

DEBT SUSTAINABILITY OF INDIA

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Abstract: *Poorly structured debt has been important cause of indulging economic crisis in several emerging economy. In the case of India, less attention has been paid to the level, cost and structure of India's overall public debt, both domestic and external. The present paper tries to analyze the trend and composition of India's debt situation at Central and state level. It makes an evolution of India's efforts towards achieving debt sustainability. It also tries to examine the debt sustainability through the theoretical debt sustainability criteria. Towards the end, the final section concludes. India's current public debt level can be termed sustainable. India's public debt remains sustainable given manageable interest rate cost and economic growth. The share of India's external debt is small; nearly all of the government debt is in fixed interest rate loans. Predominance of internal debt in India's total public sector debt has been a major factor in containing India's vulnerability to development. However, to the extent that internal borrowings by the public sector crowd out private sector domestic borrowings, the country's vulnerability to external developments may grow as the private sector's external debt increases.*

Keywords: *public debt, fiscal sustainability, fiscal deficit*

I. INTRODUCTION

Public debt has been one of the major causes of financial crises in several emerging markets. Poorly structured debt in terms of maturity, currency or interest rate composition and large and unfunded contingent liabilities have been important factors in indulging economic crisis in many countries. In the macroeconomic context government should seek to ensure that both the level and rate of growth in their public debt is fundamentally sustainable. In the case of India, less attention has been paid to the level, cost and structure of India's overall public debt, both domestic and external. India's traditional concerns have been with fiscal deficits (both Centre and state) and with the size and maturity of the country's external debt. In India fiscal sustainability got importance during the late 80s, with sharp fiscal deterioration both at national as well as sub-national levels. India's government debt grew first with the 1991 fiscal-balance of payments crisis, and then again after 1997-98, when fiscal deficits became 10 per cent of GDP range. To make the economic growth sustainable with macroeconomic stability, reducing public debt is a critical component. When the government borrows to finance a looser fiscal position, the greater demand for loan able funds can reduce private investment (and other interest-sensitive components of private spending) by raising interest rates. Under a floating exchange rate, higher interest rates will also tend to attract foreign capital, leading to an appreciation of the exchange rate, which will also crowd out exports.

Government of India enacted Fiscal Responsibility and Budget Management (FRBM) Act in 2003 Central on the presumption that fiscal imbalance is the key parameter adversely affecting all other macroeconomic variable. It aims at reducing debt to GDP ratio. Apart from

FRBM Act time to time the Government of India has taken fiscal initiatives to inculcate fiscal discipline or to achieve debt sustainability.

Considering the importance of debt sustainability it is essential to analyze the debt sustainability of India. The present paper consists of six sections, including the introduction. Section II makes an attempt to do an evolution of India's attempt to control public debt. Section III analyses the major trend of central and state government debt indicators Section IV explains the theoretical debt sustainability criteria. Section V makes an attempt to examine the debt sustainability of public debt at central and state level through the theoretical criteria. Section VI Towards the end, the final section concludes.

II. EVOLUTION OF INDIA'S ATTEMPT TO CONTROL PUBLIC DEBT

In India debt sustainability is not a new concept. For more than fifty years since the inception of the constitution, government debt and borrowing programmes for the central as well as the state governments in India were managed without any explicit targets or rules except for the constitutional provisions under articles 292 and 293. Apart from this the governments of India time to time have taken different fiscal incentives to inculcate fiscal discipline

Constitutional Provisions on Public Debt:

Dr. Ambedkar highlighted the importance of Parliamentary Legislation to control borrowing in Constituent Assembly debates on articles 292 and 293. He referred to the need for an "Annual Debt Act". Article 292 of the constitution of India contemplates limiting government borrowing through a parliament law. It mandates "borrowing by government of India the executive power of the union extends to borrowing upon the security of the consolidated fund of India within such limits. Under Article 266 any disbursement from the consolidated fund of India mandatorily requires parliamentary approval. Similarly article 293 provides that the legislation of a state can fix limits on borrowing by a state as well as limits on guarantee given by it.

Article 292 and 293 of the constitution covers only the Public Debt. This is forming part of consolidated fund of India, as this alone can be deemed to be "borrowing upon the consolidated fund of India". Other liabilities forming part of the Public Account such as post office saving deposits, deposits under small saving certificates and provident funds are not recorded as "borrowing upon the security of consolidated fund of India" (IMF, 2001). Constitutional provision on public debt is sufficient enough to control total liabilities of the government.

RBI Attempts towards Controlling Borrowing: During the 1980s, the volume of debt expanded considerably, particularly of short-term debt, due to the RBI's automatic accommodation of the central government, through issuing ad-hoc treasury bills. In September 1994 an agreement (without legislated sanction) was signed between the central government and the RBI to phase out the system of ad-hoc treasury bills by 1997- 98. Adhoc treasury bills facilitated automatic monetization of the budget deficit. This adhoc treasury bill was replaced with Ways and Means Advances.

Medium Term Fiscal Reform Programs (MTFRPs)

In 2000-01 the finance ministry issued guide lines to state for Medium Term Fiscal Reform Programs (MTFRPs). The MTFRP had dual aim of reducing wasteful expenditure (cutting low priority spending) and improving tax collection or improving the efficiency of the tax administration. The MTFRPs required the state to make time bound reform in four areas like, fiscal, power and public sector and budgetary. The main objective of MTFRPs were to bring the consolidated fiscal deficit to sustainable levels by 2005 and to bring down debt-GDP ratio as well as interest payment to revenue expenditure rate over the medium term.

