Arunachal Pradesh							156	280	250	270	308	376	408	572
3 Assam	122	345	406	564	694	811	882	1,009	1,009	1,241	1,341	1,797	1,770	1,880
4 Bihar	807	1,003	1,111	1,044	1,055	1,279	1,414	1,596	2,016	2,237	2,944	3,322	3,650	4,045
5 Goa							105	30	194	139	166	179	166	163
6 Gujart	462	454	439	550	684	754	496	1,320	981	819	880	759	,1406	1,260
7 Haryana	158	177	199	24	284	266	324	276	320	351	369	394	586	599
8 Himachal Pradesh	97	212	217	390	311	372	424	515	653	636	677	762	942	819
9 J&K	221	254	279	335	450	571	655	746	851	986	1,417	1,508	1,644	1,726
10 Karnataka	350	312	424	495	782	696	854	657	826	1,062	844	1,299	2,076	2,328
11 Kerla	312	248	302	499	481	506	728	484	646	649	1,010	1,053	1,341	1,364
12 Madhaya Pradesh	701	621	725	834	963	1,001	1,198	1,213	1,802	1,425	2,010	2,475	2,643	2,896
13 Maharashtra	730	730	818	1,057	1,284	1,337	1,439	1,333	1,395	1,650	1,967	1,488	2,167	2,309
14 Manipur	70	82	184	114	151	181	225	245	287	343	362	423	386	422
15 Meghalaya	56	89	93	120	121	144	188	221	245	284	304	369	456	553
16 Mizoram						155	31	259	291	193	182	383	391	394
17 Nagaland	46	128	139	178	166	216	281	350	354	356	436	501	571	496
18 Orissa	378	402	635	442	631	545	878	857	922	1,212	1,376	1,553	2,035	2,094
19 Punjab	200	175	254	207	543	698	674	945	916	958	1,228	1,295	1,438	1,335
20 Rajasthan	445	556	502	486	445	802	916	1,382	1,199	1,107	1,599	1,661	2,221	2,547
21 Sikkim	34	39	39	43	61	79	91	106	114	105	111	165	212	200
22 Tamil Nadu	453	489	603	788	841	860	964	1,195	1,278	1,564	1,883	2,473	2,505	2,899
23 Tripura	70	111	112	138	147	192	247	315	414	366	466	552	571	676
24 Uttar Pradesh	1,232	1,358	1,491	1,503	2,238	2,442	2,371	3,013	3,317	4,126	5,273	5,789	6,447	6,695
25 West Bengal	572	755	949	848	721	1,016	1,254	1,226	1,379	1,632	2,292	2,062	2,407	2,651
All States	8,085	9,125	10,557	11,495	14,066	15,946	18,094	20,689	23,004	25,279	31,613	35,081	41,189	43,783

Table 31 : State-wise Own Deficit (adjusted)

(Rs. crore)

