

SUSTAINABILITY OF PUBLIC DEBT IN INDIA: AN ASSESSMENT IN THE CONTEXT OF FISCAL RULES

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“Like obesity, government deficits are the result of too much self-indulgent living as the government spends more than it collects in taxes. And, also like obesity, the more severe the problem, the harder it is to correct”.

Martin Feldstein

Introduction

In the context of fiscal consolidation efforts pursued by both industrially advanced and developing economies, sustainability of fiscal policy has attracted considerable attention at the academic as well as the policy level in recent years. Furthermore, recognizing that fiscal sustainability is a critical pre-condition for financial and monetary stability and external vulnerabilities, many countries have designed fiscal rules as an institutional mechanism to enforce prudent fiscal policy. Reflecting this, a large and growing body of research has emerged. In this context, it is pertinent to note that achieving fiscal sustainability is also high on the agenda of Indian authorities since July 1991. Accordingly, the authorities have pursued fiscal correction and consolidation process during the Nineties. Recently, the fiscal adjustment programme has been further strengthened both at the national and sub-national level through enactment of fiscal legislation.

Against the above backdrop, the present paper assesses the sustainability of India's public debt within the fiscal rule framework. The remainder of the paper is organized as follows: Section 1 reviews the literature on sustainability in general as well as in the Indian context. Section 2 deals with the fiscal rules adopted in India against the backdrop of international experience. Section 3 presents an overview of the fiscal situation in India during the reform period. Analytical framework to assess sustainability is presented in Section 4. Section 5 sets out the assessment of fiscal sustainability. The policy recommendations are presented in Section 6. Section 7 concludes.

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1. Review of literature: Fiscal sustainability

1.1 Standard paradigm

Sustainability is a term that has been used with increasing frequency in the academic literature and recent multilateral policy discussions, but with different connotations under different circumstances (Balassone and Franco, 2000, Chalk and Hemming, 2000). Traditionally, fiscal sustainability has been assessed in terms of indicator analysis. Reflecting this, a large and growing research efforts have not only been directed towards developing *indicators or summary measures of sustainability* but also assessing the fiscal policy with the help of these indicators. This framework was first developed by Domar (1944) which states that a necessary condition for sustainability is that growth rate of income must exceed the interest rate. Subsequently, Buiter (1985) suggests a sustainable policy as one, which is capable of keeping the ratio of public sector net worth to output at its current level. Blanchard (1990) provided two conditions for sustainability:

- a) the ratio of debt to GNP should eventually converge back to its initial level, and
- b) the present discounted value of the ratio of primary deficits to GNP should be equal to the negative of the current level of debt to GNP.

In the context of a theoretical discussion the rules for sustainability and stability are assumed to convey the same connotation if one examines sustainable level of public debt in terms of stable long run equilibrium path. Government solvency is a necessary but not sufficient condition for fiscal sustainability. In the absence of accompanying assumption of private sector savings and investment behaviour, the application of sustainability condition assumes that the projected paths of primary fiscal balance, interest rate and economic growth are independent. Furthermore, the achievement of fiscal sustainability need not imply optimality of fiscal balances. Some of the important research efforts relating to sustainability of deficit and debt are: Bispham (1987), Blanchard (1990), Chouraqui *et al.* (1990), Horne (1991), Hamilton and Flavin (1986), Haque and Montiel (1992), Masson (1985), Spaventa (1987) and Zee (1988).

Of late, the theoretical literature has focused on whether current fiscal policy can be continued into future without jeopardising stability and growth, which does not necessarily imply that debt has to be non-increasing. In this context, the literature emphasises that to avoid ambiguity and confusion the rules for *sustainability, stability, solvency and optimality* should be clearly defined. Thus, the Government's *inter-temporal or the present value budget constraint* is the central theme of the research on sustainability. According to the inter-temporal budget constraint, the present value of revenues must be equal to the present value of spending including interest on the public debt *plus* repayment of the debt itself.

In order to work out the sustainable level of deficit, a sustainability rule was defined and developed by Blanchard (1990) and by Chouraqui *et al.* (1990). According to Blanchard-Chouraqui sustainability condition, the sustainable rate of revenues (non-interest) is equal to the annuity value of non-interest expenditure plus

the interest rate net of growth times the initial level of debt. Subsequently, this approach has been termed as Tax Gap indicator approach (Chalk and Hemming, 2000).

The sustainability indicators may be backward looking or forward looking depending on the translation and operationalisation of inter-temporal budget constraint in the *ex ante* and *ex post* sense (Blanchard, 1990). The *ex post* analysis explains the indicators of sustainability with a backward looking approach while the analysis on the *ex ante* basis pertains to forward looking indicators. The backward looking indicators help to evaluate a fiscal consolidation programme, while the forward looking indicators serve to assess the sustainability rule for medium term and long term, relative to a chosen base year. There has been analysis also on *strong and weak condition of sustainability* (Quintos, 1995 and Fernandez *et al.*, 2000) The strong condition corresponds to stationarity of the debt process while weak condition requires that the growth rate of debt to be lower than the growth rate of the economy.

In the above context, it is important to recognize that the Banca d'Italia aimed at providing an over view of the theoretical and empirical problems involved in the assessment of fiscal sustainability. It was suggested that policy makers should rely on more than one indicator. Indicators should be capable of handling different challenges. The papers included in the volume addressed conceptual and definitional issues, techniques for assessment of fiscal sustainability, long-term budgetary projections, generational accounting and policy issues and links with the Stability and Growth Pact.

1.2 Major empirical works in India

In the Indian context, the initial period of planned development strategy, when the level of debt and deficit were low, the debate mostly focused on inflationary impact of the deficit financing. For the next three decades a consensus emerged on the virtuous cycle of deficit financing except for a few dissidents such as Rao (1952), Shenoy (1955), and Dasgupta (1955).

The analysis of fiscal sustainability assumed critical importance during the late Eighties, with sharp fiscal deterioration both at national as well as sub-national levels. Accordingly, a large and erudite body of literature has emerged on the subject. The existing literature broadly discussed four aspects, *viz.*, a) concept, definition and measurement of deficit and debt, b) assessment of sustainability, c) macroeconomic impact and d) policy prescriptions. It is pertinent to note that apart from the contributions from the individual authors, there has been substantial research work also contributed by the Reserve Bank of India on the subject.

1.2.1 Contributions of individual authors

Concept, definition and measurement of deficit and debt

The official definition of debt adopted in India is set out in Annex I. However, the researchers and analysts differ with this definition on the ground that the official definition is not meaningful in economic sense. Some of the contributions in this regard were Seshan (1987), Rangarajan, Basu, Jadhav (1989), Rajaraman and Mukhopadhyay (2000), Rangarajan and Srivastava (2003). Seshan (1987) suggested a concept of net debt which exclude certain items like, non-interest and non-negotiable securities issued to IMF and reserve funds which are only intergovernmental debts from the gross debt as presented in the budget documents. Rangarajan, Basu and Jadhav (1989) suggested netting out of all deposits, in addition to the adjustments suggested by Seshan (1987) to derive the net debt of the Government. According to the authors, the net debt thus derived conceptually corresponds to the net primary deficit and is more meaningful in the context of fiscal sustainability. Rajaraman and Mukhopadhyay (2000) defined public debt as the under deemed face value of the accumulated stock of government non-monetary financial liabilities. Thus, they emphasized on the public debt not owned by the Reserve Bank of India.

The concept and measurement of deficit in Indian context has evolved over a period of time. The use of a single measure of budget deficit to assess the impact of fiscal policy has been in vogue till the late Eighties. Rangarajan *et al.* (2003) commented that the official figures of fiscal deficit show discrepancies, as the non-cash transactions are not included. Rangarajan, Basu and Jadhav (1989) for the first time conceptualized multiple deficit indicators as set out in Annex III. Pattnaik (1996 and 2000) extending Rangarajan *et al.* (1989) developed a time series data since 1950-51.

Assessment of sustainability

Seshan (1987) was (probably) the first one to draw a pointed attention to the possibility of domestic debt in India reaching an unacceptably high level in the none too distant future. Subsequently, the Report of the Comptroller and Auditor General (CAG) of India (1988) also warned against “the alarming growth in domestic debt”. The initial studies, based on simple trend analysis, were criticised by Rangarajan, Basu and Jadhav (1989), on the grounds that they lacked “analytical constructs” behind the findings. This study which is truly a “*locus classics*” on debt sustainability analysis in Indian context called for a comprehensive and much deeper analysis on measurement of budget deficit and debt. In their pioneering work the authors examined the dynamic nexus between the two. Using data for the Seventies and the Eighties, the authors simulated two alternative scenarios for financing the deficit: a debt-financing scenario and a monetary-financing scenario. Under the debt-financing scenario, they concluded that “the higher interest burden may invariably lead to a squeeze on budgetary capital outlays, thereby stifling economic growth”. Under the monetary-financing scenario they concluded “resorting to

monetary financing is likely to set in motion a vicious circle of large deficit, higher monetary financing, greater inflation leading again to a larger deficit”.

Chelliah (1991) in his paper demonstrates that maintaining the primary deficit even at a level of 3.5 per cent is unsustainable because this would raise the debt-to-GDP ratio to 77.4 per cent in 2000/01 from 60.2 per cent in 1989-90 and deficit in GDP ratio to nearly 10 per cent. Interest payments would then absorb 6.4 per cent of GDP, casting an unbearable burden on the budget. Therefore, he has suggested that the first stage of fiscal adjustment should consist of measures to enable the Government to reduce primary deficit to 2.5 per cent of GDP by the year 2000/01. If this is done, the growth of public debt would slow down and the total deficit would be contained around 8 per cent of GDP in 2000/01. In order to reduce the primary deficit to 2.5 percentage of GDP, steps must be taken to reduce the deficit on budget's revenue account to take much of the financing of the public enterprises out of the budget, to stabilize the rate of capital formation on Government account, to raise the return on Government lending and investment and to increase the income elasticity through tax reforms. Once the first stage of adjustment is completed loan finance should be largely limited to capital expenditure.

Buiter and Patel (1992) using annual data for 18 years (1970-71 to 1987-88), with four alternative interest rates, demonstrated that discounted public debt in India is non-stationary. They pointed out that without a sharp reversal of the primary deficit to a primary surplus, avoiding repudiation or default would require the mobilization of large seignorage or inflation tax.

Following the tax gap approach developed by Blanchard (1990), Chouraqui *et al.* (1990), an attempt was made in Pattnaik (1996) to assess the sustainability of Central Government finances. The empirical findings in this paper reveals that under a medium-term perspective, the fiscal sustainability requires that the debt/GDP ratio be brought down to 50 per cent by the end of fiscal 2000 from the 1996-97 level of 54 per cent. This is possible by gradual scaling down of the GFD to about 3.90 per cent of GDP by 2002. Assuming a real growth rate of 7 per cent, inflation rate of 5 per cent and real effective interest rate of 7 per cent, a primary balance relative to GDP is required as against a deficit of 1.90 per cent in 1995-96.

Auerbach (1994) concluded that the fiscal problem could linger on for many years before exploding. Similarly, Khundrakpam (1998) and Moorthy *et al.* (2000) found that the Indian public debt is sustainable in terms of Domar's stability condition. This has, however, been questioned when the GDP growth rate is compared with call money rate and commercial bank lending rate, and thus the conclusion which has emerged is that debt is not sustainable (Jha, 1999). Lahiri and Kanan (2000), Acharya (2001, 2002) and Ahluwalia (2002) also commented upon the unsustainable level of deficit and debt. A recent study by Pinto and Zahir (2004) observed that without fiscal adjustment debt/GDP ratio would be 110 per cent in 2006-07 and with adjustment this ratio would be 92.5. Correspondingly, the deficit rises to 11.4 per cent and fall steadily to 7 per cent with reforms. While assessing the debt sustainability for the State Governments, Prasad, Goyal and Prakash (2003)

discussed that the outstanding debt of the State Governments would touch 34 per cent in 2007-08 from the present level of 26 per cent in 2002-03. Public policy scenario would, however, reduce the ratio by 1-2 percentage points.

Macroeconomic impact

In recent years, there has been an intensive debate on the macroeconomic impact of fiscal deficit as the persistence of high level of deficit and debt during the last decade did not have any adverse macroeconomic impact, as it was the case in 1990-91. One school of thought (Pattnaik, 2001, Rakshit, 2000, Chandrashekhar 2000, Shetty, 2001) advocates that it would be appropriate in the Indian context to increase government expenditure on investment even through monetisation of fiscal deficit. Another school of thought has questioned the efficacy of expansionary fiscal policy at the current juncture (Lahiri and Kannan, 2000, Acharya, 2001, and Srinivasan 2001). In this context, both the size and quality of fiscal adjustment assume critical importance (Reddy, 2001). The Report of the Economic Advisory Council (EAC, 2001) stresses that high fiscal deficits, by raising real interest rates, crowd out private investment, especially in the context of the government borrowing being predominantly used to finance revenue deficits. The EAC observed that the existing level of public debt is “too high... and clearly unsustainable”. Ahluwalia (2002) observed that India’s fiscal and debt indicators are comparable to or worse than that of Argentina, Brazil and Turkey, countries which have actually experienced a serious recent macroeconomic crisis. The author, nevertheless, concludes that India is not vulnerable to a repeat of its 1991 fiscal and balance-of-payments (BoP) crisis because of the build up of foreign exchange reserves, capital controls, flexible exchange rate system and widespread public ownership of banks. Pinto and Zahir (2004) argue for further fiscal adjustment to eliminate the threat to sustained growth stemming from the crowding out of public and private investment, and constraints imposed on the domestic financial system by the financing needs of the government budget. While commenting upon India’s recent deficit on capital formation and growth, Felsdstein (2004) observed that if India did not have its current Central Government deficit of some 6 per cent of GDP the gross rate of capital formation could rise from 24 per cent of GDP to 30 per cent.