There were certain reasons, why MTFRPS could not achieve its target. There was a design failure in prescribing a uniform 5 per cent improvement in the ratio for all state. If state start off with larger base year deficits, it was relatively easier for them to make huge improvements. In the initial years MTFRPs target were set in terms of revenue deficit as a per cent of total revenues of state and when transfer to state declined, the ratio went up. The single monitor able factor was needed to be removed. The definition of revenue deficit was not uniform for all state. The size of fund, which was promised to be given to a state, as an incentive for achieving targeted reduction in fiscal deficit was insignificant, so could not give sufficient incentive to state to restore fiscal balance (Rao and Jena, 2005). The Twelfth Finance Commission (TFC) and Thirteenth Finance Commission recognized this problem and it recommended for linking the debt write off to improvement in revenue deficit. It has a lot merit as there is a direct link to absolute in the revenue deficit. The debt relief will be available, only if state enacts appropriate legislations to bring down the revenue deficit to zero and commit to reducing the fiscal deficit in a phased manner. MTFRPs was an important development in managing state finances, as the state started thinking about fiscal matters on a medium term frame work.

Fiscal Responsibility and Budget Management Act

In 2003 the central government of India enacted FRBM Act on the argument that fiscal consolidation is an essential condition for accelerating growth and to have macro-economic stability. In terms of Fiscal Responsibility and Budget Management (FRBM) Act centre's fiscal deficit was required to be reduced to 3 per cent of GDP and revenue deficit to be eliminated by 2008-09. Under borrowing related principles, government borrowing from Reserve bank has been prohibited. It may borrow from it by Way and Means of Advances (WMA) to meet temporary excess cash disbursement over cash receipts. Under the debt related principles, a limit on debt stock has been prescribed. In India, the FRBM Act sets a limit of 50 per cent of GDP on total liabilities of the central government. The central government shall not give guarantees to an amount exceeding 0.5 per cent of GDP in any financial year, beginning with financial year 2004-05. The central government should not assume additional liabilities (excluding external debt at current exchange rate) in excess of 9 per cent of GDP for the financial year 2004-05 and in each subsequent year, the limit of 9 per cent of GDP has to be progressively reduced by at least one per cent of GDP. The FRBM Act is operationally effective because it seeks year to year ceiling rather than a medium term ceiling.

A major objective of fiscal policy rule is to reduce public debt and stabilize it at a prudent level. Borrowing may need to be constrained because of longer-term debt sustainability concerns. A fiscal rule that establishes a medium term limit on the gross debt-GDP ratio can

provide a broad gauge of fiscal decency, whereas a rule that seeks to set year to year debt ceilings is unlikely to be credible or operationally effective. Since measures of public indebtedness (especially as a proportion of GDP) are usually exposed to valuation changes and other factors beyond the control of the authorities, they are difficult to treat as an annual operational target. It is difficult to calculate true extent of the states' debt burden as states engaged in off-budget activity. The level of outstanding guarantees grew by over 40 percent between 1993 and 2000, outstripping the growth in official state level debt. Fiscal activities are also conducted off-budget through various State-owned Financial Corporations (SFCs) and utilities with adverse consequences for their financial health. These off-budget sources of fiscal activity are contingent liabilities that could result in future claims on states' budgets. There is a need to go beyond the budget in setting FPR targets. There is a need to incorporate off-budget borrowing and the power sector deficit. Some states now incur more capital expenditure financed by off-budget borrowing than they do on the budget. Since there is an extensive use of off-budget borrowing at the state level, any FPR which did not tackle this issue would be creating a huge loophole for the states to walk through. The definition of liabilities needed to include not only the total liabilities under the Consolidated Fund of the state but also all the items under the Public Account of the state.

Central Government initiatives to ease the debt burden of States

Debt Swap Scheme (2003–05) Government of India (GOI) formulated a Debt Swap Scheme realising the mounting burden of interest payments on the states, and to supplement their efforts towards fiscal management. The scheme capitalized on the current low interest regime, to enable states to prepay expensive loans contracted from GOI, with low coupon bearing small savings an open market loans. The scheme covered outstanding high cost loans with interest rate of 13 per cent and above. These additional recoveries enabled the centre to repay some of its high cost debt to NSSF. The central government used the proceeds of debt swap to effect prepayment of its debt to the National Small Saving Fund (NSSF) at lower interest rate. This had the effect of bringing down centre's overall debt as well as its effective interest rate.

The debt-swap scheme was only a small step in the direction of dealing with the unsustainable deficit faced by the States. It covered only 15 per cent of their total debt. Here, again, the scheme merely aimed at reducing the cost of servicing the debt, and not extinguishing it. Though there was a benefits of Debt-Swap Scheme in terms of reducing pressure on the state by way of lower interest rate but it lead to loss of revenue for centre as the high cost loan were brought to lower level (Government of India, 2005).

Debt Consolidation and Relief Facility enacted under various finance commission. Which allowed central government loans to be rescheduled at a reduced rate of interest of 7.5% and debt to be waived (subject to enactment of fiscal Responsibility legislation and adherence to revenue deficit reduction targets); and reduction of the interest rate on securities issued to the National Small Savings Fund (NSSF) during 2000–02, which carried interest rates of 10.5%–13.5%, effective from FY2008. Further, in accordance with the National Development Council's decision, the states' obligatory share in the NSSF has been reduced from 100% to 80% from 2008.

No doubt FRBM Act is an important development in managing Centre and States finances. Recently after the implementation of FRBM Act Central Government major fiscal

deficit indicators showing a declining trend. The impact of FRBM Act on debt can be checked by looking in to the trend and composition of debt indicators before and after the FRBM Act.