	States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1	Andhra Pradesh	245.26	213.37	297.24	317.45	517.75	358	423.16	442.4	570.93	529.64	887.18	1,122.4	1,115.3	1,021.6
2	Arunachal Pradesh							74.86	111.75	130.84	123.43	182.42	225.1	268.5	253.3
3	Assam	-25.39	182.31	136.92	394.15	433.04	543.98	404.48	542.03	609.36	717.53	725.03	1,098.3	985.8	719.3
4	Bihar	250.48	281.1	392.6	497.69	410.25	725.64	472.33	436.2	755.06	577.49	892.7	1,097.3	1,009.1	1,186.9
5	Goa							61.27	91.66	100.56	105.09	63.36	13.1	16.7	15.6
6	Gujart	192.02	204.69	222.48	324.59	346.93	392.72	463.36	833.13	612.28	551.38	584	419.5	422.3	169.4
7	Haryana	73.64	103.79	22.88	-6.74	145.13	147.66	221.27	160.6	214.78	120.43	237.66	186.4	256.5	283.4
8	Himachal Pradesh	30.44	133.45	144.9	306.21	170.49	253.78	215.24	339.09	331.33	304.28	425.3	355.8	386.7	408.3
9	J&K	152.15	163.69	200.39	249.22	285.39	351.07	397.52	366.57	562.68	535.14	483.35	417.1	693.2	270
10	Karnataka	110.96	127.75	138.04	183.9	302.28	420.68	323.18	245.73	325.25	449	420.71	522.1	927.1	1147
11	Kerla	81.7	72.99	62.18	281.19	236.78	88.44	176.91	209.45	170.03	170.12	448.54	390.3	635.2	716.2
12	Madhaya Pradesh	348.59	271.97	190.16	398.7	400.91	509.43	453.75	544.89	762.48	485.66	807.8	1,180.1	849	1,163.3
13	Maharashtra	337.89	371.03	365.67	532.93	724.96	815.41	856.8	756.74	802.87	840.65	1,087.46	1,118.7	773.7	536.3
14	Manipur	24.98	47.47	71.68	104.14	81.85	111.72	108.69	121.8	165.36	162.25	201.8	188.3	176.5	183.5
15	Meghalaya	21.5	54.74	55.3	80.61	76.34	77.34	102.95	135.7	164.93	166.48	166.55	181.8	208.7	277.3
16	Mizoram					5.86	141.78	49.93	76.24	156.76	135.49	16.85	172.5	176.2	163.8
17	Nagaland	10.38	75.66	66.28	101.94	79.58	136.1	171.11	198.89	196.19	138.11	186.1	201.2	173	281
18	Orissa	145.85	174.7	244.56	306.85	229.9	263.67	307.94	374.88	501.61	509.24	750.86	604.1	895.3	1154
19	Punjab	116.16	133.61	68.9	66.3	284.99	614.94	482.14	642.98	885.74	754.16	986.34	817.5	885.5	890.6
20	Rajasthan	255.23	360.22	18.98	239.98	176.39	464.73	507.12	765.64	779.27	308.79	492.37	782.1	1,008.9	1,023.5
21	Sikkim	24.6	22.68	27.62	37.52	59.89	55.78	68.46	75.37	83.03	81.98	77.87	95.7	134.8	130.8
22	Tamil Nadu	164.59	182.24	219.85	366.3	378.24	290.2	357.88	552.87	476.03	619.41	867.72	1,000.1	995.8	960.4
23	Tripura	27.32	46.34	60.59	79.86	93.74	104.66	132.47	160.47	234.92	177.49	217.29	224.2	243.2	323.8
24	Uttar Pradesh	510.1	526.06	584.16	731.79	1,215.84	1,141.67	682.28	1,174.42	1,620.29	1,591.91	2,577.44	2,753.7	2,805.1	3,017.6
25	West Bengal	221.65	458.15	229.14	420.19	224.49	150.99	288.75	197.61	447.82	517.38	1,091.15	651.9	850.23	1,061.8
All States		3,320.1	4,208.01	3,820.52	6,014.77	6,881.02	8,160.39	7,803.85	9,557.11	11,660.4	10,672.53	14,877.85	15,819.3	16,892.33	17,358.7

Table 32 : State-wise Basic Resource Gap 1

(Rs. crore)