Policy prescriptions

Most of the authors have suggested for fiscal adjustment in terms of expenditure containment and revenue augmentation. It is also recognized that such consolidation can not be done overnight. It is emphasised that attention needs to be paid to quality of fiscal consolidation as also to its speed. It is critical to avoid the unnecessary cost in terms of growth and welfare of such an adjustment path (Lahiri and Kannan, 2000). For stabilisation of debt/GDP ratio at current or reduced levels, focus on primary balance becomes necessary (Rangarajan and Srivastava, 2003). A programme of robust fiscal reform is needed to contain the unsustainable public debt dynamics and help India achieve its long run growth and poverty reduction targets

(Pinto and Zahir, 2004). At a micro level, policy prescriptions have been to cut non-interest government outlays to increase tax or other revenues and to reduce interest on government debt (Feldstein, 2003).

1.2.2 Research contributions of Reserve Bank of India

Recognising that unsustainable public debt is likely to have a major adverse impact on monetary policy objectives, financial stability and public debt management, Reserve Bank of India in its successive Annual Reports since 1991 has been advocating fiscal prudence. The research conducted in the Department of Economic Analysis and Policy (DEAP), and published in their Report on Currency and Finance (RCF), particularly, for the years 1998-99, 2000-01 and 2001-02 highlighted the issues relating to sustainability of public debt and deficit. The thrust of this analysis was to set out a methodology, to assess sustainability and to recommend policy for achieving fiscal prudence. The RCF 1998-99 assessed sustainability of deficit and debt with the help of an indicator analysis. This Report observed that persistence of significant primary and revenue deficits of the Government sectors over the years is a major concern and would lead to an unsustainable accumulation of Government debt. According to the Report, growth in nominal GDP is lower than the growth in the domestic debt of the Government sector, which may exert pressure on the interest rate and crowd out private investment. In view of this, the Report concludes that the reduction in combined Government debt to a sustainable level in the medium-term horizon, therefore gains immense relevance. The RCF 2000-01 assessed sustainability of Government debt with the help of unit root tests. These tests show that discounted series of nominal stock of Government debt remain non-stationary, implying that Government debt continues to be unsustainable. Sustainability of public debt was assessed in terms of *Domar stability condition* and *present-value budget-constraint approach* (RCF 2001-02). The Report observed that during the Nineties, except for few occasions, the *Domar stability condition* was fulfilled. The *present value budget constraint* approach was tested by the Augmented Dicky-Fuller and Phillips-Perron Unit root tests. Both the unit root tests showed that the discounted series of nominal public debt is nonstationary. The Report therefore, concluded that continuation of current fiscal stance could make public debt of both the Central and State Governments unsustainable unless, corrective measures are undertaken to rein in the fiscal deterioration.

In the above context, it may be mentioned that the RBI Annual Reports 2000-01 and 2001-02 have set out a policy prescription for further fiscal consolidation. According to these Reports, the path of durable fiscal consolidation is through fiscal empowerment, *i.e.* by expanding the scope and size strategy based on revenue maximization would also provide the necessary flexibility to shift the pattern of expenditures and redirect them productively. Revenue maximization requires that the tax system be reformed through widening the tax base, simplification of tax rules, review of exemptions/incentives and strict tax compliance.

2. Fiscal rules

2.1 Background

With growing fiscal stress across countries, irrespective of the level of economic development, it is widely recognized that the discretionary fiscal policy would not always be effective in contributing to fiscal sustainability and stability. In this context, many countries introduced medium-term fiscal consolidation programs, which were mostly followed by fiscal rules (with or without legislations). These rules have been designed with the goal to ensure that national policies keep a sound fiscal stance while allowing sufficient margins for budgetary flexibility in bad times (Balassone and Franco, 2001). A fiscal policy rule is a permanent constraint on fiscal policy, expressed in terms of summary indicators of fiscal performance, such as government budget deficit, borrowing, debt or a major component thereof (Kopits and Symansky, 1998).

It is important to recognize in the above context the seminal contribution of Banca d'Italia in conducting the third workshop on Public Finance on Fiscal Rules in February 2001. The papers presented in this seminar analysed the pros and cons of fiscal rule, European fiscal rule, fiscal rule and budgetary procedure and fiscal rule in a decentralized framework. What follows is broadly a summary of the papers presented in the above seminar.

The route to adoption of fiscal rules across countries may be classified into three distinct phases (Kopits, 2001). In the first phase, sub national governments in some federal systems autonomously adopted the golden rule. The golden rule of fiscal policy states that over the economic cycle, the Government will borrow only to invest and not to fund current spending. In the second phase, after World War II, several industrial countries (Germany, Italy, Japan, Netherlands) introduced balanced-budget rules that underpinned their stabilisation programmes, following monetary reform. The current phase, starting with New Zealand's Fiscal Responsibility Act of 1994, has seen an increasing number of industrial and emerging market economies introducing fiscal rules.

There are two dominant but distinctly different views, *viz.*, *institutional irrelevance view* and *public choice view* on the effectiveness of fiscal rules in improving public finances. According to the former, rule-based systems may be bypassed through creative accounting, *i.e.*, fiscal frameworks may not succeed as the budget rules can be circumvented by modifying accounting practices and changing the nominal timing or other classification of taxes and expenditure (Resichauer, 1990, Auerbach, 1994, IMF, 2001 and Premchand, 2003). The latter, on the other hand contends that fiscal institution place important constraint on the behaviour of political actors, and thereby, prove to be successful in improving the fiscal outcome (Gramlich, 1990, von Hagen and Harden, 1995 and Poterba, 1997).

Though rules have been an important factor behind the fiscal consolidation in the latter part of the Nineties in both industrialized and emerging economies, it is difficult to establish the specific contribution of rules to good fiscal performance

(Hemming and Kell, 2001). In an inquiry of the effectiveness of fiscal rules, Poterba (1996, 1997) reviews the nature of balanced budget requirements at the sub-national level in the U.S., and his findings suggest that changes in budget rules and, more broadly, fiscal institutions can affect fiscal policy outcomes. In a study on the effectiveness of tax and expenditure limits, Stansel (1994) shows that the relative growth of spending in states with tax and expenditure limits declined significantly within five years of the implementation of the limits. Given this correlation, however, the introduction of a tax and expenditure limit could potentially be used as a signal of commitment to reduce tax and expenditure growth on part of the policymakers. Eichengreen and Bayoumi (1994) argue that a tax and expenditure limit reduces the likelihood of future surges of borrowing and hence the likelihood of default. Such limits may also have a positive impact by way of reduction in the interest cost of borrowings. Poterba and Rueben (1999) and Goldstein and Woglom (1992) find that states with limits on deficits/borrowings face a lower cost of borrowing. An interesting analysis by Corsetti and Roubini (1996) argues that fiscal rules are more suited to subnational governments than to national governments due to the reason that the supply- and demand-side macroeconomic effects of any action on the part of the subnational government to balance the budget during a recession would be much lower than similar actions at the Centre's level, and insofar as individual States' business cycles are not perfectly synchronized, the actions of any given state trying to balance its budget do not have a national impact. Corsetti and Roubini's arguments are complemented by Bayoumi and Eichengreen's (1995) findings, which emphasize the importance of central governments in providing fiscal stabilization. Similarly, Alesina and Bayoumi (1996) suggest that since State's role in stabilization is not very important, the stringency of fiscal rules would not have much impact on output variability, and hence, balanced budget rules may be more effective for subnational governments.

Despite the debates taking place in several countries about the rationale and effectiveness of fiscal rules, there are universally recognised fiscal policy rules, and legislation incorporating one or several specific targets or ceilings or conditionalities or even prohibitions. There are broadly three types of rules, balanced-budget or deficit rules; borrowing rules and debt rules. Present fiscal policy rules are fairly diverse in both design and implementation. Whereas Anglo-Saxon countries place primary emphasis on transparency (Australia, Canada, New Zealand, United Kingdom), in continental Europe (EMU Stability and Growth Pact, Switzerland's proposal) and emerging market economies (Argentina, Brazil, Colombia, Peru, India's proposal) rely far more on a set of numerical reference values (targets, limits) on performance indicators. Empirical evidence suggests that the type of rules that may be helpful during a phase of deficit reduction may not be sufficient later on. In this regard, it is worth noting that both Canada and Switzerland modified their rules after the initial balanced budget objective was achieved, with Canada shifting the emphasis from deficit to debt reduction and Switzerland adopting an expenditure rule.

In federal systems with strong subnational autonomy, the rules are assumed only by the central government (Argentina), in other federal systems, where

subnational governments also impose rules, this could be done either autonomously or in a coordinated fashion (Kopits, 2001). In federations with concern about potential bailouts and external spillovers of fiscal misbehaviour across jurisdictions, the rules are imposed on each government level in a coordinated manner (Brazil, EMU). Under this top down approach, all subnational governments are subject to uniform rules under the surveillance of a central authority, and each subnational government seeks to establish collective credibility for overall macroeconomic policy. Under the autonomous approach (a bottoms-up approach), the initiative for adopting fiscal rules arises from individual subnational governments. For instance, in Canada, Switzerland and the US, the autonomous approach is adopted wherein the fiscal rules are adopted at the subnational level with varying degrees of stringency. Those countries where subnational governments have direct access to financial markets adopt this approach, and bailouts to insolvent subnational governments by the national government do not exist.

2.2 Indian setting

2.2.1 Process

Fiscal rule at national level

A peep into the past reveals that in India there is no certain provocation or realisation for sound fiscal management (Reddy, 2000). The Welby Commission in pre-independent India explored the possibility of reduction in expenditure. Furthermore, in the pre-independent India, while drafting the Constitution of India, the Constituent Assembly debated on the issue of a *limit* on Government borrowing. The issues raised in this context were: (a) no borrowing without Parliament approval; (b) purpose of borrowing; (c) underlying safeguards and (d) consideration for Annual Debt Act (Pandey, 2000).

Constitutional arrangement

The Indian Constitution under Article 292 and 293 prescribes limit on Government borrowing through Parliamentary Law. The mandate under Article 292 is as follows:

“Borrowing by security of the Consolidated Fund of India within such limits, if any, as may from time to time be fixed by Parliament by law and to the giving of guarantees within such limits, if any, as may be so fixed”.

According to Article 293, the State Governments as long as they are indebted to Central Government cannot borrow without the approval of Central Government. Furthermore, this article does not permit State Governments to borrow overseas. In addition, there are statutory bodies like Estimate Committee and Public Accounts Committee and also the Comptroller and Auditor General of India (CAG), who evaluate the fiscal performance of the Government. In the past, however, repeated exhortations to adverse impact of widespread fiscal deterioration by the Estimates

Committee, Public Accounts Committee, Comptroller and Auditor General of India failed to elicit desired response. It is of interest to note that the Law contemplated under Article 292 has not been enacted during the last five decades.

Role of the Reserve Bank in recommending fiscal rules

Against the above backdrop, it is important to note that Reserve Bank of India in its Annual Report of 1991-92 made the following observations:

“To ensure that the monetised deficit does not have deleterious effects on the economy, there is a need for a law restricting the extent to which the Centre can run a deficit and moreover there should be a legal ban on the Government borrowing from all sources beyond a certain ceiling with a sub-ceiling on borrowing from the Reserve Bank of India”.

The RBI thus was in the forefront of sensitizing the policy makers to the consequences of fiscal dominance (Reddy, 2000). Consequently, on September 9, 1994 Government of India decided to phase out automatic monetisation of the budget deficit through the issue of *ad hoc* Treasury bills over a period of three years. Pursuant to this, the issue of *ad hoc* Treasury bill was discontinued with effect from April 1, 1997 and a scheme of Ways and Means Advances was put in its place on the same day on the basis of the supplemental agreement between Government of India and RBI reached on March 26, 1997. The Ways and Means Advances is an accommodation to provide for temporary mismatches between inflows and outflows in the Government accounts and not a source of financing and as such the use of Ways and Means Advances is to be periodically vacated to enable use of such financing for future mismatches. In the above context, it is important to note that the Reserve Bank highlighted the importance of a statutory ceiling on debt through a technical paper published in the RBI Bulletin of December 1997 (Sabhpathy, Pattnaik and Anand, 1997).

Budget announcement

Recognising the worsening fiscal situation, the Union Finance Minister in his Budget Speech for 2000-01 observed:

“A long history of high fiscal deficits has left us with a legacy of a huge public debt and an ever-growing bill of interest payments... If we do not raise the resources and instead take recourse to even higher borrowing next year, then we will jeopardise our prospects for growth, reignite the flames of inflation. Sow the seeds of another balance of payments crisis and place an unfair burden on the next generation... For medium term management of the fiscal deficit, we also need the support of a strong institutional mechanism embodied in a Fiscal Responsibility Act... I have set up a Committee to examine the issue and make suitable recommendations.”

Conceptualization

Following the above announcement, Government of India desired that the Reserve Bank as the monetary authority, banker and debt manager should have a Working Group to assist in the preparation of fiscal responsibility bill. The Committee on Fiscal Responsibility Legislation was constituted by Government of India (Chairman E.A.S. Sarma) on January 17, 2000. Following this, Governor Dr. Y.V. Reddy as the then Deputy Governor and as a member of the Sarma Committee, in his landmark speech conceptualized the objectives, features, institutional accounting, fiscal management and procedural issues.