III.1 Central Government Debt Indicators before the Implementation of Fiscal Responsibility and Budget Management Act

The debt-to-GDP ratio of the central Governments in India has been on upward trends since the early 1990s. The rise has been particularly pronounced during the 1980s. The magnitude of debt to GDP ratio has also increased over the periods (Lahiri and Kanan, 2002). The total outstanding liabilities show an increasing trend from 55.22 per cent of GDP in 1990-91 to 63.33 per cent of GDP in 2004-05. The composition of central government debt reveals that the debt is mostly internal in nature. The proportion of government financed externally is small. While, internal liabilities showed an increasing trend during 1990-91 to 2004-05, the external liabilities showed a declining trend. In India consequently, there was an accumulation of a huge stock of debt. The growing size of liabilities eventually generated a considerable debt-service burden and rising interest payments.

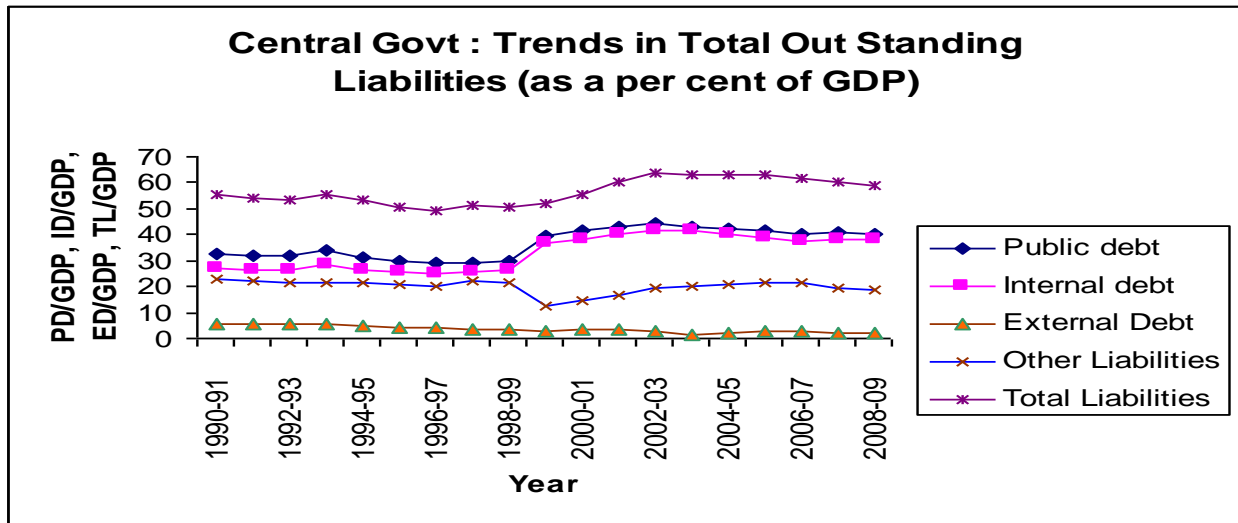
Table 1 Central Government major debt indicators (as a per cent of GDP)

Year	Public debt	Internal debt	External Debt	Other Liabilities	Total Liabilities
1990-91	32.57	27.04	5.53	22.65	55.22
1991-92	32.03	26.38	5.64	22.14	54.17
1992-93	32.07	26.46	5.62	21.33	53.41
1993-94	33.85	28.38	5.47	21.36	55.21
1994-95	31.25	26.23	5.01	21.78	53.03
1995-96	30.13	25.83	4.30	20.73	50.87
1996-97	28.92	24.99	3.93	20.09	49.01
1997-98	29.10	25.47	3.62	21.87	50.96
1998-99	29.52	26.25	3.27	21.41	50.93
1999-00	39.58	36.59	2.99	12.72	52.31
2000-01	41.37	38.23	3.14	14.22	55.58
2001-02	43.20	40.06	3.14	16.75	59.96
2002-03	44.01	41.58	2.43	19.51	63.52
2003-04	43.12	41.45	1.67	19.92	63.05
2004-05	42.45	40.51	1.93	20.88	63.33
2005-06	41.37	38.75	2.63	21.64	63.01
2006-07	39.90	37.42	2.49	21.58	61.48
2007-08	40.66	38.29	2.37	19.41	60.07
2008-09	40.14	37.85	2.29	18.79	58.93

Source: RBI Hand book of Statistics on Indian Economy (2009) *GDP means GDP at market price.

*Here Total liabilities comprising (i) public debt (ii) other liabilities, Public debt comprising External debt and internal liabilities debt, other liabilities include (i) National Small Saving Funds (ii) State Provident Fund (iii) Other accounts such as special deposits (iv) Reserve funds.

Chart 1 Central Government: Trends in Total outstanding Debt to GDP (as a per cent of GDP)



Central Government Debt Indicators after the Implementation of Fiscal Responsibility and Budget Management Act

The outstanding liabilities of the central government, after reaching 63.33 per cent of GDP in 2004-05, started declining consistently. This was because of the growth of nominal GDP remaining higher than interest rate. This decline occurred even though a new component had been added to internal debt in 2004-05, which is not reflected in the fiscal deficit. The Government of India introduced the Market Stabilization Scheme (MSS) in consultation with the RBI in April 2004. Under the scheme, the Government of India raises money through the issue of dated securities/treasury bills to absorb excess liquidity in the market on account of foreign inflows. The amount so raised was to be kept in a separate account with the RBI and was not meant to meet the expenditure needs of the government. Despite a sharp increase in the fiscal deficit in the years 2008-09 and 2009-10, a marginal decline in the ratio of outstanding debt to GDP is projected even in these two years. Among the components of outstanding debt, there is an increase in the share of internal debt. Because of the developments unfolding since the global crisis, the centre increased its net market borrowings sharply, from Rs. 1, 31,768 crore in 2007-08 to Rs. 2, 61,972 crore in 2008-09 and further to Rs. 3, 97,957 crore in the budget estimates for 2009-10. Following the global downturn, the Memorandum of Understanding (MoU) signed with the RBI was amended in February 2009 to allow a part of the amount in the MSS account to be transferred to the Consolidated Fund of India as part of the government's normal market borrowing programme. Following this, an amount of Rs. 12,000 crore was transferred from the MSS account to the Consolidated Fund of the centre in March 2009.