	States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1	Andhra Pradesh	804.63	865.71	864.91	1,312.6	1,573.55	1,584.29	2,103.11	1,970.74	2,276.91	2,668.45	3,156.55	3,722.39	4,219.4	4,507.5
2	Arunachal Pradesh							204.57	320.3	294.1	353.43	354.4	389.64	447.2	632.8
3	Assam	427.74	470.32	509.18	728.27	892.51	881.87	1,077.96	1,386.44	1,399.74	1,717.29	1,991.28	1,988.69	2,423.58	2,879.1
4	Bihar	1,418.48	1,376.12	1,363.38	1,472.89	1,605.45	1,895.66	2,166.9	2,563.1	2,653.11	3,316.5	4,306.3	4,953.1	5,402.4	5,948.8
5	Goa							155.55	170.22	168.7	195.7	241.28	266.08	262.8	270.8
6	Gujarat	725.29	715.99	940.8	1,006.95	1,151.12	1,222.94	1,501.26	2,108.4	1,929.92	1,872.32	2,666.31	2,879.44	3,333.8	3,007.2
7	Haryana	254.14	267.92	420.06	414.57	500.14	555.07	646.98	619.98	729.46	764.19	816.39	880.72	1,076.1	1,189.1
8	Himachal Pradesh	202.83	224.75	267.17	282.41	373.79	448.78	501.91	635.71	799.61	766.75	897.88	2,073.46	1,274.9	1,422.1
9	Jammu and Kashmir	311.71	411.36	380	487.5	611.4	707.03	794.13	1,033.23	1,165.9	1,392.5	1,788.4	2,005.5	1,999.5	2,440.9
10	Karnataka	625.11	557.42	798.98	926.22	1,358.89	1,460.92	1,447.27	1,585.94	1,633.95	1,966.51	2,129.04	2,726.52	3,007.2	3,596.1
11	Kerala	418.85	479.1	441.85	716.56	817.03	1,096.12	1,184.34	1,137.13	1,273.97	1,481.87	1,827.56	2,095.86	2,421.69	2,450.44
12	Madhya Pradesh	939.97	850.98	984.9	1,207.48	1,411.24	1,608.14	1,850.85	2,158.49	2547.1	2,442.01	3,301.23	3,480.24	3,936.6	4,125.2
13	Maharashtra	,1045.13	1,201.21	1,350.88	1,712.74	2,250.89	2,378.86	2,502.06	2,525.09	3,056.74	3,765.82	3,857.98	4,309.88	5,477.09	5,683.99
14	Manipur	126.87	122.33	129.9	150.03	210.19	228.92	274.58	287.69	356.39	389.36	412.2	497.2	491.7	492.8
15	Meghalaya	74.59	88.43	103.21	123.43	139.48	160.75	198.69	226.83	269.65	299.64	350.67	427.41	528.6	634.3
16	Mizoram						170.8	53.49	290.95	276.42	285.39	366.35	380.06	455.7	448.7
17	Nagaland	109.76	120.1	149.44	194.83	181.6	252.7	316.3	406.1	419.2	482.7	507.8	602.4	812.4	591.7
18	Orissa	610.56	555.73	912.98	669.39	932.24	994.17	1,233.65	1,447.31	1,624.39	1,752.62	2,181.45	2,707.13	3,107.29	3,223.37
19	Punjab	375.05	448.76	484.45	733.87	994.26	1,099.87	824.07	1,493.87	1,404.25	1,415.65	1,852.95	1,823.76	2,087.6	2,711.3
20	Rajasthan	690.88	871.87	796.86	876.56	1,069.97	1,250.79	1,603.86	2,241.77	2,159.65	2,023.01	2,691.5	3,529.16	3,564.31	4,060.01
21	Sikkim	35.5	36.84	35.62	55.38	60.7	87.13	93.39	109.16	130.19	134.97	145.39	187.79	239.6	228.9
22	Tamil Nadu	815.06	1,019.8	1,112.83	1,416.77	1,435.74	1,521.86	1,601.29	2,137.8	2,288.53	2,779.91	3,115.79	4,747.17	4,117.82	4,610.22
23	Tripura	107.19	109.74	127.01	166.02	186.2	237.46	274.39	364.52	457.76	486.9	567.97	630.75	654.1	786.5
24	Uttar Pradesh	1,779.49	,1824.86	2,186.06	2,718.72	3,660.98	3,515.73	4,724.1	4,280.69	5,308.62	6,364.84	8,300.44	8,665.31	10,149.6	10,721.4
25	West Bengal	882.46	1,082.99	1,269.17	1,254.11	1,628.54	1,664.38	2,122.72	2,310.88	2,353.87	2,731.35	3,674.79	3,498.16	4,701.4	4,568.3
	All States	12,781.29	1,3702.33	15,629.64	18,627.3	23,045.91	25,024.24	29,457.42	33,812.34	36,978.13	41,849.68	51,501.9	59,467.82	66,192.38	71,231.53

Table 33 : State-wise Basic Resource Gap 2

(Rs. crore)