The Sarma Committee submitted the Report to the Union Finance Minister on July 4, 2000. The draft of the fiscal legislation was named as Fiscal Responsibility and Budget Management Bill 2000. The Bill outlined fiscal management principles to reduce revenue deficit, fiscal deficit and debt, elimination of borrowing from the Reserve Bank of India, measures for fiscal transparency, review committee and measures to enforce compliance. The Bill was placed before the Parliament in December 2000 and also was referred to a Statutory Body, *viz.*, Standing Committee on Finance. With the approval of the Parliament, and clearance from the Standing Committee on Finance, finally the President of India gave his assent on the Bill on August 26, 2003. The Fiscal Responsibility and Budget Management Act, 2003 (FRBM Act, 2003) came into force from July 5, 2004.

The structure and content of the FRBM Act go beyond the conventional fiscal legislation, *i.e.*, setting the ceiling on the fiscal indicators. There is a provision for presentation of fiscal policy statements, *viz.*, Medium-term Fiscal Policy Statement, the Fiscal Policy Strategy Statement and the Macro-Economic Framework Statement. The legislation also lays down the fiscal management principles and combine fiscal transparency, budget integrity and accountability, which has further streamlined the budget presentation process of the Union Government. Apart from these, the legislations make provision for enforcement mechanism, either through a statutory body or other appropriate body, to enable the observance of fiscal prudence. The government is also conferred with the power to make rules for carrying out the provisions of the legislation.

2.2.2 Features of FRBM Act 2003

Objective

The FRBM Act, 2003 provides the responsibility of the Central Government to ensure intergenerational equity in fiscal management and long-term macroeconomic stability by achieving sufficient revenue surplus and removing fiscal impediments in the effective conduct of monetary policy and prudential debt management consistent with fiscal sustainability through limits on the Central Government borrowings, debt and deficits, greater transparency in fiscal operations of the Central Government and conducting fiscal policy in a medium-term framework and for matters connected therewith or incidental thereto.

Fiscal policy statement

The Act sets out three fiscal policy statements, viz., Medium-Term Fiscal Policy Statement, Fiscal Policy Strategy Statement and Macroeconomic Framework Statement, which are to be laid before the Parliament. The Medium-Term Fiscal Policy Statement will set forth a three-year rolling target for fiscal indicators. The Fiscal Policy Strategy Statement shall *inter alia* contain policies for the ensuing financial year related to taxation, expenditure, borrowings, investment, strategic priorities, rationale for any major deviation and an evaluation of the current policies. The Macroeconomic Framework Statement shall contain an assessment of the growth prospects of the economy.

Fiscal management principles

According to the Act appropriate measures will be taken by the Government to reduce fiscal deficit and revenue deficit with annual targets. Revenue deficit will be eliminated by March 31, 2008 and thereafter adequate revenue surplus will be built up. Annual targets for guarantees as percentage of gross domestic products shall be framed. Under exceptional circumstance on the grounds of national security or national calamity, revenue deficit and fiscal deficit may exceed the targets.

Borrowing from Reserve Bank of India

The Central Government shall not borrow from the Reserve Bank of India except for ways and means advances. The Reserve Bank may subscribe to the primary issues of the Central Government upto April 1, 2005. However, Reserve Bank may buy and sell the Central Government securities in the secondary markets.

Other features

The other features of the Act contain measures for fiscal transparency and measures to enforce compliance. Every rule made under this Act shall be laid before each house of Parliament. No suit, prosecution or other legal proceedings shall lie against the Central Government or any officer of the Central Government for anything which is in good faith done or intended to be done under this Act or the rules made thereunder. No civil court shall have jurisdiction to question the legality of any action taken by or any decision of the Central Government, under this Act.

In exercise of the powers conferred by the FRBM Act 2003, the Central Government framed the Fiscal Responsibility and Budget Management Rules, 2004, which became effective on July 5, 2004. The Rules have set annual targets for the phased reduction in key deficit indicators over the period ending March 31, 2008. The rules also impose annual ceilings on Government guarantees and additional liabilities. In accordance with the Rules framed under the FRBM Act, the Government presented the Medium-term Fiscal Policy Statement, the Fiscal Policy

Strategy Statement and the Macroeconomic Framework Statement along with the Annual Financial Statement for 2004-05.

Fiscal legislation at subnational level

At the sub-national level, the background for rule-based fiscal policy was prepared with the setting up of State Fiscal Reform facility (2000-01 to 2004-05) by the Centre in pursuance with the Eleventh Finance Commission (EFC) recommendations. Under this arrangement, a majority of States have entered into a medium term fiscal reforms programme (MTFRP) which sets up targets for broad fiscal indicators, viz., deficit, revenue and expenditure, apart from public sector enterprise reform, power sector reforms and budgetary reforms.

In addition to this, State Governments have also opted for fiscal rules of their own through legislation. So far, five State Governments, viz., Karnataka (2002), Punjab (2003), Kerala (2003), Tamil Nadu (2003) and Uttar Pradesh (2004) have enacted fiscal responsibility legislations, while Maharashtra is still in process (Annex III). Thus, the Indian States have adopted a unique blend of *coordination approach* (MTFRP) and *autonomous approach* (Fiscal Responsibility Legislation) in providing statutory backing to their fiscal reform process. A group of State Finance Secretaries with the technical support from the Reserve Bank of India are at present are engaged to draft the *model fiscal legislation scheme* for the consideration of the rest of the state governments for implementation.

3. An overview of fiscal performance

3.1 Backdrop

3.1.1 Central Government

Developments in the Central Government finances since independence may be classified into four distinct phases: Phase I (1951 to 1981), Phase II (1982-91), Phase III (1991-96) and Phase IV (1997 to the present). It may be noted that the former two phases relate to pre-reform period, while the later two phases reflect the developments during the reform process which started in July 1991. The first phase was a period of surplus in revenue account. Fiscal deficit and debt were maintained at reasonable levels, though monetisation of deficit and debt were predominant, but they were manageable. This period was, however, accompanied by high marginal rate of taxation, predominance of public investment neglecting commercial considerations, and financial repression. The second phase may be truly called the decade of fiscal deterioration as the major fiscal variables were in disarray. The fiscal deterioration eventually destabilized the relationship between the budget and the economy, which was reflected in accumulation of large debt, high debt-service ratio and double-digit inflation. Furthermore, the increasing chasm between the income and expenditure of the Government led to widening of the gap between the income and expenditure of the economy as a whole, resulting in bulging of current

account deficit in the balance of payments. It was widely recognized that the fiscal situation was unsustainable. Accordingly, the fiscal adjustment programme in the form of deficit reduction has been undertaken by the Central Government since July 1991. Concerted efforts to restore fiscal balance began in July 1991 in terms of a fiscal adjustment programme constituting the third phase. These *inter alia*, comprised tax and non-tax reforms, expenditure management and institutional reforms. These initiatives resulted in a significant fall in the fiscal deficit and in public debt as a proportion of GDP till 1996-97, but the trends reversed shortly thereafter. Reversal in the phase four was largely on account of downward rigidity in revenue expenditure, fall in tax buoyancy, slowdown in PSU restructuring and continuation of uneconomical user charges particularly at the State level.

Although the present levels of fiscal deficit, revenue deficit and primary deficit relative to GDP exceed those at the beginning of reform period, it should be noted that elimination of automatic monetisation and reduction in preemption of institutional resources by the Government has provided a conducive environment to generate market liquidity and softening of interest rate in the economy. Paradoxically, the Indian economy is on a high growth profile and inflation is generally benign.

3.1.2 State Government

The fiscal position of the State Governments broadly followed the pattern witnessed for the Central Government. There has been a severe fiscal stress in respect of finances of State Governments since the mid-Eighties. The fiscal stress emanates from inadequacy of receipts in meeting the expenditure requirements. The low and declining buoyancies in tax and non-tax receipts, constraints on internal resources mobilisation due to losses incurred by State Public Sector Undertakings and decelerating resources transfer from Centre have contributed to worsening of State finances. A survey on worsening State finances as set out in RBI (2003) reveals that the following factors were responsible: (1) reluctance to raise additional resources (Kurian, 1999), (2) competitive reduction in taxes, absence of service tax and agricultural income tax (Rao, 2002), (3) sluggishness in Central Transfer reflecting the precariousness of center's own finances (Chakraborty, 1999), (4) inappropriate user charges (Mohan, 2000) and (5) impact of pay revisions (Acharya, 2002). It is important to recognize that there are large disparities across the States in terms of level of income and the tax and expenditure policies pursued by respective governments. Accordingly, the impact of various are likely to vary across the States. Reflecting the fiscal stress, the expenditure for development activities which are directly related to growth suffered (RBI, 2002).

3.2 Developments

Against the above backdrop, the fiscal performance at Centre, State and General Government is set out in the following paragraphs.

3.2.1 Trends in revenue

The annual rate of growth in revenue receipts has decelerated from around 15 per cent in phase III to around 11 per cent in phase IV. The deceleration is more in Central revenues than those for the States. If the States' own revenue receipts are considered, then the deceleration is from around 16 per cent to around 13 per cent during the same period.

Figure 1

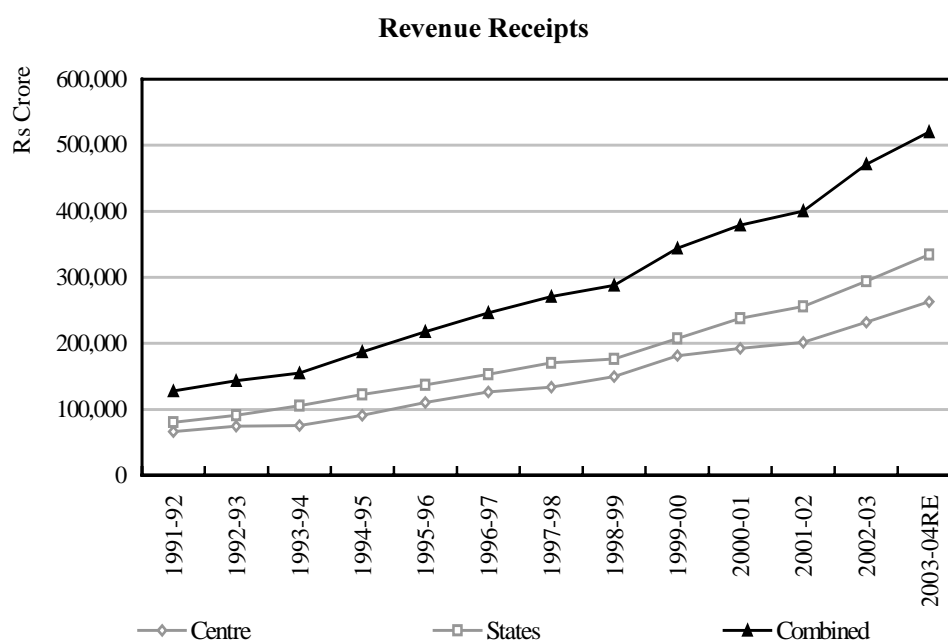
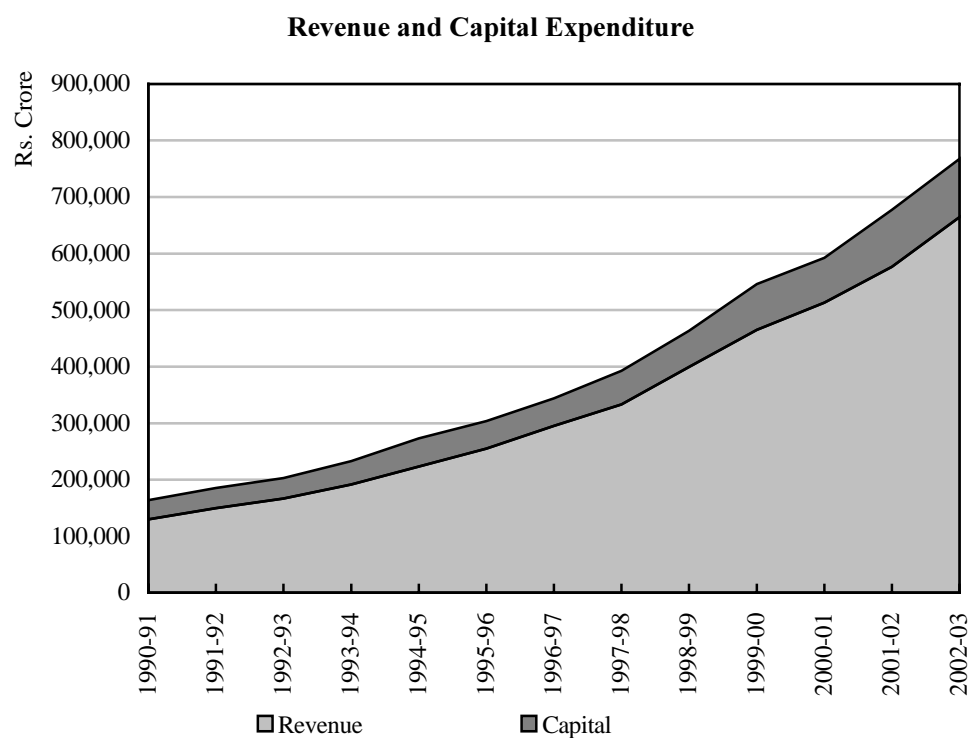


Table 1

Revenue Receipts		Centre	State	Combined
1991-92 to 1996-97	Growth Rate	15.1	14.9	15.2
	percent of GDP	9.4	11.9	18.6
1997-98 to 2003-04	Growth Rate	11.2	11.9	11.4
	percent of GDP	9.0	11.1	17.7

Figure 2**Table 2**

Expenditure of the Government Sector*
(percent)