III.2 Aggregate States' Outstanding liabilities before the implementation of Fiscal Responsibility Laws

The structural weaknesses of the state finances manifested in large and persistent RD resulting in high GFD and large accumulation of debt and a concomitant increase in debt service

burden. Between 1991 and 2004, the consolidated debt-GDP ratio of states increased by 10.7 per cent to 33.2 per cent. Outstanding debt of the states comprises internal debt (mainly market borrowings, special securities issued to NSSF loans from banks and financial institutions, and WMA and OD from the Reserve Bank), loans from the centre, public accounts liabilities (including small savings, state provident funds, reserve funds and deposits and advances), and contingency fund.

The composition of outstanding liabilities of the state governments shows a sharp decline in the share of loans from the Centre with an upsurge in the share of loans from NSSF, market borrowings and loans from banks and other financial institutions. Loans from NSSF will remain the dominant component (31.2 per cent) of outstanding liabilities during 2008-09 (BE), though its share has come down since 2007. This will be followed by market borrowing at 25.0 per cent in 2008-09 (BE), which stood at 19.3 per cent in 2006-07 (Accounts). On the other hand, loans from the centre, which formed 57.4 per cent of outstanding debt in 1991 declined substantially and are budgeted to contribute only 10.8 per cent during 2008-09 (BE). The share of public accounts in total liabilities has remained in the range of 25- 30 per cent.

Table 4 Outstanding Liabilities of States' Government (as per cent of GDP)

Year	Total Liabilities	Total Internal Debt	Loan and Advances from Centre
1990-91	22.50	3.38	12.91
1991-92	22.46	3.55	12.67
1992-93	22.37	3.57	12.17
1993-94	21.71	3.57	11.68
1994-95	21.37	3.53	11.34
1995-96	21.05	3.68	10.85
1996-97	20.90	3.72	10.60
1997-98	21.86	3.88	11.04
1998-99	23.03	4.41	11.36
1999-00	26.43	6.47	11.80
2000-01	28.26	8.64	11.35
2001-02	30.31	10.93	10.95
2002-03	32.04	13.60	10.15
2003-04	33.16	17.31	7.01
2004-05	32.68	18.89	5.08
2005-06	32.56	19.48	4.38
2006-07	30.29	18.41	3.57
2007-08	28.31	17.69	3.19
2008-09	27.27	17.36	2.96

Source: Hand book of Statistics on Indian Economy, RBI, (various Issues), RBI States finances: A Study of Budget, (various Issues)

Table 5 Composition of Outstanding Liabilities of State Governments

	1991	2000	2005	2006	2007	2008(RE)	2009(BE)
Total Liabilities (1 to 4)	100	100	100	100	100	100	100
1. Internal Debt	15	24.8	57.8	59.8	61.1	62.5	63.7

(i) market Loans	12.2	14.8	20.7	19.6	19.3	22.4	25
(ii) Special Securities issued by NS		5	27.4	31.3	33.8	32.3	31.2
(iii) Loans from Banks and FIs	2	3.4	6.6	6.2	5.8	6	6
2.Loan and Advances from Centre	57.4	45.2	15.6	13.4	11.7	11.3	10.8
3. Public Account(I to iii)	26.8	29.9	26.6	26.6	27.2	16.2	25.4
(i) Small Savings States, PF	13.2	15.8	14.2	13.8	13.6	13.8	13.5
(ii) Reserve Funds	3.7	3.9	5.1	5.4	5.6	4.6	4.3
(iii) Deposits and Advances	10	10.2	7.3	7.4	7.9	7.8	7.5
4. Contingency Fund	0.8	0.3	0.1	0.1	0.1	0.1	0.1

Source: States finances: Study of Budget, RBI, 2008-09

Aggregate States' Outstanding liabilities after the implementation of Fiscal Responsibility Laws

The Twelfth Finance Commission recommended a target of 30.8 per cent for debt-GDP ratio and 15.0 per cent for IP/RR ratio to be achieved by 2009-10. The debt relief mechanism prescribed by the TFC, incentives by adherence to rule-based fiscal regime helped to contain the magnitude of outstanding liabilities. From the peak level of 33.2 per cent at end-March 2004, the debt- GDP ratio of state governments came down to 28.3 per cent in 2007-08 (RE) and is budgeted at 27.4 per cent in 2008-09(BE).

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. 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

IV. THEORETICAL APPROACH ON DEBT SUSTAINABILITY CRITERIA

Debt sustainability has been assessed in terms of indicators analysis. Traditionally effort has been directed towards developing indicators to measure sustainability

Domar (1944), explained that a continuous government borrowing results in an ever rising public debt, the servicing of which will require higher and higher taxes. This would eventually destroy the whole economy and result in outright repudiation of the debt (sovereign default). A constant overall deficit to GDP ratio ensures convergence of both the debt to GDP ratio and the interest to GDP ratio to finite values. Consequently also taxes needed to service interest payments converge to a finite value as a share of GDP. Domar assumed that the indebtness degree needs to converge to a finite value, in order to avoid further increasing of the

tax burden. Primary deficit can sustain as long as the real growth of the economy remains higher than the real interest rate.

Buiter (1985) in his paper, “A guide to public sector debts and deficits defined a sustainable fiscal policy should maintain the ratio of public sector net worth to output at its current level.