	States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1	Andhra Pradesh	696.53	760.21	882.51	1051	1,314.35	1,363.89	1,662.81	1,783.14	2,067.21	2,249.35	2,953.65	3,498.59	3,816.9	40,16.9
2	Arunachal Pradesh							174.37	284.8	294.3	282.93	354.9	420.04	485.5	472.3
3	Assam	349.74	402.32	351.18	646.77	795.91	1,025.87	1,095.76	1,285.34	1,549.34	1,784.99	1,992.08	1,941.59	2,420.98	2,517.5
4	Bihar	875.78	967.02	1,169.48	1,405.59	1,476.85	2,128.76	2,090.4	2,191.9	2,753.71	3,103.3	3,754.4	4,525.1	4,957.5	5409
5	Goa							150.55	186.92	182.5	184.4	244.58	180.98	192.4	203.3
6	Gujarat	517.99	562.79	629.8	720.85	873.72	987.84	972.36	1,694.4	1,584.92	1,565.82	1,513.91	1,542.64	2,311.9	2,194.5
7	Haryana	199.84	242.52	210.56	226.37	367.84	405.17	596.88	495.08	597.16	514.99	668.09	726.72	858	974.8
8	Himachal Pradesh	179.23	210.55	194.57	400.41	325.19	469.88	461.41	587.31	629.41	646.65	834.38	832.06	929.3	978.5
9	Jammu and Kashmir	272.71	301.66	349:1	426.4	574.1	682.63	786.83	881.53	1,094.2	1,277.1	1,425.3	1,488.2	1,850.9	1,590.1
10	Karnataka	444.61	474.42	544.48	670.52	933.39	1156.92	1112.37	1,126.34	1,316.25	1,606.71	1,667.34	1,939.72	2,575.2	2,910.4
11	Kerala	300.75	446.8	339.35	632.96	762.53	783.22	902.54	911.73	1,049.27	1,148.57	1,450.76	1,724.96	2,043.99	2,047.44
12	Madhya Pradesh	773.07	749.38	716.1	1,007.48	1,054.04	1,385.64	1,516.95	1,738.69	2099.1	2,107.61	2,618.43	3,243.24	3,234.9	3,680.5
13	Maharashtra	816.43	956.11	1,040.58	1,328.74	1,597.59	1,786.06	2,103.46	2,106.39	2,355.24	2,768.82	3,184.68	3,753.88	3,813.79	3,850.09
14	Manipur	120.67	110.93	122.1	131.43	168.89	237.02	244.48	277.09	332.09	349.46	425	442.9	499.3	477.4
15	Meghalaya	68.79	85.33	93.91	120.53	146.28	172.25	199.19	235.63	277.25	295.14	325.97	372.81	429.5	507.4
16	Mizoram					5.9	156.4	66.79	189.65	271.92	310.59	361.15	380.46	410.5	408.7
17	Nagaland	104.16	111.4	126.64	176.83	178.4	274.4	315.3	351.4	380.6	360.2	460.3	525.6	675.6	608.3
18	Orissa	505.26	492.23	709.38	726.59	748.44	845.27	1,032.85	1,139.71	1,361.49	1,579.12	2,054.25	2,274.13	2,706.09	3,000.07
19	Punjab	279.45	353.76	357.75	484.17	743.06	1,030.97	882.97	1,172.47	1,370.35	1,282.05	1,657.05	1,540.26	1,765.7	2,488.6
20	Rajasthan	632.78	800.97	440.66	721.16	8,65.87	1,078.79	1,366.06	1,764.67	1,928.75	1,715.41	2,359.4	2,610.46	3,071.01	3,244.91
21	Sikkim	32.6	34.24	37.42	52.28	66.7	80.83	98.59	104.96	128.89	130.37	142.69	160.59	210.8	208.2
22	Tamil Nadu	591.46	648.4	757.33	1,023.47	1,083.94	1,190.86	1,329.79	1,693.5	1,744.03	2,166.31	2,583.39	2,996.77	3,379.82	3,499.62
23	Tripura	98.59	92.44	116.91	142.12	186.4	232.36	272.69	320.02	409.96	448.2	531.57	574.45	619.9	699.7
24	Uttar Pradesh	1,434.09	1,654.76	1,850.96	2,095.42	2,872.88	3,198.43	3,115.3	4,138.49	4,730.72	5,451.94	6,888.04	7,724.01	8,584.8	9,238.4
25	West Bengal	765.56	1,104.59	896.37	1,191.41	1,297.64	1,551.48	1,842.02	2,025.18	2,263.27	2,389.65	3,080.89	3,247.96	3,714.7	4,097.4
	All States	10,060.09	11,562.83	11,937.14	15,382.5	18,439.91	22,224.94	24,392.72	28,686.34	32,771.93	35,719.68	43,532.2	48,668.12	55,558.98	59,324.03

Table 34 : State-wise Basic Resource Gap 3

(Rs. crore)