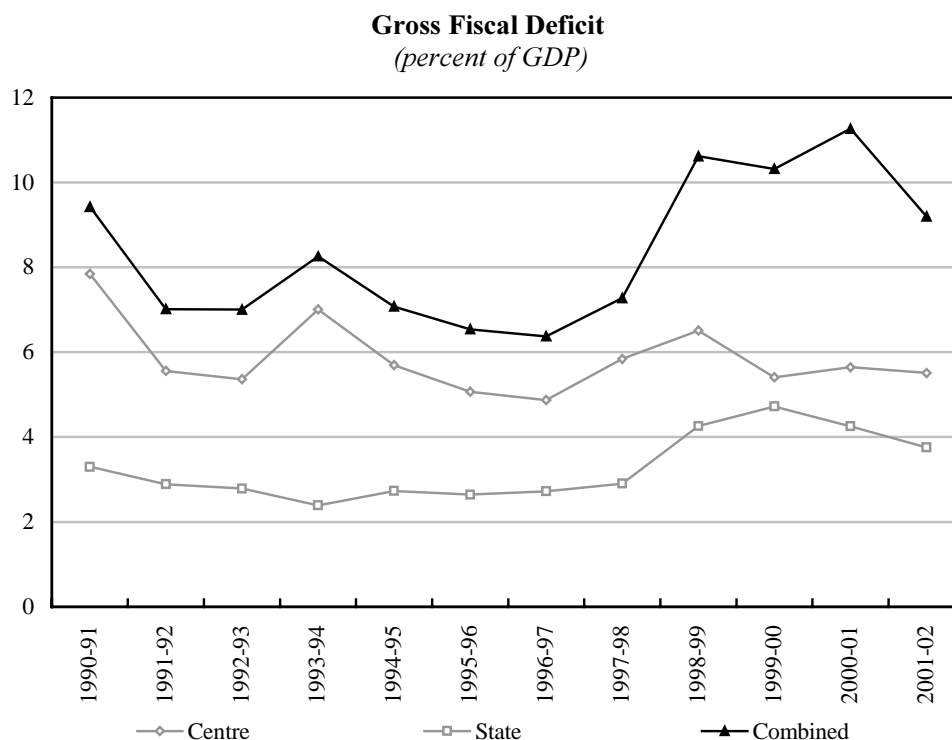
Item	1990-91 to 1996-97		1997-98 to 2001-02	
	Average Growth	Ratio to GDP	Average Growth	Ratio to GDP
Total Expenditure	13.1	27.0	14.6	27.7
Development Expenditure	11.0	15.3	13.4	14.3
Non-developmental Expenditure	16.1	11.7	16.0	13.4

* Government sector refers to finances of Central and State Governments.
Source : Union and State Governments' Budgets.

Since the onset of tax reforms, the tax/GDP ratio of the Central Government has suffered a persistent decline – from an average of 9.7 per cent in the first half of the Nineties and further to 9.0 per cent in the second half of the decade. In the Indian context, the expected increase in tax buoyancy *à la* “Laffer curve effect” did not occur (RBI, 2002). Though the direct tax collection to GDP ratio rose to 2.3 per cent in the first half of the Nineties and further to 2.9 per cent in the latter half of the decade, the ratio of indirect tax collection to GDP declined from 7.3 per cent and 6.1 in the first and second half of the Nineties, respectively.

Under the existing federal fiscal structure, the States’ rights to collect taxes are largely confined to indirect taxes, predominantly commodity taxes like sales tax and other indirect levies, such as State excise duties, service tax on entertainment, on betting and gambling and on passengers and goods. There has been a fall in buoyancies in States sales tax during the reform period mainly on account of competitive tax reductions by States to attract trade and industry (Government of India, 2000). The decline in buoyancies also follows from higher growth in services, which are not adequately taxed but raises the Net State Domestic Product (NSDP) (RBI, 2003). Thus, on average, tax/GDP ratio for States during the reform period was higher than that of the Eighties.

Figure 3

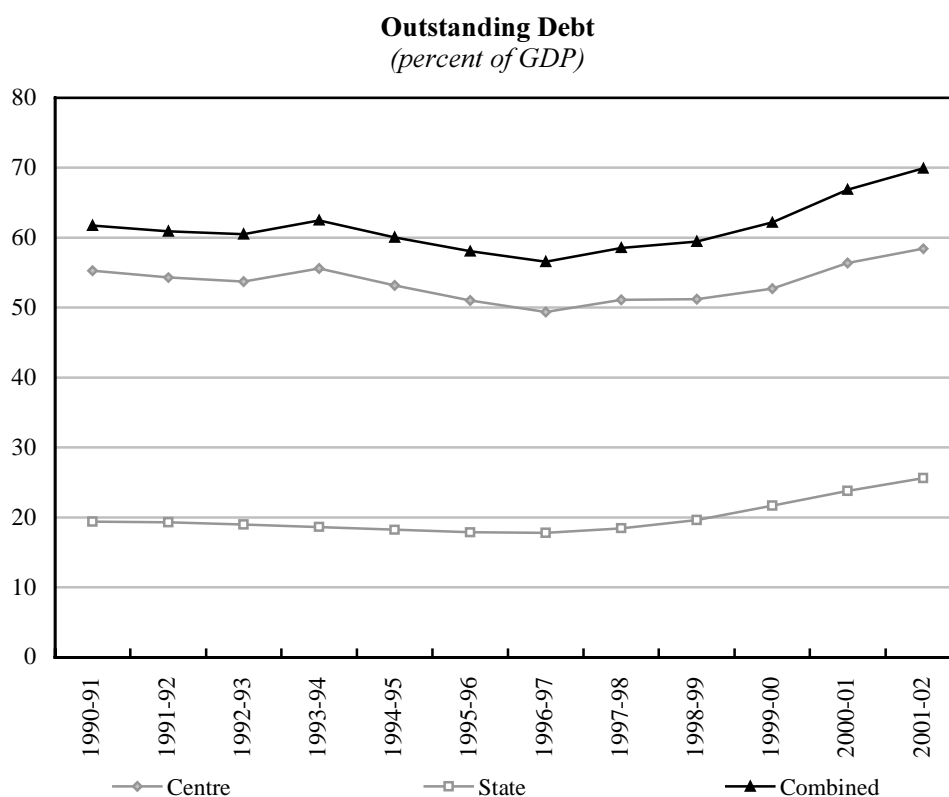


3.2.2 Trends in expenditure

The combined expenditure of Centre and State Governments as a ratio to GDP after declining from 28.8 per cent in 1990-91 to 25.1 per cent in 1996-97, began to follow an upward movement after 1996-97 and reached 29.5 per cent in 2001-02. This was due to the fact that at, both, the national and sub-national levels of Government, the revenue expenditure increased by about 3.6 percentage points between 1996-97 and 2001-02. The efforts to augment investment expenditure by cutting consumption expenditure did not materialize during the post reform period.

The major contributing factor imparting a downward rigidity to the revenue expenditure relates to items of committed expenditure, mostly those on interest payments and expenditure on wages and salaries. Though the cost of borrowings declined consistently due to fall in market interest rates, interest payments continued to rise unabated reflecting the impact of sizeable amount of past debt contracted at higher interest rates. With the implementation of the Fifth Pay Commission award towards the late Nineties, the wage bill and the pension bill could not be kept constricted.

Figure 4



3.2.3 Trends in deficit and debt

Reflecting these developments, the gross fiscal deficit of the government which had declined to 6.4 per cent of GDP by 1995-96, began to increase thereafter to about 10 per cent of GDP in recent years. Consequently, there was an accumulation of a huge stock of debt which is estimated to be 69.9 per cent as at end March 2002. The growing size of liabilities eventually generated a considerable debt-service burden and rising interest payments.

The composition of Central Government debt reveals that the debt is mostly internal in nature. The share of internal liabilities in the total has increased from 90 per cent at end-March 1991 to around 95 per cent at end-March 2002.

State Governments are not allowed to borrow from external sources. The public debt of States comprises internal debt (including market borrowings, loans from banks and financial institutions (FIs), special securities issued to the National Small Savings Fund-NSSF); loans from Centre; and small savings and Provident Funds, etc. Loans from the Centre form the most important constituent of States' debt. In recent years, market borrowings have emerged as the cheapest source of raising funds for the State Governments with the average rate of interest declining continuously from 14.0 per cent in 1995-96 to 6.2 per cent by March 2003. Both for the Central and State Governments, the share of market borrowings has increased during the past decade. Market borrowings which formed around 22 per cent of the total outstanding liabilities of the Centre at end-March 1991, increased its share to about 40 per cent as at end-March 2003.

3.2.4 External debt

The debt position presented in the Budget documents as explained above includes external debt at the historical exchange rate. In terms of current exchange rate, the actual level is higher. For example, at end-March 2003, the external debt to GDP ratio at historical exchange rate is 2.4 per cent but at current exchange rate it worked out to around 8 per cent. Subsequently, with prepayment the ratio at current exchange rate has come down to around 7 per cent of GDP. India's external debt position posted spectacular improvement with the debt/GDP ratio declining from 28.7 per cent at end-March 1991 to 20.1 per cent at end-March 2003. Responding to the reform in the external sector based on the recommendations of the High Level Committee of Balance of Payments, 1992-93 (Chairman: C. Rangarajan), the external sector has gained considerable strength, resilience and stability. This is evident from an unprecedented accretion to reserves (US\$ 109 billion at present), modest current account deficit (a surplus in 2001-02 and 2002-03), larger non-debt-creating capital inflows, orderly exchange rate movements and containment of external debt within sustainable levels. India's share of multilateral and bilateral debt during 1990-2003 ranged between 41-51 per cent, most of which were incurred by the Government of India mainly from a few multilateral creditor sources, *i.e.* IBRD, IDA, ADB; and bilateral official agencies from Japan and Germany – or the “big five”. Apart from multilateral and bilateral debt, external

commercial borrowings and non-resident deposits are the other two major components contributing to around 21 per cent and 22 per cent in India's total external debt.

It is important to recognize six basic facts which emerge from the changing practice of India's external debt. First, level of debt is relatively low. Second, the debt portfolio is characterized by high share of concessional and low share of short term debt. Third, there has been a sustained improvement in key indicators reflecting solvency and liquidity. Fourth, when compared with other emerging market economies, India's external indebtedness position is relatively less vulnerable and has improved overtime. Fifth, the external debt position in net terms (debt minus outstanding reserves) is nearly zero. Sixth, India prepaid the high cost debt from the foreign exchange reserve.

3.2.5 *Contingent liabilities*

With restrictions on borrowings by the States, the State Governments have taken recourse to off-budget borrowings, which are in the nature of contingent liabilities, which include guarantees, indemnities, etc. Although contingent liabilities do not form a part of the debt burden of the States, in the event of default by the borrowing agency, the States will be required to meet the debt service obligations. The outstanding guarantees of State Governments have shown a rising trend during the Nineties. As per the available data, the outstanding guarantees extended by 17 major States rose from Rs. 40,159 crore (6.1 per cent of GDP) in 1992 to Rs. 1,68,712 crore (8.1 per cent of GDP) in 2001 and declined marginally to Rs. 1,66,116 crore (7.2 per cent) in 2002. The conventional accounting system of government finances followed in the preparation of the budgets which does not consider guarantees/contingent liabilities as debt obligations of the State Government. Since government's off-budget liabilities could pose potential threats to fiscal and financial stability of the system, adoption of appropriate accounting practices to gauge the government's true net worth is crucial.

The fiscal reforms programme initiated in 1991 was able to bring down the level of fiscal deficit upto 1996-97 through rationalization of tax measures and expenditure compression measures. Although there have been some slippages in fiscal consolidation since 1997, there has been a renewal of the commitment to improve the quality of fiscal adjustment through monitorable reform programmes, debt consolidation and measures designed to bring back buoyancy to the tax/GDP ratio. The implementation of fiscal rule at both the levels of government has further strengthened the process of fiscal consolidation.

4. **Analytical framework**

Following the standard paradigm as alluded to earlier, four distinct approaches to assess the sustainability of fiscal policy have been framed, viz., Domar

Stability Condition, Sustainability Indicators, Present Value Budget Constraint; and the Model Based Approach. What follows is a design of the broad contours of each approach in the Indian context.

4.1 Domar stability condition

The Domar stability condition has been defined as:

$$y - r > 0 \quad (1)$$

$$r = (IP)_t / (OD)_{t-1} \quad (2)$$

where:

y = Growth of GDP at Current Market Prices

r = Average Interest Rate

IP = Interest Payment

OD = Outstanding Debt

t = Time Period

Equation (1) and (2) imply that the debt/GDP ratio (d/y) is stable if the nominal GDP growth (g) exceeds the nominal interest rate (r) on government debt. According to the Domar stability condition, larger the gap between the interest rate and growth rate the higher will be the d/y . Thus, to stabilise debt/GDP ratio (d/y), rate of interest should be lower than the output growth ($r < g$).

In this study the Domar stability condition has been tested in respect to market related borrowings rates and administered interest rates both for the Center and States.