Blanchard (1990) explained two conditions for sustainability first, the ratio of debt to Gross National Product (GNP) should eventually converge back to its initial level and secondly, present discounted value of the ratio of primary surplus to Gross National Product should be equal to current level of debt to GNP.

Blanchard et al. (1990) explained debt level to be sustainable if a country’s debt to GDP ratio remains stable and if the economy generates debt stabilizing primary balance to cover that debt in future.

Chouraqui, Hagemann and Sartor (1990) explained that fiscal policy is sustainable when public debt does not explode and governments are not forced to increase taxes, decrease spending, monetize fiscal deficit or repudiate public debt. They policy as one capable of keeping the ratio of public sector net worth to output at its current level. They imposed the restriction that the present value of future primary surpluses must equal the current level of public debt. They considered that at time t, government has to borrow money to finance the primary deficit (the difference between primary expenditures, and government revenues), interest payment related to previous year, and public debt from previous year. If the government runs a primary deficit, the stock of debt will grow at a rate exceeding the interest rate and, if the government runs a primary surplus, the stock of debt will grow more slowly than the interest rate.

Subsequent restatements in terms of infinite horizon constraint on the present discounted value (PDV) of debt have not changed the fundamental Domar condition for stabilization of debt as a ratio to GDP (Rajaraman et al. 2005; Rakshit 2005; Rath 2005).

According to the Domar’s model for solvency of public debt,

$$D_0 = -\sum PD_t / (1+r)^t \quad (1)$$

Here, D_0 = Present stock of outstanding debt

PD_t = Primary deficit for the time period t

r = interest rate on public debt

The above equation implies that for solvency, present outstanding stock of public debt must be equal to the summation of discounted primary surplus of future years expressed in terms of present value.

Primary deficit incurred in a particular year can be expressed as,

$$PD_t = D_t - (1+r) D_{t-1} \quad (2)$$

To examine sustainability, the equation (2) can be expressed as

$$D_t = (1+r) D_{t-1} + PD_t \quad (3)$$

Dividing both sides by Y_t

$$D_t / Y_t = [(1+r) / Y_t] D_{t-1} + (PD_t / Y_t) \quad (4)$$

$$(D/Y)_t = (1+r/1+g) (D/Y)_{t-1} + (PD/Y)_t \quad (5)$$

Writing $dt = D/Y$ as the debt-GSDP ratio and $Pdt = PD / Y$

$$dt = (1+r/1+g) dt + pdt \quad (6)$$

Here, pd_t can be assumed as pd as the ratio of primary deficit to GSDP is targeted to a constant value (Rath, 2005). Now, equation (6) can be rewritten as:

$$dt = (1+r/1+g) dt + pd \tag{7}$$

Equation (7) is a first order difference equation. On solving the equation, it is found,

$$dt = [d_0 - (1+g/ g-r) pd] (1+r/ 1+g)^t + (1+g/ g-r) pd \tag{8}$$

dt tends to $(1+g/ g-r) pd$ if and only if $[(1+r)/(1+g)]^t$ tends to zero as t tends to infinity

This is possible if

$$\begin{aligned} 0 < [(1+r)/(1+g)] < 1 \\ (1+r) < (1+g) \\ r < g \end{aligned}$$

Interest rate on public debt must be less than the annual growth rate of GSDP. Domar model concludes that for sustainability of public debt, the following condition must be satisfied, i.e., growth rate of public debt (k) \leq interest rate on public debt (r) $<$ growth rate of GSDP (g) when an economy is running by the accumulation of primary deficit. It is also necessary to determine the conditions for sustainability of public debt when the rate of interest on public debt is greater than the growth rate of GSDP. For doing this, equation (6) can also be expressed as:

$$dt = (r - g)dt + pdt \tag{9}$$

From the above equation, it is evident that when $r > g$, for the sustainability of public debt, i.e., to keep $dt = dt-1$ or for achieving a stable constant debt-GSDP ratio for the future, there must be targeted primary surplus to GSDP ratio. This can be derived in the following manner:

$dt = (1+r/1+g)d_{t-1} + pdt$ if there is primary surplus

$ps = (1+r/1+g)d - d$ in static sense

$$ps = (r-g/1+g) d \tag{10}$$

Therefore, when $r > g$, for an economy to achieve debt sustainability, the following conditions must be satisfied

$$ps = (r-g/1+g) debt /GSDP \tag{11}$$

From equation (11), it is possible to determine amount of primary surplus required when $r > g$. It is also necessary to determine the amount of fiscal deficit for debt sustainability. The sustainability condition can also be derived from the concept of fiscal deficit (Rajaraman et al. 2005). Fiscal deficit is nothing but total net borrowings of the government as given in equation (12) as produced below:

$$(FiscalDeficit)_t = Dt - Dt-1 \tag{12}$$

$$Dt = Dt-1 + (FD) \tag{13}$$

Dividing both side by Y_t

$$Dt/Y_t = Dt-1/Y_t + (FD)_t/Y_t \tag{14}$$

$$Dt/Y_t = Dt-1/[(1+g)Y_{t-1}] + (FD)_t/Y_t \tag{15}$$

$$D/Y = D/(1+g) = FD/Y, \text{ in static sense} \tag{16}$$

$$D/Y[1 - (1/1+g)] = D/Y(g/1+g) = d, \text{ where } d = FD/GSDP \tag{17}$$

It implies that for debt sustainability,

$$Debt/GSDP = [1+g]/g (FiscalDeficit/GSDP) \tag{18}$$

The above equation gives the relationship between the fiscal deficit and debt-GSDP ratio. It tells about the amount of fiscal deficit an economy can incur with a given growth rate.