	States	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
1	Andhra Pradesh	392.83	421.63	514.84	585.71	847.76	756.8	893.51	1,007.72	1,231.89	1,265.51	1,645.26	2,086.59	2,184.3	2,242.2
2	Arunachal Pradesh							100.05	158.61	160.36	170.74	207.95	263.14	293.8	290.7
3	Assam	251.44	289.22	225.19	505.61	605.17	747.69	680.81	836.09	980.69	1,156.7	1,316.36	1,245.49	1,597.78	1,680.5
4	Bihar	435.08	473.96	633.05	797.15	810.04	1,226.67	1,050.67	1,121.4	1,498.97	1,469.35	1,884.41	2,348.6	2,358.8	2,625.6
5	Goa							102.65	146.32	125.45	141.59	106.67	82.58	83.8	91.7
6	Gujarat	299.35	354.69	382.97	494.15	567.52	694.36	734.79	1,277.58	1,176.85	1,137.02	1,206.18	1,230.24	1,413.5	1,274.3
7	Haryana	129.62	172.07	137.96	136.11	274.34	317.78	497.65	385.74	474.63	359.47	479.73	504.22	601.2	674.9
8	Himachal Pradesh	116.99	144.22	157.6	326.11	198.92	301.77	267.62	396.71	406.5	387.71	531.75	491.16	537.4	580.2
9	Jammu and Kashmir	206.61	217.95	271.5	343.82	409.49	462.7	528.37	547.61	805.88	826.24	766.64	818.7	940	870.3
10	Karnataka	245.9	250.66	304.38	392.92	634.49	800.12	697.96	668.23	804.03	967.63	981.39	1,131.82	1,631.9	1,897.7
11	Kerala	145.27	275.27	153.39	418.55	513.45	459.11	540.94	605.17	601.11	662.36	877.25	1,120.66	1,333.79	1,342.94
12	Madhya Pradesh	456.2	396.37	343.9	544.81	590.24	806.6	829.13	934.37	1,240.7	1,047.27	1,479.24	1,904.04	1,653.2	2,008.6
13	Maharashtra	480.03	587.48	618.68	843.23	1,067.79	1,272.74	1481.37	1,418.5	1,594.28	1,743.32	2,078.31	2,462.58	2,309.19	2,239.49
14	Manipur	82.25	70.87	79.41	111.16	100.31	144.35	140.02	156.17	195.99	200.62	237.33	234.4	266.6	240.1
15	Meghalaya	43.27	57.06	63.7	87.17	92.62	90.54	114.81	145.09	176.22	182.29	186.16	217.21	252.6	328.4
16	Mizoram					5.9	156.4	66.79	97.79	160.38	146.86	185.95	185.46	192.3	185.9
17	Nagaland	59.21	83.09	72.86	119.41	91.98	164.72	196.1	231.73	233.5	183.4	243.49	287.6	408	338.3
18	Orissa	279.32	280.84	371.34	479.1	453.23	513.42	574.01	703.34	898.25	947.86	1,299.06	1,325.93	1,592.39	1,913.87
19	Punjab	197.25	261.56	258.55	339.56	621.46	858.34	724.34	996.94	1,184.61	1,059.27	1,375.91	1,189.86	1,298.8	2,056.7
20	Rajasthan	454.4	599.24	217.85	466.46	598.69	727.52	980.11	1,277.05	1,394.53	931.29	1,377.13	1,477.06	1,801.51	1,928.41
21	Sikkim	25.48	24.84	27.91	42.89	64.4	56.97	71.33	80.03	90.99	93.63	99.89	112.89	154.9	151.8
22	Tamil Nadu	295.89	318.9	400.29	598.5	617.12	619.99	729.12	1,028.69	1,014.85	1,212.33	1,567.11	1,763.57	1,905.12	1,994.52
23	Tripura	60.13	51.35	68.63	89.22	109.42	126.52	152.06	187.17	262.46	263.43	271.97	284.45	308.8	389.9
24	Uttar Pradesh	777.96	889.65	1,028.57	1,348.6	1,879.21	1,856.07	1,654.43	2,274.03	2,907.69	3,097.48	4,258.46	4,777.81	5,135.7	5,690.9
25	West Bengal	445.43	749.95	515.3	755.49	787.47	743.47	970.73	1,022.67	1,235.39	1,356.5	1,971.8	1,804.06	2,192.4	2,488.3
	All States	5,879.91	6,970.87	6,847.87	9825.73	11,941.02	13,904.65	14,779.37	17,704.75	20,856.2	21,009.87	26,635.4	29,350.12	32,447.78	35,526.23

Reserve Bank of India Occasional Papers
Vol. 15, No. 4 December, 1994

BOOK REVIEWS

Saving and Investment in a Global Economy, by Barry P. Bosworth, The Brookings Institution, Washington, D.C., 1993, Pp. xi + 188, Price : not stated

The emergence during the 1980s of large trade imbalances among major industrial economies caused a lot of public discussion. While much of the public discussion has emphasized microeconomic causes - specially, what Americans perceive as the unfair trade practices of other countries, Barry Bosworth's analysis shows that the imbalances can be traced to macroeconomic changes in saving and investment in the major industrial economies. The experience of a large number of industrial economies, treating each as a separate sample is examined.