4.2 Sustainability indicators

According to the contemporary literature as discussed in the preceding section, fiscal sustainability rule requires real growth rate to exceed real interest rate and primary balance to be non-negative for the debt/GDP ratio to be stable. The necessary condition is that real interest rate (r) is lower than real GDP growth (y) and the sufficient condition is that adequate primary surplus is maintained to finance debt services. Considering this rule, a host of alternative conditions to test fiscal sustainability are set out below:

$$\Delta d = \Delta y \quad (3)$$

$$PD/Y > 0 \quad (4)$$

$$r^* - y^* > 0 \quad (5)$$

$$OD/Y (r - y) - PD < 0 \quad (6)$$

$$IP/Y, IP/RR, IP/RE \downarrow \downarrow \downarrow \quad (7)$$

$$PRB > 0 \quad (8)$$

$$PRB = IP \quad (9)$$

$$ROC = COB \quad (10)$$

$$ROC = IR_t / OFA_{t-1} \quad (11)$$

$$COB = IP_t / OD_{t-1} \quad (12)$$

$$[(IP + REP) - PRB] / TGB > 1 \quad (13)$$

$$TNB / TGB \uparrow \uparrow \uparrow \quad (14)$$

Δd = Rate of Growth of Debt	RR = Revenue Receipts
Δy = Rate of Growth to GDP at Current Market Prices	RE = Revenue Expenditure
PD = Primary Deficit	PRB = Primary Revenue Balance
Y = GDP at Current Market Prices	ROC = Rate on Return on Capital Investments
R^* = Rate of Real Interest	COB = Cost of Borrowing
Y^* = Real Output Growth	IP = Interest Payments
IP = Interest Payment	PRB = Primary Revenue Balance
TNB = Net Borrowing	TGB = Total Gross Borrowing
REP = Repayments of Government Debt	IR = Interest Return
OFA = Outstanding Financial Assets	

Alternative conditions set out above, could be used to gauge the various aspects of the fiscal sustainability, keeping in view the Indian budgetary practices and fiscal system. While conditions 3 to 6 analyse the sustainability of the fiscal system in aggregate terms, conditions 7-9 examines from the point of view of revenue account and condition 10 tests the capital account sustainability. The conditions 11 to 12 could be employed to focus on fiscal vulnerability to debt trap. Closely related to the concept of sustainability of debt is the concept of debt trap. In an accounting sense, if interest payments or repayments or both, exceed total gross borrowings, it is argued that there is a debt trap.

In the above context, it is pertinent to note that the condition of debt trap only takes into account developments in the budget. The sustainability rule, however, as

defined above, represent the developments in the budget as well as the economy. The budget because it recognizes adequate primary surplus and the economy because, it recognizes inflation rate, interest rate and growth rate. Therefore, the sustainability rule has the advantage of superior analytical insight than the debt trap conditions.

4.3 Present value budget constraint approach

Extending the conventional sustainability indicator, *i.e.*: $d = pd (r - g)$, another approach to assess the sustainability is the present value of budget constraint. Solvency requires that the future primary surpluses should be sufficient to repay the current stock of public debt. According to this approach, the present value (*PV*) of the sum of future primary surpluses should not be less than the current outstanding liabilities of the Government. Following the methodology set out in the contemporary literature, the testing of the sustainability under this approach involves discounting of nominal stock of government debt backwardly to a given date with an appropriate discount rate. Thereafter the discounted series is tested for stationarity. If the series is non-stationary it implies the insolvency of the debt.

4.4 Model based approach

4.4.1 Dynamics of debt-deficit nexus

The outstanding debt at a given point of time is the accumulation of past deficit. If the deficit grows it leads to higher debt and given the rate of interest higher debt leads to higher interest payments. On account of higher interest payments expenditure increases. Given the constraints of augmenting revenue from conventional sources deficit would increase with every increase in expenditure thus what is otherwise called a vicious cycle of deficit and debt is created. Analytically, an unsustainable fiscal policy with unsustainable level of fiscal deficit leads to an unsustainable level of debt. This economic reasoning of dynamic nexus between debt and deficit within the framework of an inter temporal budget constraint is set out below:

$$OD_t = \sum_{i=0}^n GFD_{t-i} \quad (15)$$

$$GFD_t = OD_t - OD_{t-1} \quad (16)$$

$$GFD_t = PD_t + IP_t \quad (17)$$

$$IP_t = [i (BF_{t-1})] + [i^* (MF_{t-1})] + [i^{**} (EF_{t-1})] \quad (18)$$

$$PD_t = (TE_t - IP_t) - (RR_t - IR_t) \quad (19)$$

$$TE_t = RE_t + CO_t + NL_t \quad (20)$$

$$RR_t = T_t + NTR_t + DISINT \quad (21)$$

$$PD_t = (TE_t - IP_t) - RR_t \quad (22)$$

<i>OD</i>	Outstanding Debt
<i>GFD</i>	Gross Fiscal Deficit
<i>PD</i>	Primary Deficit
<i>IP</i>	Interest Payments
<i>BF</i>	Bond Financing
<i>MF</i>	Money Financing
<i>EF</i>	External Financing
<i>TE</i>	Total Expenditure
<i>RR</i>	Revenue Receipts
<i>RE</i>	Revenue Expenditure
<i>T</i>	Tax Revenue
<i>NTR</i>	Non Tax Revenue
<i>DISINV</i>	Disinvestment Proceeds

Against the above an empirical model to study the dynamic interrelationship between the internal and external balances for the Indian economy is postulated. The model is eclectic in nature. The model follows a disaggregated approach to the determination of government revenues and government expenditure. The level of Government is taken to be the general Government comprising both Centre and States. Financing of fiscal deficit by the monetary authority has been assumed to be zero reflecting the elimination of automatic monetization. The objective of the model is to examine the level of deficit and debt in the medium term and also the possible impact on the trade balance, inflation, interest rate and private investment and consumption.

4.4.2 Specification of model

Keeping in view the objectives stated above, the model has got four blocks viz., fiscal, monetary, external and real. The individual equations and the model have

been estimated for the period 1991 to 2002. The detailed exposition of the model is set out below.

Fiscal sector

Revenues

All the three components of revenue, *i.e.*, direct tax (*DT*), indirect tax (*IDT*) and non-tax (*NTAX*) have been modeled separately. The total revenue receipts (*RR*) is thus derived as an identity summing up these variables.

Tax Revenue

Revenue from direct and indirect taxes and also from non-tax sources is defined as a function of real GDP (*GDP*) and prices (*WPI*). Increase in real income is expected to increase both the tax and non-tax revenue. Similarly, rise in price level would also enhance the revenue if not indexed to inflation. Accordingly, the following specifications are set out:

Direct Tax:

$$LDT = f(LGDP, LWPI) \quad (23)$$

Indirect Tax:

$$LIDT = f(LGDP, LWPI) \quad (24)$$

Non-tax Revenue:

$$LNTAX = f(LGDP, LWPI) \quad (25)$$

Expenditure

Revenue expenditure (*RE*) has been defined as the summation of non-interest revenue expenditure (*NIRE*) and interest payments (*IP*) through an identity. Interest payment is modeled to depend on the fiscal deficit and its own past levels. *NIRE* is expressed as a function of past GDP, revenue receipts and the revenue deficit. While net lending (*NL*) has been modeled to depend on its own lag, real GDP and prices; capital outlay (*CO*) on real GDP only. Accordingly, the following specifications for the different components of expenditure are set out.

Non-interest Revenue Expenditure:

$$L(NIRE) = F(LGDP(-1), RR, RD) \quad (26)$$

Interest Payment:

$$LIP = f(FD, IP(-1)) \quad (27)$$

Capital Outlay:

$$LCO = f(LGDP) \quad (28)$$

Net Lending:

$$LNL = f(LGDP, LWPI, LNL (-1)) \quad (29)$$

External sector

Indicators of the external sector, viz., exports, imports, and unit value index of exchange rate have been modeled separately. World output, and past level of exports are taken to influence exports. Imports are modeled to depend on real GDP, exchange rate and domestic prices. Unit value index of exchange rate has been estimated as the function of GDP and prices. Notationally,

Exports:

$$LXP = f(LWOUT, LXP (-1)) \quad (30)$$

Imports:

$$LMP = f(LGDP, EXCH, LWPI) \quad (31)$$

Unit Value Index of Exports:

$$LUVIEXP = f(LWPI, LGDP) \quad (32)$$

Real sector

Private consumption has been expressed as a function of real disposable income and domestic prices. The effect of inflation on consumption has received considerable attention in the developing economies. It is expected that in low-income countries, rise in prices may lead to cut in savings. Investment by the private sector has been explained in terms of the level of economic activity proxied by the real GDP and the lagged interest rate (weighted lending rate of the commercial banks). Notationally,

Private Consumption Expenditure:

$$LPFCE = f(LGDP, LWPI) \quad (33)$$

Private Investment:

$$LIPVT = f(LGDP, WLR (-1)) \quad (34)$$

Monetary sector

Interest rate (R) defined by the yield on ten years G -Sec and the inflation rate (WPI) have been modeled under the monetary sector. Lagged values of the money supply, and fiscal deficit (GFD) in addition to WPI are taken to influence R and the inflation rate (WPI) is explained in terms of the reserve money and past inflation. Notationally,

Interest Rate:

$$LR = f(LWPI, LFD (-1), LM3 (-1)) \quad (35)$$

WPI :

$$LWPI = f(LRM, LWPI (-1)) \quad (36)$$

The Deficit Indicators are derived from the following identities:

$$RR = DT + IDT + NTX \quad (37)$$

$$RE = NIRE + IP \quad (38)$$

$$RD = RR - RE \quad (39)$$

$$PRB = RD - IP \quad (40)$$

$$FD = RD + CO + NL \quad (41)$$

$$Debt = Debt (-1) + FD \quad (42)$$

$$DYR = (Debt/GDP) * 100 \quad (43)$$

$$TB = XP - MP \quad (44)$$

$$PD = FD - IP \quad (45)$$

$$WLR = R + 3 \quad (46)$$

List of Endogenous variables	
$GDPMP$ = Nominal Gross Domestic Product	DT = Direct Taxes
RR = Revenue Receipts	IDT = Indirect Taxes
RE = Revenue Expenditure	NTX = Non Tax
$PFCE$ = Private Final Consumption Expenditure	RD = Revenue Deficit
$IPVT$ = Private Investment Expenditure	FD = Fiscal Deficit
WPI = Wholesale Price Index	IP = Interest Payment
R = Weighted Average Interest Rate of Government Dated Securities	PRB = Primary Revenue Balance
XP = Exports	MP = Imports
$EXCH$ = Exchange Rate (Rupees per US \$)	TB = Trade Balance
$Debt$ = Outstanding total Liabilities of the Government	$UVIEXP$ = Unit Value Index of Exports
DYR = $Debt/GDPMP$ Ratio	
Exogenous variables	
$WOUT$ = World Output	GDP = Real GDP
WPR = World Price Index of Exports	$M3$ = Money Supply
RM = Reserve Money	WLR = Weighted Lending Rate of the Commercial Banks

* The Prefix L denotes the log of the variable under consideration.

The model attempts to assess the fiscal situation till 2010 with a base line and a policy-induced scenario.

5. Analysis and assessment

5.1 Domar debt stability condition

Domar stability condition has been tested and results are in Table 3 for Centre and States. Average interest rate R (D) is calculated as a ratio of interest payment to the previous year's total liability of the Centre. The second series R (ML) is the

Table 3

Domar Condition of Debt Sustainability for Centre and States

Year	Centre			All States	
	y	$r(C)$	$R(ML)C$	$r(S)$	$R(ML)S$
1990-91	16.65	8.02	11.41	9.19	11.50
1991-92	14.85	10.43	11.24	9.92	11.84
1992-93	14.58	10.44	10.86	10.46	13.00
1993-94	14.81	11.33	13.36	11.11	13.50
1994-95	17.87	11.94	14.10	12.13	12.50
1995-96	17.30	11.76	12.50	11.89	14.00
1996-97	15.17	11.66	13.88	12.05	13.82
1997-98	11.28	12.04	12.01	12.37	12.82
1998-99	14.35	13.09	11.68	12.76	12.35
1999-00	11.25	13.34	11.77	13.21	11.89
2000-01	8.64	12.15	10.95	12.31	10.99
2001-02	9.11	11.32	9.44	12.95	9.20
2002-03	8.21	10.69	7.34	12.27	7.49

Notes:

 y = Growth Rate of GDP at Current Market Prices $r(C)$ = Average Interest Rate Centre $R(ML)C$ = Weighted Average of Central Government Market Borrowing Rates $r(S)$ = Average Interest Rate States $R(ML)S$ = Weighted Average of State Government Market Borrowing Rates

weighted average rate on current loans. The series $G(Y)$ gives the growth rate of GDP at current prices.

The movements in the average interest rates *vis-à-vis* nominal GDP growth reflect that the Domar stability condition has not been fulfilled for many of the years since 1991. This is because sizeable proportion of the domestic debt had been contracted at administered interest at higher level. In recent years, however, the rates on market related borrowings have come down and are lower than the nominal GDP growth rate. These developments confirm to weak sustainability condition.

Table 4

Fiscal Sustainability of Centre: Indicator Analysis
(percent)

Indicators	Symbolic representation	1993-97	1998-2002
1. (a) Rate of growth of GDP (Y) should be more than rate of growth of debt (D) (b) [$Y - D > 0$]	Y	16	10.9
	D	14.4	15.7
	$Y - D$	1.6	-4.9
2. Real output growth (y) should be higher than real interest rate (r) growth [$y - r > 0$]	y	6.2	5.5
	r	4.7	6.3
	$y - r$	1.5	-0.8
(a) Primary deficit (PD) should not be rising faster than GDP [$PD / GDP < 0$]	$PD / GDP < 0$	1.2	1.3
(b) Net Primary deficit (NPD) should not be rising faster than GDP [$NPD / GDP < 0$]	NPD / GDP	1.4	1.8
(c) Primary revenue balance (PRB) should be in surplus and adequate enough to meet interest payments (IP) [$PRB - IP > 0$]	PRB / GDP	-1.4	-0.8
	IP / GDP	4.3	4.6
	$(PRB - IP) / GDP$	-5.7	-5.4
3. Proportion of repayments (REP) to Gross Borrowings (TGB) should be falling over time [$REP / TGB \downarrow \downarrow$]	REP / TGB	38.4	31.8
4. Interest payments (IP) and repayments (REP) adjusted for primary revenue balance (PRB) should not exceed total Gross Borrowings (TGB) [$\{(IP + REP - PRB) / TGB\} < 1$]	$(IP + REP - PRB) / TGB$	2.05	1.34
5. Interest Burden defined by interest payments (IP) to GDP ratio should decline over time [$IP / GDP \downarrow \downarrow$]	IP / GDP	4.3	4.6
6. Interest payment as a proportion of revenue expenditure should decline overtime [$IP / RE \downarrow \downarrow$]	IP / RE	35.6	36.0
7. Interest payment as a proportion of revenue receipts should fall over time [$IP / RR \downarrow \downarrow$]	IP / RR	46.4	51.3

Note: Figures are 5-Year Averages.