The review clarified the conceptual framework for fiscal policy and public debt sustainability. In general terms, public debt can be regarded as sustainable when the primary balance needed to at least stabilize debt under both the baseline and realistic shock scenarios is economically and politically feasible, such that the level of debt is consistent with an acceptably low rollover risk and with preserving potential growth at a satisfactory level. Conversely, if no realistic adjustment in the primary balance i.e., one that is both economically and politically feasible can bring debt to below such a level, public debt would be considered unsustainable. The higher the level of public debt, the more likely it is that fiscal policy and public debt are unsustainable. This is because other things equal a higher debt requires a higher primary surplus to sustain it. Moreover, higher debt is usually associated with lower growth and higher interest rates, thus requiring an even higher primary balance to service it.

V. DEBT SUSTAINABILITY AT CENTRE

The Domar stability condition has been defined as:

$$Y-r > 0 \tag{1}$$

$$r = (IP) t / (OD) t-1 \tag{2}$$

Where,

Y= Trend growth rate of GDP at current Market price

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 stabilize debt/GDP ratio (d/y), rate of interest should be lower than the output growth (r<g).

If the real growth rate of the economy exceeds the average real interest rate paid on government debt, the effect is to lower the ratio of debt to GDP, for a given level of the primary deficit.

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

Here, Debt refers to Internal Total Outstanding Liabilities including Internal and external liabilities.

GDP means GDP at current market price.

R(C) =average interest rate

R (ML) C = weighted average of market borrowing rate.

Table 2 Debt Sustainability of Central Government Internal Debt

Year	GDPGR	R	w (R)	OLGR	GPD/ GDP	NPD/ GDP	(PRBIP)/ GDP	IP/ GDP	IP/RE	IP/RR
1981-8	17.50	6.59	7.29	15.29	3.20	2.11	-0.04	1.87	20.74	21.27
1982-8	11.86	7.05	8.36	27.45	3.50	2.56	-0.03	2.06	21.01	22.59
1983-8	16.45	6.74	9.29	12.57	3.70	2.54	-0.03	2.16	21.55	24.33

1984-85	12.04	7.45	9.98	20.79	4.59	3.59	-0.03	2.40	21.57	25.46
1985-86	12.86	7.76	11.08	23.27	5.10	3.78	-0.03	2.67	22.14	26.80
1986-87	11.90	7.75	11.38	22.56	5.43	4.17	-0.03	2.94	22.63	27.95
1987-88	13.67	7.69	11.25	17.84	4.41	3.61	-0.04	3.14	24.37	30.38
1988-89	18.63	8.28	11.40	18.39	3.92	3.17	-0.04	3.36	26.39	32.75
1989-90	14.88	8.70	11.49	17.56	3.67	2.96	-0.05	3.64	27.65	33.95
1990-91	16.80	8.96	11.41	18.00	4.06	3.15	-0.04	3.77	29.24	39.12
1991-92	14.94	9.40	11.78	12.25	1.49	1.37	-0.06	4.06	32.32	40.28
1992-93	14.95	9.78	12.46	13.20	1.21	1.55	-0.06	4.13	33.52	41.92
1993-94	15.04	10.22	12.63	19.73	2.72	2.81	-0.05	4.24	33.97	48.69
1994-95	17.32	10.23	11.90	13.25	1.34	1.19	-0.06	4.34	36.08	48.37
1995-96	17.33	10.26	13.75	13.80	0.86	0.91	-0.06	4.20	35.78	45.44
1996-97	15.67	10.72	13.69	11.97	0.53	0.65	-0.06	4.31	37.42	47.10
1997-98	10.77	10.56	12.01	16.34	1.53	1.49	-0.06	4.30	36.40	49.02
1998-99	14.67	10.77	11.86	15.44	2.03	1.84	-0.05	4.45	35.98	52.10
1999-00	11.47	10.81	11.77	15.34	0.74	1.72	-0.06	4.62	36.23	49.73
2000-01	7.70	10.32	10.95	14.54	0.93	1.97	-0.05	4.72	35.75	51.56
2001-02	8.40	9.75	9.44	17.44	1.47	2.24	-0.05	4.72	35.65	53.38
2002-03	7.71	9.10	7.34	15.81	1.11	2.19	-0.05	4.80	34.78	51.03
2003-04	12.22	8.27	5.71	12.73	-0.03	1.09	-0.05	4.50	34.27	47.04
2004-05	17.70	7.51	6.11	14.37	-0.04	0.98	-0.05	3.92	33.03	41.48
2005-06	13.89	6.86	7.34	12.02	0.37	0.95	-0.05	3.59	30.19	38.21
2006-07	16.28	6.94	7.89	12.46	-0.18	0.55	-0.05	3.50	29.20	34.59
2007-08	16.13	7.02	8.12	11.89	-0.88	-0.59	-0.06	3.43	28.77	31.56
2008-09	11.96	7.05	7.69	11.40	2.59	2.82	-0.02	3.44	24.213	35.57

Source: Hand book of Statistics on Indian Economy, RBI (2009)

The movements in the average interest rates vis- a-vis nominal GDP growth reflect that the Domar stability condition has not been fulfilled for many of the years since 1980s. This is because sizable proportion of domestic debt has been contracted at administered interest at higher level. In recent year, however the rates on market related borrowing have come down and are lower than the nominal GDP growth rate. This development confirms weak sustainability.