The basic theme of the book is that the conventional model of international macroeconomics works surprisingly well in explaining economic developments through the 1980s. The major principle that emerges from the empirical analysis is that exchange rate changes are an effective means of altering trade flows. While variations in real exchange rates are found to have powerful effects on trade flows, these results do not suggest an integration of international markets in goods and services sufficiently enough to support a fixed exchange rate regime. Without the ability to vary exchange rates, the realignment of the trade balance to shifts in saving - investment balances would be highly disruptive domestically, requiring large variations in relative rates of domestic inflation and employment.

Much of the controversy over the causes of external current account imbalances and their implications for economic policy has arisen because there are alternative ways of viewing the current account itself. If it is defined as the difference between receipts (exports) and payments (imports) to foreigners, for example, attention is drawn to factors that have a direct effect on trade flows, such as trade policies, relative prices, and domestic and foreign income growth.

The external current account can also be defined as the difference between a nation's saving and its domestic investment, which leads to a completely different set of concerns about the causes of changes in do-

mestic saving and investment. This definition underlies the so-called twin deficits view, according to which the swelling U.S. budget deficit of the 1980s and the reduction of national saving were the primary causes of the current account deficit.

Still a third definition sees the current account as a change in a country's net foreign assets. Within the overall balance of payments, any surplus or deficit on the current account must be matched by an equivalent and offsetting financial flow on the capital side of the accounts. Therefore, disturbances in the current account balance could be viewed as the product of changes within capital markets. A definition that emphasizes the capital side of the balance of payments focuses on factors such as differences in the levels of national interest rates, financial deregulation and capital flight—all of which lead investors to alter their allocations of investments as between domestic and foreign assets.

All the three concepts are equally relevant measures of the current account. Each focusses on particular aspects of a system in which events in both the domestic and international economies interact and influence the current account.

The Mundell-Fleming model is widely used as a basic analytical framework for illustrating the role of macroeconomic policies in a global system of interrelated economies. This indeed was outlined in the second chapters of the book, which has, besides the introduction, four chapters in all. The Mundell-Fleming model is a direct extension of IS - LM analysis popularized by J.R. Hicks to examine the determination of aggregate demand in a closed economy. The two major additions to the IS - LM type of approach are the introduction of the real exchange rate as a determinant of net exports and the use of accounting requirement for balance of payments equilibrium as a framework for inclusion of forces that determine the exchange rate.

Chapter 3 (International Trends in Saving and Investment) highlights recent changes in the pattern of domestic saving and investment in the industrial countries. It also examines the international consistency of a variety of explanations that have been put forth to explain the decline in the rates of saving and investment. In summary there are some regularities in the behaviour of private saving and investment that should have strong implications for the current account balance. In particular, episodes of high output growth should be reflected in external current account deficits, and surpluses should emerge during periods of low growth.

Such a pattern does not emerge on a regular basis, however, because of offsetting actions of governments to alter the public sector saving balance. It remains unclear whether the actions of governments are a predictable response to slow growth and rising unemployment in the domestic economy, or a reflection of a desire to maintain current account balance at near zero position.

The effort in Chapter 4 (Exchange Rate Mechanics : Some Empirical Tests) has been to account for observed changes in exchange rates : this, however, yielded mixed results. Despite the emphasis in the current literature on the failure of PPP to hold in its most rigid form, differences in the rate of domestic price inflation have a marked effect on nominal exchange rate. Price level differentials had consistently significant coefficients in the equations explaining the nominal exchange rate. On the other hand, it proved more difficult to verify the effect of interest rate differentials on the exchange rate. However, the United States stood out as providing the strongest support for orthodox explanations of changes in exchange rates. It was possible to account for a large proportion of the variation in the US dollar's value over the 1970s and 1980s, although the sharp currency appreciation of late 1984 and early 1985 is not fully explained. Many recent explanations for the difficulties encountered in empirical studies of exchange rates have emphasized the role of events that alter investors' judgement of the long run equilibrium rate. An example is provided by the sharp variations in oil prices.