Table 5

Fiscal Sustainability of States

Indicators	Symbolic representation	1993-97	1998-2002
1. (a) Rate of Growth of GDP (Y) should be more than Rate of (b) Growth of Debt (D) [$Y - D > 0$]	Y	15.9	10.9
	D	14.0	19.4
	$Y - D$	1.9	-8.5
2. (a) Primary Deficit (PD) should not be rising faster than GDP [$PD/GDP < 0$]	PD / GDP	0.01	0.02
(b) Net Primary Deficit (NPD) should not be rising faster than GDP [$PD/GDP < 0$]	NPD / GDP	1.5	2.7
(c) Primary Revenue Balance (PRB) should be in surplus and adequate enough to meet Interest Payments (IP) [$PRB - IP > 0$]	$(PRB) / GDP$	-1.13	-0.02
	(IP)	1.8	2.3
	$PRB - IP$	-3.0	-2.2
3. Real Output Growth (y) should be higher than Real Interest Rate (r) Growth [$y - r > 0$]	y	6.7	5.5
	r	4.6	6.6
	$y - r$	2.1	-1.1
4. Proportion of Repayments (REP) to Gross Borrowings (TGB) should be falling over time [$REP / TGB \downarrow \downarrow$]	(REP / TGB)	0.05	0.08
5. Interest Payments (IP) and Repayments (REP) adjusted for Primary Revenue Balance (PRB) should not exceed Total Gross Borrowings (TGB) [$\{(IP + REP - PRB) / TGB\} < 1$]	$IP + REP - PRB / TGB$	5.93	3.53
6. Interest Burden defined by Interest Payments (IP) to GDP ratio should decline over time [$IP / GDP \downarrow \downarrow$]	IP / GDP	1.8	2.3
7. Interest Payment as a proportion of Revenue Expenditure should decline overtime [$IP / RE \downarrow \downarrow$]	IP / RE	14.8	17.6
8. Interest Payment as a proportion of Revenue Receipts should fall over time [$IP / RR \downarrow \downarrow$]	IP / RR	15.8	21.4

Note: Figures are 5-year averages.

GFD = Gross Fiscal Deficit

RD = Revenue Deficit

PD = Gross Primary Deficit

NPD = Net Primary Deficit

MD = Monetised Deficit

GDP = Nominal GDP

Primary Receipts = Revenue Receipts Net of Interest Receipts

GFD Receipts include Revenue Receipts and Non-debt Capital Receipts.

GFD Expenditure includes Revenue Expenditure, Capital Outlay, Loans and Advances net of Recovery.

5.2 Sustainability indicators

The contemporary literature defines sustainability as $d = pd(r - g)$ with a necessary and sufficient condition where $d = \text{debt}/\text{GDP}$ ratio, PD = primary deficit, r = real interest rate and g = real growth rate. The necessary condition is akin to the Domar stability condition, *i.e.*: $g > r$. The sufficient condition explains that the debt/GDP ratio stability may not serve as an appropriate indicator of sustainability. If (r) exceeds (g) , even with primary balance the interest burden on the existing debt may be translated into perpetual growth in debt/GDP ratio. In such a scenario adequate primary surplus is required to offset the gap between (r) and (g) and to stabilise debt/GDP ratio. Reflecting this, sustainability indicators for the Central Government and State Governments are set out in Tables 4 and 5, respectively.

Indicator analysis presents an unsustainable fiscal position, particularly in the latter half of the Nineties. An analysis of sustainability indicators reveals that though there has been some improvement in terms of rate of interest and real GDP growth rate (satisfying the necessary condition of sustainability); the fiscal indicators have shown significant deterioration for both the Centre and the States. This is evident both in the revenue as well as the capital account. While the domestic debt position has shown sharp deterioration, the external debt has witnessed spectacular improvement over the years. The sustainability of external debt assessed in terms of a set of solvency and liquidity indicators, *viz.*, (a) external debt to GDP ratio; (b) ratio of debt service payments to exports of goods and services; (c) ratio of short term to total debt; (d) ratio of short term debt to foreign exchange reserves; and (e) debt service to current receipts are the lowest for India with the exception of China among the top 15 debtor countries of the world (World Bank, 2002).

5.3 The present value of budget constraint approach

Sustainability of debt has been tested by performing the unit root tests on the present discounted value of combined debt ($PDVDEBT$) for the period 1990-91 to 2001-02 for which actual data are available. The results are as under:

Unit Root Test Results

Unit root test	$PDVDEBT$	1% level	5% level
Augmented Dicky Fuller	3.46	-5.52	-4.10
Phillips-Perron	4.78	-5.12	-3.93

The results of the unit root tests indicate that the null hypothesis of a unit root could not be rejected at 1 per cent level of significance. However, at 5 per cent level of significance the PDVDEBT series becomes stationary, and satisfies the weak sustainability condition. Since the series is non stationary at 1 per cent level of significance it may be inferred that the combined debt position is unsustainable under the strong sustainability condition.

5.4 *Model-based approach*

5.4.1 *Model structure and model solution*

The model comprises of 14 stochastic equations and 10 identities. In total there are 36 variables in the model with 24 endogenous and 12 exogenous variables. There are 2 simultaneous and 2 recursive blocks in the model structure. Block-1 consists of 8 recursive equations consisting of equations for capital outlay, exports, WPI, indirect tax, direct tax, interest payment, non-tax receipts and revenue receipts. Blocks 2 and 3 consist of three simultaneous equations each. Block-2 has non-interest revenue expenditure, and identities for revenue expenditure and revenue deficit in a simultaneous framework. Equation for net lending and identities for debt and fiscal deficit constitute the second simultaneous block. Block-4 has got 10 Recursive Equations for Imports, interest rate, private investment expenditure, private final consumption expenditure, price of exports, unit value of exports, trade balance, weighted lending rate, primary revenue balance and primary deficit.

Deterministic simulation has been applied to solve the model. Deterministic simulation involves first an analysis of block structure of the model. The equations of the model are then solved for each observation in the solution sample, using an iterative algorithm to compute values for the endogenous variables. The model solution uses a Gauss-Seidel iterative scheme across all the observations of the sample. The values for the exogenous variables for the forecast period has been drawn from univariate (autoregressive) forecasting except for real GDP, which is assumed to be grow at 7 per cent *per annum*.

5.4.2 *Baseline scenario*

The empirical results based on the above methodology for the equations specified in the analytical framework are presented in Annex IV. The summary results for the baseline scenario are presented in Table 6. As it may be seen, the revenue deficit and the fiscal deficit, though gradually decline from the levels of 2002-03, but remain at a high level 6.6 per cent and 10.4 per cent, respectively, by the end of fiscal 2009-10. Reflecting this, the level of debt relative to GDP increases from around 81 per cent in 2002-03 to 90 per cent in 2009-10. The primary deficit though declines but still remains at 2.8 per cent. Thus the fiscal situation remains grim. However, there is no evidence of spillover of fiscal deficit to external sector as the trade gap is maintained at 3 to 3.5 per cent during the period 2002-03 to 2009-10. Similarly, the benign inflation condition also continues during the period

Table 6

Baseline Scenario
(percent to GDP)

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
DT	3.83	3.85	3.97	4.07	4.10	4.14	4.17	4.21	4.24
IDT	10.22	11.10	11.27	11.43	11.31	11.20	11.58	11.66	11.83
TAX	14.05	14.94	15.24	15.50	15.42	15.34	15.76	15.87	16.07
NTAX	4.06	3.92	4.08	4.24	4.31	4.37	4.44	4.51	4.57
RR	18.11	18.86	19.33	19.74	19.72	19.71	20.19	20.37	20.65
RE	25.11	27.28	27.73	27.97	27.98	27.90	27.74	27.52	27.25
IP	6.23	7.38	7.59	7.67	7.71	7.72	7.70	7.66	7.59
NIRE	18.84	19.89	20.14	20.31	20.28	20.18	20.03	19.86	19.66
RD	7.00	8.42	8.40	8.24	8.26	8.19	7.54	7.15	6.60
PRB	0.73	1.03	0.81	0.57	0.55	0.47	-0.16	-0.51	-0.99
CO	2.82	2.67	2.76	2.85	2.85	2.86	2.86	2.86	2.87
NL	0.49	0.22	0.35	0.46	0.50	0.59	0.67	0.79	0.92
GFD	10.31	11.30	11.51	11.54	11.61	11.63	11.07	10.80	10.39
PD	4.08	3.92	3.92	3.87	3.90	3.91	3.37	3.14	2.80
XP	9.33	9.83	10.01	10.06	10.10	10.14	10.17	10.20	10.23
MP	11.96	12.92	13.31	13.62	13.65	13.65	13.62	13.56	13.46
TB	-2.63	-3.09	-3.30	-3.56	-3.55	-3.51	-3.45	-3.35	-3.23
DEBT	71.10	80.53	80.87	83.10	85.05	86.80	88.26	89.44	90.36
WPI	4.6	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
R	9.44	9.14	9.48	9.21	8.96	8.72	8.49	8.27	8.06
RIPVT	0.11	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10
RPFCE	0.23	0.20	0.18	0.17	0.15	0.14	0.12	0.11	0.10

Table 7

Corrected Scenario through Adjustment in Revenue and Expenditure
(percent)

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
DT	3.83	4.07	4.31	4.55	4.79	5.03	5.27	5.51	5.75
IDT	10.22	10.46	10.70	10.94	11.18	11.42	11.66	11.90	12.14
TAX	14.05	14.53	15.01	15.49	15.97	16.45	16.93	17.41	17.89
NTAX	4.06	4.30	4.54	4.78	5.02	5.26	5.50	5.74	5.98
RR	18.11	18.83	19.55	20.27	20.99	21.71	22.43	23.15	23.87
RE	25.11	24.96	24.81	24.65	24.50	24.35	24.20	24.05	23.89
IP	6.23	7.38	7.59	7.67	7.71	7.72	7.70	7.66	7.59
NIRE	18.84	17.57	17.22	16.99	16.79	16.63	16.49	16.39	16.31
RD	7.00	6.13	5.26	4.38	3.51	2.64	1.77	0.90	0.02
PRB	0.73	-1.26	-2.33	-3.28	-4.20	-5.08	-5.94	-6.76	-7.56
CO	2.82	3.12	3.42	3.72	4.02	4.32	4.62	4.92	5.22
NL	0.49	0.22	0.35	0.46	0.50	0.59	0.67	0.79	0.92
GFD	10.31	9.47	9.03	8.56	8.03	7.55	7.06	6.60	6.17
PD	4.08	2.08	1.44	0.89	0.32	-0.17	-0.64	-1.05	-1.42
XP	9.33	9.83	10.01	10.06	10.10	10.14	10.17	10.20	10.23
MP	11.96	12.92	13.31	13.62	13.65	13.65	13.62	13.56	13.46
TB	-2.63	-3.09	-3.30	-3.56	-3.55	-3.51	-3.45	-3.35	-3.23
DEBT	71.20	79.68	79.59	81.35	82.77	84.03	85.01	85.74	86.22
WPI	4.66	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3
R	9.44	9.14	9.48	9.21	8.96	8.72	8.49	8.27	8.06
RIPVT	0.11	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10
RPFCE	0.23	0.20	0.18	0.17	0.15	0.14	0.12	0.11	0.10

with inflation rate measured in terms of WPI is stabilized at 4.3 per cent. Even though fiscal deficit predominates, there is an evidence of the softening of interest rate as it declines from 9 per cent in 2002-03 to 8 per cent in 2009-10. The decline in private investment and consumption over the baseline period indicates some evidence of crowding-out.

5.4.3 Corrected Scenario

As the baseline scenario indicates, there is no adverse macroeconomic impact even though fiscal situation does not fulfill the sustainability criteria. Therefore, taking into account the inertial and macroeconomic effect of the baseline scenario, the required fiscal correction in the context of fiscal rules is attempted in Table 7. The main assumptions are: (a) elimination of revenue deficit by 2009-10 (this is on the basis of Centre's FRBM Act, 2003 which mandates to reach the target by 2007-08 and most of the State Governments are actively considering implementing FRBM); (b) enhancement of revenue receipts to 18 per cent as assumed in the Tenth Plan; (c) reduction in non-interest revenue expenditure; and (d) higher provision for capital outlay for helping higher growth and inducing private investment. The results are summarised in Table 7.

In the corrected scenario, revenue deficit is eliminated mainly on account of enhancement in revenue, particularly indirect tax revenue. This would be possible due to extended coverage in respect of service tax, improved collections under customs and excise duties and better compliance. The substantial reduction in revenue deficit would be helpful for providing higher capital outlays, which would go up from around 3 per cent to 5 per cent during the period. The GFD would decline to 6 per cent and the debt/GDP ratio would reach 86 per cent.

6. Policy recommendations

Sustainability of budget deficit is essentially about good house keeping by the Government. It gives a correct picture whether Government is in a position to continue the present fiscal policy or not, and if it continues, what is the extent of fiscal malaise it is going to generate in the economy; and if it does not continue, what is the extent of fiscal correction necessary. The important precondition for sustainability of fiscal policy is that Governments should have their revenues cover expenditures and where they do not, returns from investment should cover amortisation costs. The sustainability of Government deficits and domestic debt primarily depends upon the size and nature of resource mobilization as well as the disposition of public expenditure.