1. According to the Domar stability condition rate of growth of GDP (Y) should be more than rate of growth of (R) [$Y-R > 0$]

Y= Trend growth rate of GDP at current Market price

R = Average Interest Rate

IP= Interest Payment

OD = Outstanding Debt (here Internal Debt has been consider for the study)

t = Time Period

Here $R = (IP) t / (OD) t-1$

In the years 2000-01, 2001-02 and 2002-03, $Y-R < 0$ so debt sustainability condition is not satisfied

The debt-GDP ratio will rise continuously for positive values of the primary deficit relative to GDP, if the growth rate is equal to or less than the interest rate.

2. Growth of GDP (Y) should be more than rate of growth of interest rate on government dated securities W(R) [$Y - W(R) > 0$].

W(R) = weighted average interest rate on central government dated securities

In the years 2000-01, 2001-02 and 2002-03 $Y - W(R) < 0$ so debt sustainability condition is not satisfied

3. Rate of growth of GDP (Y) should be more than rate of growth of debt (D) [$Y - D > 0$]

In most of the years [$Y - D < 0$] so debt sustainability condition is not satisfied

4. If rate of interest exceeds growth rate of the economy, even with primary balance the interest burden on the existing debt may be translated into a perpetual enlargement in debt/GDP ratio. In such a scenario adequate primary surplus is required to offset the gap between rate of interest and rate of growth of the economy and to stabilize debt/GDP ratio. Primary deficit (P) should not be rising faster than GDP (Y) [$PD/GDP < 0$] in most of the year [$PD/GDP > 0$] so debt sustainability condition is not satisfied

5. Primary revenue balance (PRB) should be in surplus and adequate enough to meet interest payments (IP) [$PRB - IP/GDP > 0$]. Here in most of the years [$PRB - IP/GDP < 0$] so, debt sustainability condition is not satisfied

6. Interest Burden defined by interest payments (IP) to GDP ratio should decline over time. Here IP/GDP is not declining in most of the year so; debt sustainability condition is not satisfied

7. Interest payment (IP) as a proportion of revenue expenditure (RE) should decline overtime. Here IP/RE is not declining in most of the year so, debt sustainability condition is not satisfied

8. Interest payment as a proportion of revenue receipts should fall over time. Here (IP/RR) is not declining in most of the year so, debt sustainability condition is not satisfied

Indeed over the fifty years cumulative primary deficit has led to an increase in the ratio of debt to GDP the potential increase was neutralised by the fact that the real growth rate was higher than the real interest rate.

Though the share of India's external debt is small; nearly all of the government debt is in fixed interest rate loans. Here an attempt has been made to examine the sustainability of internal debt of the Central Government by performing the unit root tests. Total Internal Liabilities (TIL) for the period 1980-81 to 2008-09 for which data are available. The data are obtained from the

Handbook of Statistics on Indian Economy, 2012-13 published by the RBI and Union Budget Documents. The results are presented in Table 3.

Table 3 Unit Root Test Results of Total Internal Liabilities

	ADF	PP
Level (only intercept)	2.452090	20.61461
Level (with trend and intercept)	10.82843	8.292691
TIL		
First Difference(only intercept)	2.957679	3.2811201
First difference (with trend and intercept)	-0.592959	-0.640991

Note: ADF: Augmented Dickey-Fuller, PP: Phillips-Perron; Test critical values for TIL without trend at 1% , 5% and 10% level of significance are -3.699871, -2.976263 and -2.627420 and with trend at 1% , 5% and 10% level of significance are -4.339330, 3.580623 and 3.225334

The result of the unit root tests indicate that the null hypothesis of a unit root could not be rejected under ADF test at 1%, 5% and 10% at level and first difference without trend and first difference with trend. Under PP test unit root could not be rejected under first difference with trend. Compared with Mackinnon critical value which is most suited to test for unit root in the present context, the null hypothesis of unit root can not be rejected. Since the series is found to be non stationary, it may be inferred that central Government’s domestic debt position may is not sustainable going by this criteria.

VII. DEBT SUSTAINABILITY AT STATE LEVEL

According to the Domar to stabilize debt/GDP ratio (d/y), rate of interest should be lower than the output growth.

Here, R(S) =average interest rate, R(ML)S = weighted average of market borrowing rate

Y= Trend GDP growth rate.

Table 6 States’ Government: Debt Sustainability

Year	GDPGR	R	W(R)	ODGR	GPD/GDP	PRB-IP/GDP	IP/GDP	IP/RE	IP/RR
1981-82	17.50	6.01	7.00	18.00	1.54	-0.02	0.84	8.43	7.80
1982-83	11.86	6.03	7.50	16.38	1.72	-0.02	0.89	8.42	8.07
1983-84	16.45	5.97	8.58	15.70	1.98	-0.02	0.88	8.25	8.17
1984-85	12.04	6.48	9.00	16.62	2.30	-0.02	0.99	8.70	8.99
1985-86	12.86	6.62	9.75	20.87	1.63	-0.02	1.05	8.97	8.80
1986-87	11.90	7.64	11.00	13.16	1.64	-0.03	1.30	10.78	10.73
1987-88	13.67	8.07	11.00	15.23	1.77	-0.02	1.37	10.86	11.13
1988-89	18.63	8.48	11.50	15.79	1.35	-0.02	1.40	11.36	11.77