The argument in this volume is that variations in real exchange rates are an integral part of the process by which the external balance is realigned with changed domestic balance of saving and investment. The process by which changes in the domestic balance are reflected in the external balance, namely, through changes in incomes and relative prices, is examined in Chapter 5 (Income and Price Elasticities in International Trade). During the '80s it became fashionable to be an "elasticity pessimist", which meant providing reasons to expect trade flows to be unresponsive to changes in the relative prices of domestic vis-a-vis foreign goods. This pessimism arose in response to the small initial adjustment in the U.S. current account that occurred after 1985 in the face of what was perceived to be large changes in the value of the dollar. Some, therefore, advocated a managed trade policy, on the ground that the existing adjustment process was not working in view of the insensitivity of exports and imports of some countries, such as Japan, to exchange rate changes. The exports and imports of these economies, it was alleged, are controlled by strategic goals of trade policy rather than prices in the

market. However, the final chapter provides that it is possible to account for a large proportion of the variation in the exports of the industrial countries by means of simple regressions that emphasize changes in foreign demand and real exchange rates. The estimates of the price elasticities are nearly always statistically significant; but, with long-run elasticities in the range of 0.5 to 1.0, they fall far short of the expected implication that domestic and foreign-produced goods are perfect substitutes. Income elasticities for both exports and imports differ substantially among the countries under investigation. The difference was most pronounced on the export side. The income elasticities of imports are generally above 2.0 when the activity variable is GDP. A large coefficient is consistent with the fact that imports have also grown more rapidly than GDP in the long run. However, it may be argued that GDP which includes both tradables and non-tradables, systematically understates the variation in the demand for the market basket of tradables of which imports is a component. As an alternative, industrial production is substituted for GDP in the import demand equations. With industrial production substituted for GDP, the income elasticities are much lower.

It may not be out of place to stress that growth of any country's imports largely reflects the strength of its domestic demand. Several studies confirm that the most important factor explaining swings in external trade balances in recent years has not been exchange rates, but relative rates of growth in domestic demand. However, Bosworth has done a good job of integrating the two perspectives on external balance, namely, the saving-investment and price-spending approaches. The theoretical discussion along with the empirical work make this volume worthy of consideration by both academics and policy makers.

T.K. Chakrabarty*

---

* Dr. T.K. Chakrabarty is Director in the Department of Economic Analysis and Policy.

Reserve Bank of India Occasional Papers
Vol. 15, No. 4 December, 1994

Indian Banking Industry : Growth and Trends in Productivity, by Jagwant Singh, Deep & Deep Publications 1993, New Delhi 110 027, Pp. xiv + 233, Price Rs. 225

Commercial banking in India is undergoing a rapid transformation in recent years, especially following the far reaching policy measures that were taken after the release of the Narasimham committee report. In fact, the balance sheets have been made more transparent and banks are encouraged to improve, now than ever before, their overall efficiency, productivity and profitability. The book under review appearing as it does in these contextual circumstances would *prima facie* carry some inherent weakness but, speaking objectively, the author could not have had the current information and facts at the time of its completion. As the book's focus was on the period 1969 to 1985, the author's judgements were essentially tempered by the policy ambience of this period.

Although a substantial progress has been made in the understanding and application of the concept of productivity in banking and the measurement of it in developed countries, similar progress is conspicuously missing in Indian banking. There were however, a few attempts in the past to measure productivity in Indian banking. As early as 1972 the Banking Commission provided perhaps the first view on the subject. This was followed by the Productivity, Efficiency and Profitability (PEP) Committee in 1977. It is against this backdrop, the attempt to study the productivity aspect of Indian banking provides important clues to an understanding of the problem, notwithstanding the fact that the book under review focuses on this aspect only for the period 1969-1985. The book deals usefully with the cross sectional and inter temporal analysis of the public sector banks i.e., State bank group and the 14 nationalised banks even though it does not cover the six banks that were nationalised in 1980.

The book uses seventeen indicators (ratios) broadly grouped under labour productivity, branch productivity and financial performance. The ratios used were per employee and per branch deposits, credit, total earnings, total expenditures etc., besides, business to total expenditure, business to establishment expenditure, to mention a few. Though at times mention was made on the total productivity, the book does not explicitly script out as to what constitutes total productivity. The special feature of the book is that it measures productivity in real terms by deflating the

current prices by developing a deflator index based on average consumer price index in contrast to the general proclivity among scholars to use current prices in this area. Further, it also uses the T-Scale, based on T-Scores with the following formula to sketch out the relative position (ranking) of a particular bank among the rest of the banks at a glance.

$$T\ Scores = 50 + \frac{10}{\sigma} (X - \overline{X})$$

Where σ is the standard deviation of the raw scores, X is the specific score of the particular bank and $\overline{X}$ is the mean score.