The path to durable fiscal consolidation is through fiscal empowerment *i.e.*, by expanding the scope and size of revenue flows into the budget. A fiscal strategy based on revenue maximisation would also provide the necessary flexibility to shift the pattern of expenditures and redirect them productively. There has been some

progress in restructuring the tax system; however, the leakages in the tax base through exemptions continue to pose problems. Higher tax revenue should be achieved mainly through buoyancy and expansion of the tax base. A central issue remains the coordination of central excises (CENVAT) with a State-level VAT, with the objective of structuring a national VAT. In this context, the issue of a State-level VAT that includes interstate trade assumes critical significance. It is also imperative to introduce comprehensive taxation of services at the central level with appropriate assignment to States and local bodies. The VAT requires integration of various stages of commodity taxation between the Centre and the States. It also involves managing the problems in transition from the existing structure, including the long run effects of State VAT on the economy and on public revenue. Consensus among all the States on the principle and rates is essential so that exemptions and escape clauses in VAT rate structures and anomalies in legislation are limited.

Revenue maximisation covers not only taxes but also non-tax revenues, especially cost recovery in respect of all commercial services directly (*i.e.*, water) or indirectly (*i.e.*, power) in which investments have been made. Improvement in fixing and collection of user charges, extension of the same to non-merit goods and progress in cost recoveries is also central to the issue of fiscal empowerment. Reductions in non-obligatory revenue expenditures, such as subsidies and administrative services, improvement in non-interest non-tax revenue receipts as well as tax revenue.

The thrust of expenditure compression measures should be on restricting non-interest outlays to less than the growth of GDP. A comprehensive approach to the management of public expenditure would require explicit recognition of macroeconomic linkages of Government expenditure policies, setting of expenditure priorities and ensuring that specified activities are undertaken efficiently and effectively. In this context, accumulated empirical evidence shows that public sector investment in the infrastructure sector “crowds in” private investment. Considerations of growth and fiscal consolidation require that predominantly large amount of resources of the government are channelised for investment purposes. This has a special significance in the context of the trends witnessed in public investment outlays in recent years and the urgent need to step up infrastructure investment for improving the growth prospects of the economy.

The strategy of fiscal empowerment is of special significance for States since the bedrocks of socioeconomic welfare, *i.e.*, law and order and social services are in the State sector. There is considerable merit in emphasizing the quality aspects of fiscal adjustment in the process of reduction in the fiscal deficit and this means fiscal empowerment rather than fiscal enfeeblement as an appropriate strategy.

Pension reforms would assume priority in the coming years with the availability of a menu of schemes, diversification of risk and independent regulatory oversight. Steps are being taken to identify and provide for the fiscal risk embodied in State Government guarantees with limits imposed to restrain their growth. These structural changes are expected to impart sustainability to public debt over the medium term. A High-Level Expert Group to provide a roadmap for pension

reforms. The Eleventh Finance Commission underscored the need for some viable scheme of pension funding. In this context, a new pension scheme based on defined contributions for central Government employees entering service after October 2001 has been announced.

Contingent liabilities arising on account of formal guarantees extended by Central and State Governments need to be considered within strategies to ensure the sustainability of public debt. The quality of financial assets in terms of ownership in PSEs and Government-owned financial entities need to be assessed keeping in view the health of their balance sheets as a whole, since the Government is the owner. In addition, a holistic view of the assets and liabilities as well as incomes and expenditures of the public sector as a whole would add to the quality of fiscal adjustment and the health of public finances.

7. Concluding observations

Indian economy in recent years has seen significant improvement. Growth prospects are robust; inflationary outlook is benign; external sector is strong and resilient with large accretions to foreign exchange reserves mainly due to non-debt capital inflows and orderly management of the exchange rate. These positive factors have contributed to a softer interest rate regime. Notwithstanding these spectacular achievements, one of the major problems facing the Indian economy is large budget deficit and the resulting high national debt. The paper assessed the sustainability condition in terms of four different approaches: (a) Domar condition, (b) sustainability indicators, (c) present value budget constraint, and (d) model based approach. The results under different approaches are set out below.

The movements in the average interest rates *vis-à-vis* nominal GDP growth reflect that the Domar stability condition has not been fulfilled for many of the years since 1991. This is because sizeable proportion of the domestic debt has been contracted at administered interest at higher level. In recent years, however, the rates on market related borrowings have come down and are lower than the nominal GDP growth rate. These developments confirm to weak sustainability condition.

An analysis of sustainability indicators reveals that though there has been some improvement in terms of rate of interest and real GDP growth rate (satisfying the necessary condition of sustainability); the fiscal indicators have shown significant deterioration for both the Centre and the States. This is evident both in the revenue as well as the capital account. While the domestic debt position has shown sharp deterioration, the external debt has witnessed spectacular improvement over the years. The sustainability of external debt assessed in terms of a set of solvency and liquidity indicators, *viz.*, (a) external debt to GDP ratio; (b) ratio of debt service payments to exports of goods and services; (c) ratio of short term to total debt; (d) ratio of short term debt to foreign exchange reserves; and (e) debt service to current receipts are the lowest for India with the exception of China among the top 15 debtor countries of the world.

The results of the unit root tests indicate that the null hypothesis of a unit root could not be rejected at 1 per cent level of significance. However, at 5 per cent level of significance the PDVDEBT series becomes stationary, and satisfies the weak sustainability condition. Since the series is non stationary at 1 per cent level of significance it may be inferred that the combined debt position is unsustainable under the strong sustainability condition.

The model based approach under the baseline scenario reveals that the revenue deficit and the fiscal deficit, though gradually decline from the levels of 2002-03, but remain at a high level 6.6 per cent and 10.4 per cent, respectively, by the end of fiscal 2009-10. Reflecting this, the level of debt relative to GDP increases from around 81 per cent in 2002-03 to 90 per cent in 2009-10. The primary deficit though declines but still remains at 2.8 per cent. Thus the fiscal situation remains grim. However, there is no evidence of spillover of fiscal deficit to external sector as the trade gap is maintained at 3 to 3.5 per cent during the period 2002-03 to 2009-10. Similarly, the benign inflation condition also continues during the period with inflation rate measured in terms of WPI is stabilized at 4.3 per cent. Even though fiscal deficit predominates, there is an evidence of the softening of interest rate as it declines from 9 per cent in 2002-03 to 8 per cent in 2009-10. The decline in private investment and consumption over the baseline period indicates some evidence of crowding-out.

In the corrected scenario, revenue deficit is eliminated mainly on account of enhancement in revenue, particularly indirect tax revenue. This would be possible due to extended coverage in respect of service tax, improved collections under customs and excise duties and better compliance. The substantial reduction in revenue deficit would be helpful for providing higher capital outlays, which would go up from around 3 per cent to 5 per cent during the period. The GFD would decline to 6 per cent and the debt/GDP ratio would reach 86 per cent.

In view of the above, the study concludes that there are evidences of weak sustainability (real rate of growth is higher than the real interest rate). Furthermore, though the fiscal position would continue to be grim in the baseline scenario, evidence of lower inflation, no spillover to the external sector and continuation of softer interest rate regime suggest that this would not distort the macroeconomic fundamentals.

The fiscal consolidation efforts through legislative enactment of the fiscal rule would help strengthen fiscal position in eliminating revenue deficit and reducing fiscal deficit and also providing higher expenditure for public investment.

Elimination of automatic monetisation, prudent debt management by the Reserve Bank and Government of India, softer interest rate regime, higher growth trajectory continuation of benign inflationary outlook, strong and resilient external sector would help in smoothening the process of further fiscal consolidation. Thus, the medium term outlook looks positive and favourable. The sustainability assessment as done in the study recognizes inertial impact, macroeconomic effect and fiscal impact. The strong macroeconomic fundamentals would strengthen the

inertial impact. Given the adverse macroeconomic impact of high fiscal deficit, it would be essential that fiscal rules should be followed very stringently to achieve the desired fiscal consolidation.

The revenue augmentation through customs and excise are possible through industrial revival and picking up of imports. The broadening of coverage of service tax would garner higher revenues. And introduction of VAT would be beneficial. Expenditure management of the government has been praiseworthy. This could be further continued with higher provisions in capital outlay. The enactment of fiscal rules is underway. Positive signs have already been seen in 2003-04 where marked improvements have taken place in Central Government budget. It is expected that State Governments would also undertake similar exercise.

It is pertinent to note that the level of primary surplus relative to GDP is conditional on the performance of the economy in respect of economic growth, inflation and interest rate. It is expected that the strong macroeconomic fundamentals along with the enforcement of fiscal rule would ensure fiscal sustainability in the foreseeable future.

ANNEX I

CONCEPT AND DEFINITION OF DEBT

Internal Debt in the budget document comprises loans raised in the open market, Treasury Bills, special securities issued to Reserve Bank and non-interest non-negotiable rupees securities issued to international financial institutions. Other liabilities include small savings, provident funds, special deposit schemes, reserve funds and deposits. However, according to economic analysis, any obligation having repayment and interest payment is debt and are of two types, *viz.*, domestic debt and external debt. Thus, under domestic debt, internal debt and other liabilities (which mainly include market borrowings, small savings, provident funds and reserve funds and deposits) are clubbed together.

In addition, in economic analysis there are also issues relating to gross debt (GD) and net debt (ND). The gross domestic debt (GDD) represents internal debt and other liabilities as given in the budget document. However, it has been suggested by Seshan (1987) that there are certain items like, non-interest and non-negotiable securities issued to IMF and reserve funds which are only intergovernmental debts and thus could be netted out from gross debt. Another concept as developed by Rangrajan *et al.* (1989) is to net out all deposits under reserve funds and deposits in addition to the adjustments suggested by Seshan (1987).

In this paper the gross debt is defined as total liabilities given in the budget document and gross domestic debt is connoted as gross debt *minus* loans and advances (outstanding). As an extension to the net debt concept, the net asset position of the Government has also been examined which is defined as total assets *minus* total liabilities. Total assets according to the budget document are capital investments and loans by the Central Government.

An issue that has significant implication for sustainability of the fiscal position of Governments, particularly in the context of the existing heavy burden of debt, is that of providing guarantees. Government's grant guarantees to promote certain economic enterprises by reducing the credit risk for investors especially in those activities where the nature of investment is characterized by long gestation periods. While guarantees are contingent liabilities do not form part of debt as conventionally measured, these have in the eventuality of default the potential of exacerbating apparently sound fiscal system.

For illustration purpose a statement of liabilities and assets of both levels of Government as set out in the budget document, is presented opposite.

With the change in the accounting system from 1999-2000, States' share in the small saving collections which was earlier included under loans from the Centre are shown as special securities issues to NSSF and included under the internal debt of the States.

Central Government

	Liabilities		Assets
A	Public Debt (A1 + A2)	A	Capital Outlay (A1 + A2 + A3)
A.1	Internal Debt (A1.1 to A.1.4)	A.1	General Service (A.1 + A.1.2)
A.1.1	Market Loans	A.1.1	Defence Service
A.1.2	Treasury Bills	A.1.2	Other General Service (Police, Public Works, etc.)
A.1.3	Special Securities issued to RBI	A.2	Social Services (Education, Health, Housing, Urban Development, etc.)
A.1.4	Securities issued to International Financial Institutions	A.3	Economic Services
A.2	External Debt	A.3.1	Agriculture
		A.3.2	Transport
		A.3.3	Industry
		A.3.4	Investment in Financial Institutions
B	Other Liabilities	B	Loans and Advances
B.1	Small Saving Schemes	B.1	States
B.2	Provident Funds	B.2	Public Enterprises
B.3	Special Deposits Scheme	B.3	Government Servants
B.4	Reserve Funds and Deposits		
C	Total Liabilities	C	Total Assets (A + B)

State Governments

	Liabilities		Assets
A	Public Debt (A1 + A2 + A3)	A	Capital Outlay (A1 + A2 + A3)
A.1	Internal Debt (A1.1 to A.1.4)	A.1	Social Service (Education, Health, Housing, Urban Development, etc.)
A.1.1	Market borrowings	A.2	Social Services
A.1.2	Special sec. issued to NSSF	A.3	Economic Services
A.2	Loans from the Centre	B	Loans and Advances
A.3	Small Savings, State Provident Funds etc.		

Note: While calculating the combined debt, the loans from the Centre to State Governments (net of loan recovery) and investment in special securities of States under NSSF are netted out.

ANNEX II

INDICATORS OF DEFICIT

In order to measure different concepts of budget deficit in the Indian context, it is interesting as well as instructive to understand the Indian budgetary system and practice and the fiscal balance sheet.

A. Indian budgetary system and practice

Under Article 112 of the Constitution, a statement of estimated receipts and expenditure of the Government of India has to be laid before Parliament and for the State Governments in the State Legislature in respect of the financial year, which runs from April 1 to March 31. This statement titled “Annual Financial Statement (AFS)” is the main budget document. The estimates of receipts and disbursements in the AFS and of expenditure in the demand for grants are shown according to the accounting classification prescribed under the Article 150 of the Constitution.

The AFS shows the receipts and payments of Government under the three parts in which Government accounts are kept. (i) Consolidated Fund; (ii) Contingency Fund, and (iii) Public Account. All revenues received by Government, loans raised by it and also its receipts from recoveries of loans granted by it, form the Consolidated Fund. The contingency Fund is an imprest placed at the disposal of the President to incur urgent unforeseen expenditure. Besides the normal receipts and expenditure of Government which relate to the Consolidated Fund, certain other transactions enter Government account, in respect of which, Government acts more as a banker, *viz.*, transactions relating to provident funds, small savings collections, other deposits, etc. The moneys thus received are kept in the account called Public Account.