1989-90	14.88	8.87	11.50	16.30	1.69	-0.02	1.47	11.93	12.71
1990-91	16.80	9.19	11.50	16.38	1.78	-0.02	1.52	12.06	13.02
1991-92	14.94	9.98	11.84	14.94	1.22	-0.02	1.67	12.70	13.59
1992-93	14.95	10.48	13.00	12.66	1.02	-0.03	1.76	13.73	14.50
1993-94	15.04	11.13	13.50	12.70	0.53	-0.03	1.83	14.51	15.05
1994-95	17.32	12.13	12.50	14.98	0.78	-0.03	1.91	15.28	16.14
1995-96	17.33	11.87	14.00	14.87	0.76	-0.03	1.83	15.26	16.24
1996-97	15.67	12.01	13.82	14.30	0.81	-0.02	1.84	15.21	16.92
1997-98	10.77	12.33	12.82	15.39	0.90	-0.03	1.95	16.17	17.86
1998-99	14.67	12.71	12.35	21.76	2.16	-0.02	2.02	16.31	20.51
1999-00	11.47	13.15	11.89	28.45	2.33	-0.02	2.29	17.34	22.00
2000-01	7.70	11.69	10.99	17.25	1.76	-0.02	2.43	17.71	21.93
2001-02	8.40	12.05	9.20	16.97	1.43	-0.03	2.70	19.88	24.70
2002-03	7.71	11.54	7.49	15.20	1.25	-0.03	2.81	20.86	25.22
2003-04	12.22	11.67	6.13	14.91	1.46	-0.04	2.92	21.58	26.00
2004-05	17.70	10.92	6.45	11.92	0.66	-0.04	2.67	21.46	23.77
2005-06	13.89	9.48	7.63	12.49	0.16	-0.04	2.28	19.18	19.49
2006-07	16.28	9.35	8.10	6.41	-0.37	-0.05	2.17	18.43	17.56
2007-08	16.13	9.41	8.25	6.69	-0.49	-0.05	2.00	17.19	16.01
2008-09	11.96	9.10	7.87	10.93	0.57	-0.04	1.84	15.10	14.82

Source: Handbook of Statistics on Indian economy, RBI (various issues)

*GDP means GDP at market price. *Here Debt refers to out standing liabilities comprising (i) internal debt (viz, open market loans, loans from banks/ financial institutions, special securities issued to NSSF, WMA/OD from RBI), (ii) loans and advances from Centre and (iii) small savings, State provident funds, (iiii) reserves funds, deposits and advances and contingency fund

1. According to the Domar stability condition rate of growth of GDP (Y) should be more than rate of growth of (R) [$Y-R > 0$]

Y= Trend growth rate of GDP at current Market price

R = Average Interest Rate

IP= Interest Payment

OD = Outstanding Debt (here Outstanding Debt= Total liabilities-Reserve Fund-Deposit and Advances –Contingency Fund

t = Time Period

Here $R = (IP) t / (OD) t-1$

In the years 1997 to 200, $Y-R < 0$ so debt sustainability condition is not satisfied

2. Growth of GDP (Y) should be more than rate of growth of interest rate on government dated securities W(R) [$Y-W(R) > 0$].

W(R)= weighted average interest rate on state government dated securities

In the years 1997-98, 2000-01 and 2001-2002 $Y-W(R) < 0$ so debt sustainability condition is not satisfied

3. Rate of growth of GDP (Y) should be more than rate of growth of debt (D) [$Y-D > 0$]
In most of the years [$Y-D < 0$] so debt sustainability condition is not satisfied
4. Primary deficit (P) should not be rising faster than GDP (Y) [$PD/GDP < 0$] in most of the year [$PD/GDP > 0$] so debt sustainability condition is not satisfied
5. Primary revenue balance (PRB) should be in surplus and adequate enough to meet interest payments (IP) [$PRB-IP/GDP > 0$]. Here in most of the years [$PRB-IP/GDP < 0$] so, debt sustainability condition is not satisfied
6. Interest Burden defined by interest payments (IP) to GDP ratio should decline over time. Here IP/GDP is not declining in most of the year so; debt sustainability condition is not satisfied
7. Interest payment (IP) as a proportion of revenue expenditure (RE) should decline overtime. Here IP/RE is not declining in most of the year so; debt sustainability condition is not satisfied
8. Interest payment as a proportion of revenue receipts should fall over time. Here (IP/RR) is not declining in most of the year so, debt sustainability condition is not satisfied.

The movements in the average interest rates vis-a-vis nominal GDP growth reflect that the Domar stability condition has not been fulfilled for many of the years since 1980s. This is because sizable proportion of domestic debt has been contracted at administered interest at higher level. In recent year, however the rates on market related borrowing have come down and are lower than the nominal GDP growth rate. These developments conforms weak sustainability.

VIII. CONCLUSION

India's current public debt level can be termed sustainable. India's public debt remains sustainable given manageable interest rate cost and economic growth. India is not very vulnerable to external sentiments in managing and sustaining its public debt. The share of India's external debt is small; nearly all of the government debt is in fixed interest rate loans. Predominance of internal debt in India's total public sector debt has been a major factor in containing India's vulnerability to development. However, to the extent that internal borrowings by the public sector crowd out private sector domestic borrowings, the country's vulnerability to external developments may grow as the private sector's external debt increases. During the 1991-2008 periods, a favorable interest growth differential facilitated the fiscal consolidation episodes in the early 1990s and mid-2000. Better tax buoyancy, a GST and a direct tax code improve efficiency and lead to revenue gain. However, a negative interest growth differential is unlikely to persist in long run as liberalization and economic development narrow the gap between the interest rate and growth. Recently In 2013-14 the India's debt problem is unsustainable in light of the recently changed outlook for growth, inflation and interest rates. Negative growth shocks represent one of the major risks to the debt outlook, with shocks to real interest rate and contingent liabilities posing additional risk. Lack of proper fiscal adjustment is another principal risk to debt sustainability in India's context. Fiscal consolidation reversed due to a soaring subsidy bill, the sixth pay commission, the agricultural debt waiver and crisis-related fiscal measures. An unchanged primary balance would raise the debt ratio. While central government explicit guaranties are included in contingent liabilities, state and local government liabilities are not included. An implicit liability which arises from recapitalization of weak bank, financial institutions, and public enterprises are not included. 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.

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