The book comes out with interesting and revealing results. In respect of growth, the UCO bank has been mentioned as the poorest performer from all the indicators. The Bank of Maharashtra, the Allahabad Bank and the Dena Bank have also shown poor performance. Among the good performers, the Indian Bank and the Indian Overseas Bank had distinctly performed well in terms of growth in productivity. Also, banks like the Canara Bank, the Union Bank of India, the State Bank of India, the State Bank of Hyderabad and the Syndicate Bank have shown better performance.

The labour productivity for the nationalised banks have been found to be higher as compared with the State Bank group, both during the time of nationalisation and in 1985. However, the difference has narrowed down over the years. Although the level of branch productivity for the nationalised banks was higher in 1969, the State Bank group showed a faster growth over the years. The author concludes that there was reasonably good growth in terms of labour productivity and a marginal decline in terms of branch productivity at the industry level.

With the use of the T-scale, ranking of the relative position of banks have been computed for the two points of time i.e., at the time of nationalisation and in 1985. On this basis, the author concludes that the banks which made all round improvement in their productivity were the Indian Bank, the Indian Overseas Bank, the Canara Bank and the State Bank of Hyderabad. In terms of employee productivity the Bank of Baroda stood first with the Bank of India occupying the second position. In terms of total productivity the Bank of Baroda and the Bank of India maintained their first and second positions. In the State Bank group it was only the State Bank of India which showed good performance.

The one factor which was repeatedly stated as one causing increase or growth in income and expenditure was the change in lending and deposit rates by the Reserve Bank of India. While this is an important point, it sounds too simplistic. Considering that notwithstanding the administered interest rate regime some banks have performed better than the others. The changes in the administered interest rates have wider implications for the economy and affect some banks more than others. This would imply that there are also other factors, both internal and external, that influence a bank's financial position. The behavioural responses of the banks to the movements in administered interest rates are worth studying. This is where the author should have focused some attention to gain an insight into the differing performances of banks over time and also at different periods of time.

Though there are differences of opinion among the researchers and practical bankers as far as the concepts of input and output in banking are concerned, it would have been more appropriate, if instead of taking business as output and total expenditure as input, the total earnings has been used as output to measure the productivity, as such a usage is common in the literature. Besides, there are some statements in the book which appear contradictory. The author, for example, while analysing the growth in the per employee ratio of establishment expenses in the case of State Bank of India, says that "...there is nothing in the analysis to suggest that increase in wages necessarily improves productivity". In the following paragraph while analysing the ratio of business to establishment expenses, he argues that ".....it indicates positive growth in the employee productivity". But as wages and salaries will be part of establishment expenses, it would be possible to argue that the wages and salaries *per se* would have some impact on productivity - whether labour or total productivity. To the extent that there is no evidence to show the contribution of non-labour factors to productivity, it is possible to infer that identified factors in so far as labour productivity is concerned and changes in the ratio will give some clues about the movement in the labour productivity itself. Again, while analysing the United Bank of India the decline in the ratio of business to total expenditure was regarded by the author as decline in productivity, but he dismisses it as not a serious problem since this decline was said to have occured due to increase in the interest rates on deposits. This however, cannot be a typical situation in respect of United Bank of India alone since the interest rate structure is applicable to all banks.

There are also some important omissions in the book. For instance the priority sector lending by the public sector banks which is one of the crucial aspects that influences banks' profitability and productivity adversely has not been touched at all.

These limitations in the book as pointed out above do not detract the fact that it is important to measure the real productivity aspects of Indian banking. The author has made an honest attempt in this direction. It is necesary for researchers to improve analytical tools in this area and come out with detailed empirical studies at both macro and micro levels of the Indian banking industry.

A.Karunagaran*

---

* Shri A.Karunagaran is Research Officer in the Department of Economic Analysis and Policy.

Reserve Bank of India Occasional Papers
Index to Volume 15 (1994)

ARTICLES

NOTES

VIEWPOINT

BOOK REVIEWS