Under the Constitution of India, Budget has to distinguish expenditure on revenue account from other expenditure. Accordingly, the Government Budget comprises; (a) Revenue Budget, and (b) Capital Budget. Revenue Budget consists of the revenue receipts of the Government which mainly include tax revenues and interest and dividends on investments made by the Government. Revenue expenditure is for normal running of the government. Broadly speaking, expenditure which does not result in the creation of assets is treated as revenue expenditure with the exception of grants given to the State Governments. Capital Budget consists of capital receipts and disbursements. Capital receipts consist of non-debt components and debt components. The non-debt item is the recovery of loans disbursed in the past by the Government. The disinvestment proceeds also form part of non-debt capital receipts. The debt portion comprises internal debt (market borrowings), other liabilities (small savings, reserve funds and deposits, etc.) and external borrowings. Capital disbursements consists of capital expenditure on acquisition of assets and loans and advances to State Governments. The transactions in the Public Account which include small savings, provident fund, deposits and reserve funds are also covered in the Capital Budget.

Fiscal Balance Sheet

Receipts	Expenditures
Revenue Receipts (RR) = TR + NTR	Revenue Expenditure (RE)
Tax Receipts (TR)	General Services (GSR) – of which
Non-Tax Receipts (NTR) – of which	Interest Payments (IP)
Interest Receipts (IR)	Social Services (SSR)
Dividends and Profits (DP)	Economic Services (ESR)
External Grants (EG)	Grants-in-Aid (GIA)
Capital Receipts (CR) – of which	Capital Expenditure (CE)
Recoveries of Loans (ROL)	Capital Outlay (CO)
Disinvestment Proceeds (DIS)	Social Services (SSC)
Internal Debt (ID)	General Services (GSC)
Market Loans (ML)	Economic Services (ESC)
Other Internal Liabilities (OL) – of which	Loans and Advances (LA) – of which
	Loans to States against small savings collections (LASS)
Small Savings (SS)	General Services (GSL)
Provident Funds (PF)	Social Services (SSL)
Special Deposits (SD)	Economic Services (ESL)
Reserve Funds and Deposits (RFD)	Other Loans and Advances (OLA)
External Borrowings (EB)	
Total Receipts (TR) = (RR + CR)	Total Expenditure (TE) = (RE + CE)

Concept and Measurement of Deficit Indicators

	Deficit Indicators	Expenditures	Receipts	Measurement
1.	Revenue Deficit (RD)	RE	RR	$RD = RE - RR$
2.	Gross Fiscal Deficit (GFD1)	$TE - ROL = RE + CO + (LA - ROL)$ $= RE + CO + NL$	RR + DIS	$GFD = (TE - ROL) - (RR + DIS)$ $= (RE + CE - ROL) - (RR + DIS)$ $= (RE + CO + LA - ROL) - (RR + DIS)$ $= (RE + CO + NL) - (RR + DIS) = (RD + CO + NL - DIS)$
	GFD2 (concept presently followed by GoI)	$TE - ROL - LASS$	RR + DIS	$RD + CO + NL - LASS - DIS$
3.	Primary Deficit (PD)			
	(a) $PD1 = GFD1 - IP$	$TE - ROL - IP$ $= (RE - IP) + [CO + (LA - ROL)]$ $= (RE - IP) + (CO + NL)$	RR + DIS	$PD1 = (RE - ROL - IP) - (RR + DIS)$ $= [(RE - IP) + (CO + LA - ROL)] - (RR + DIS)$ $= [(RE - IP) + (CO + NL)] - (RR + DIS)$
	(b) $PD2 = GFD2 - IP$	$TE - ROL - IP$ $= (RE - IP) + [(CO + LA - LASS - ROL)]$ $= (RE - IP) + (CO + NL - LASS)$	$(RR - IR) + DIS$	$PD2 = (TE - ROL - IP) - [(RR - IR) + DIS]$ $= [(RE - IP) + (CO + LA - ROL - LASS)] - [(RR - IR) + DIS]$ $= [(RE - IP) + (CO + NL - LASS)] - [(RR - IR) + DIS]$
	(c) $PD3 = GFD1 - (IP + IR)$	$TE - ROL - IP$ $= (RE - IP) + [CO + (LA - ROL)]$ $= (RE - IP) + (CO + NL)$	$(RR - IR) + DIS$	$PD3 = (TE - ROL - IP) - [(RR - IR) + DIS]$ $= (RE - IP) + [CO + (LA - ROL)] - [(RR - IR) + DIS]$ $= [(RE - IP) + (CO + NL)] - [(RR - IP) + DIS]$
	(d) $PD4 = GFD2 - (IP + IR)$	$TE - ROL - IP$ $= (RE - IP) + [(CO + LA - LASS - ROL)]$ $= (RE - IP) + (CO + NL - LASS)$	$(RR - IR) + DIS$	$PD4 = (TE - ROL - IP) - [(RR - IR) + DIS]$ $= [(RE - IP) + (CO + LA - ROL - LASS)] - [(RR - IR) + DIS]$ $= [(RE - IP) + (CO + NL - LASS)] - [(RR - IR) + DIS]$
4.	Net Fiscal Deficit (NFD)			
	(a) $NFD1 = GFD1 - NL$	$TE - NL$ $= (RE + CE) - (LA - LASS - ROL)$ $= (RE + CE) - NL$	RR + DIS	$NFD = (TE - NL) - (RR + DIS)$ $= [(RE + CE) - (LA - LASS - ROL)] - (RR + DIS)$ $= [(RE + CE) - NL] - (RR + DIS)$
	(b) $NFD2 = GFD2 - NL$	$TE - NL$ $= (RE + CE) - (LA - LASS - ROL)$ $= (RE + CE) - NL$	RR + DIS	$NFD = (TE - NL) - (RR + DIS)$ $= [(RE + CE) - (LA - LASS - ROL)] - (RR + DIS)$ $= [(RE + CE) - NL] - (RR + DIS)$
5.	Primary Revenue Balance (PRB)			
	(a) PRB1	RE - IP	RR	$PRB = (RE - IP) - RR = RD - IP$
	(b) PRB2	RE - IP	RR - IR	$PRB2 = (RE - IP) - (RR - IR) = RD - NIP$

ANNEX III
FISCAL RESPONSIBILITY LEGISLATION OF STATES

Item/State	Karnataka (Act)	Kerala (Act)	Tamil Nadu (Act)	Punjab (Act)	Uttar Pradesh (Act)	Maharashtra (Bill)
1. Gross fiscal deficit	Not more than 3% of GSDP by 2006	GFD to 2% of GSDP by 2007	GFD not more than 2.5% of GSDP by 2007	Contain rate of growth of GFD to 2% <i>per annum</i> in nominal terms, till GFD is below 3% of GSDP	Not more than 3% of all GSDP by 2009	
2. Revenue deficit	Nil by 2006	Nil by 2007	Ratio of RD to revenue receipt below 5% by 2007	Reduce RD to revenue receipts by at least 5 percentage points until revenue balance is achieved	Nil by 2009	Ensuring that after a period of 5 years from the appointed day, RD to be brought to nil
3. Limiting guarantees	Limit the guarantees within prescribed ceiling under the Government Guarantees Act		Cap outstanding risk weighted guarantees to 100% of the total revenue receipts in the proceeding year or at 10% of GSDP	Cap outstanding guarantees on Long-term debt to 80% of revenue receipts of the previous year and guarantees on short-term debt to be given only for working capital or food credit	Not to give guarantee for any amount exceeding the limit prescribed under any rule or law made by the Government for the purpose	Amount of risk in guarantees issued in a year shall not exceed 1.5% of the expected revenue receipts and to classify the guarantee obligations according to risk of devolvement

Item/State	Karnataka (Act)	Kerala (Act)	Tamil Nadu (Act)	Punjab (Act)	Uttar Pradesh (Act)	Maharashtra (Bill)
4. Total liabilities	Total liabilities not to exceed 25% of GSDP by 2015			Ratio of debt to GSDP to 40% by 2007	Total liabilities not to exceed 25% of GSDP by 2018	Restriction on borrowing.
5. Expenditure					To be as per the targets to be given in the MTFRP	Achieving non-salary development expenditure not less than 60 per cent of the total expenditure
6. Medium-Term Fiscal Plan (MTFP)	MTFP would include: i) Four-year rolling target for prescribed target, ii) Assessment of the sustainability, and iii) Evaluation of performance of prescribed fiscal indicators	MTFP to review periodically the progress of public expenditure with reference to fiscal target, evaluation of the current trend to budgetary allocations	MTFP include: i) State objectives, ii) Evaluation of fiscal indicators, iii) Strategies priorities for ensuing year iv) Economic trends and future prospects	MTFP include: i) Three-year rolling target for prescribed target, ii) Assessment of the sustainability, and iii) Recent economic trends and future prospects	MTFP would include: i) Five-year rolling targets, ii) Medium term fiscal objectives, iii) Strategies priorities, iv) Evaluation of performance of prescribed fiscal indicators	Multi-year framework and presenting three years forward estimates of revenue and expenditure

Item/State	Karnataka (Act)	Kerala (Act)	Tamil Nadu (Act)	Punjab (Act)	Uttar Pradesh (Act)	Maharashtra (Bill)
7. Compli-ance	Half yearly review of receipts and expenditure in relation to budget estimates along with remedial measures to achieve the budget target. GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	Public Expenditure Review Committee which would submit a review report giving full account of each item where the deviation from the fiscal target have occurred during the previous year	Independent external body to carry out periodic review for compliance for the provision of the Act. Target GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	Quarterly review of receipts and expenditure in relation to budget estimates along with remedial measures to achieve the budget target GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	a) Half-yearly review of receipts and expenditure in relation to budget. The review report to reflect clearly deviation from the budget targets and remedial measures, b) GFD/RD may exceed the limits on unforeseen grounds due to national security or natural calamity	Constitution of Fiscal Advisory Board to advise Government relating to implementation of the fiscal responsibility legislation
8. Pension						Present to the legislature every year estimated yearly pension liabilities worked out on actuarial basis for the next ten years
9. Fiscal transpa-rency	Certain fiscal management principles and measures for fiscal transparency	Measures to ensure grater transparency in its fiscal operations	Measures to ensure greater transparency in its fiscal operations	Measures to ensure greater transparency in its fiscal operations	Budget to be made more transparent by better disclosure statements to be included in the budget documents	Bringing budget transparency by identifying all liabilities (past and present), constitution of a Doubtful Loans and Equity Fund

ANNEX IV ESTIMATION RESULTS

Fiscal sector

Revenue

Dependent variable	Independent Variable		R^2	DW	Theil's U
	LOG (GDP)	LOG (WPI)			
LOG (DT)	0.81 (3.26)	1.66 (7.98)	0.99	2.45	0.018
LOG (IDT)	1.36 (7.23)	0.43 (2.71)	0.99	2.07	0.010
LOG ($NTAX$)	1.24 (2.68)	1.20 (3.34)	0.98	2.64	0.023

Non-interest revenue expenditure

Dependent variable	Independent Variable			R^2	DW	Theil's U
	LOG ($GDP(-1)$)	LOG (RD)	LOG (RR)			
LOG ($NIRE$)	0.33 (2.36)	0.19 (10.56)	0.62 (13.65)	0.99	2.42	0.010

Combined interest payment

Dependent variable	Independent Variable		R^2		Theil's U
	LOG (FD)	LOG ($IP(-1)$)			
LOG (CIP)	0.11 (1.90)	0.86 (14.97)	0.99	2.95	0.006

Capital outlay and net lending

Dependent variable	Independent Variable			R^2		Theil's U
	LOG (GDP)	LOG (WPI)	LOG ($NL(-1)$)			
LOG (NL)	10.18 (2.43)	-8.05 (-2.18)	-0.37 (-1.57)	0.50	2.48	0.178
LOG (CO)	1.82 (21.52)	-	-	0.98	2.19	0.017

Monetary sector*Interest rate*

Dependent variable	Independent Variable			R^2	DW	Theil's U
	LOG ($M3(-1)$)	LOG ($FD(-1)$)	LOG (WPI)			
LOG (R)	-0.60 (-2.39)	-0.12 (-0.97)	1.20 (3.53)	0.91	2.68	0.013

WPI

Dependent variable	Independent Variable		R^2	DW	Theil's U
	LOG (RM)	LOG ($WPI(-1)$)			
LOG (WPI)	0.27 (3.48)	0.41 (3.12)	0.99	3.12	0.088

External sector*Exports*

Dependent variable	Independent Variable		R^2	DW	Theil's U
	LOG ($WOUT$)	LOG ($XP(-1)$)			
LOG (XP)	1.65 (3.40)	0.54 (6.71)	0.99	1.99	0.024

Imports

Dependent variable	Independent Variable			R^2	DW	Theil's U
	LOG (GDP)	LOG ($EXCH$)	LOG (WPI)			
LOG (MP)	1.05 (2.49)	-0.02 (-2.20)	2.27 (5.37)	0.99	2.67	0.021

Unit value index of exports

Dependent variable	Independent Variable		R^2	DW	Theil's U
	LOG (GDP)	LOG (WPI)			
LOG ($UVIEXP$)	-0.73 (-1.94)	1.50 (4.72)	0.95	1.24	0.024

Real sector*Private investment expenditure*

Dependent variable	Independent Variable		R^2	DW	Theil's U
	LOG (GDP)	LOG ($WLR(-1)$)			
LOG ($IPVT$)	1.17 (3.74)	-0.02 (-0.70)	0.97	3.31	0.018

Private final consumption expenditure

Dependent variable	Independent Variable		R^2	DW	Theil's U
	LOG (GDP)	LOG (WPI)			
LOG ($PFCE$)	0.87 (14.87)	-1.07 (-22.36)	0.99	2.92	0.003

Notes: Figures in brackets indicate t-values.

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