Sustainability is about good housekeeping. It is essentially about whether, based on the policy currently on the books, a government is headed towards excessive debt accumulation. Thus a good indicator of sustainability is the one which sends clear and easily interpretable signals when current policy appears to be leading to a rapidly growing debt.

Blanchard et al. (1990).

With the discussion of public debt comes the issue of solvency and sustainability of debt. Solvency by definition is the financial state of an organisation, person or company which is able to pay back all its debt when due. It may also be defined as amount by which the assets of an organisation exceed its liabilities.\(^1\) Same definition is applicable to a nation also. A nation which has capacity to pay back its debt is called as solvent. When total debt of a nation is more than its total assets, the term ‘national insolvency’ is used.

Assuming that a nation opts for debt in order to achieve macroeconomic objectives of growth, employment and stability, and considering that debt resources remain to be an important and integral component of fiscal policy, the term sustainability, which means the ability of the government to service a debt while keeping the objectives of growth and stability in mind, is a more realistic concept.

According to Rangarajan and Srivastava (2005), “Sustainability can be seen as the capacity to keep balance between costs of additional borrowing with returns from such borrowing, which could be in the form of higher growth that results in higher government revenues that can be used for servicing the additional borrowing. Sustainability issues should be viewed for combinations of debt and fiscal deficit, and not in isolation for either debt or fiscal deficit.”\(^2\)
A government which does not generate enough revenues to service its debt may face a situation where it might default on its debt obligation, or may be forced to borrow more in order to pay off past debt. (This situation may lead to a *ponzi game* situation).

A government, which defaults on debt, loses its credibility and may be excluded from further credit. If in a nation debt/GDP ratio rises without limits, a point may come when it will be impossible for the government to sell its debt, and the process will have to be brought to an end by cutting the budget deficit or by bringing a change in debt management policy to make debt sustainable. According to Fischer and Easterly (1990), “…the point at which the process has to end depends on the expectations of the people. Whenever the public will recognise the un-sustainability of the government’s fiscal policy, it will cease buying government debt and thereby force a change in policy.”

As mentioned in chapter 4, the 1991 crisis was an eye opener for Indian economy and for the prevailing economic policy of that time. The crisis forced the system to go for comprehensive structural reforms in many aspects of economy, including fiscal aspect. Improved economic performance in terms of growth indicators led to reduction in deficits up to 1996-97, but after this again the situation started deteriorating. With this background, Fiscal Responsibility and Budget Management act (FRBM) was enacted in August 2003, which came to force in July 2004. Objective of the act was to provide rule based fiscal consolidation and to lead the fiscal indicators towards long term sustainability.

The objective of present chapter is to analyse the public debt policy of the central government in context of debt sustainability. Though sustainability is a much debated and researched topic, there is no universally accepted definition of sustainability of public debt. As stated by Rajaraman and Mukhopadhyay (2005) “Neither economic policy nor practical thumb rules prescribe a particular universally prudent target value for the debt/GDP ratio”.

Present chapter is divided in two main parts.

**Part 7.1** makes an analysis of various debt sustainability approaches available in literature/practice and in this part, attempt has been made to see sustainability of debt for central government in India.
Part 7.2 shows the performance of the Fiscal Responsibility and Budget Management (FRBM) act, 2003 with respect to Public debt sustainability of the central government. It also focuses on the debate involving need of explicit debt ceilings/targets quoting historical experience of some nations which follow explicit debt targets.

7.1 : Debt Sustainability -various approaches

Debt stock of a nation is generally shown as proportion of GDP. It not only makes analysis of debt easier, it also helps in making international comparisons with respect to public debt. The economic theory does not provide any precise level of public debt which is sustainable / unsustainable. Various approaches to debt sustainability are discussed in next section.

7.1.1 : Domar debt stability condition (also called as accounting approach)

Work by Domar (1944) is considered to be a pioneer attempt towards studying debt sustainability. According to this approach, the real interest rate on borrowed funds (i.e. on debt) must not exceed the real output growth of the economy so that the debt/output ratio does not grow to explosive proportions. According to Domar if government finances a portion of its total expenditure through borrowing, the ratio of public debt to GDP would be stable in the long run only if the growth rate of GDP exceeds the real interest rate on public debt.6

As per Rakshit (2005) the implication of this is that as long as the sustainability condition as suggested by Domar is fulfilled “… maintaining full employment through debt financing of budget deficits will not lead to debt trap”7.

Domar gives lot of importance to growth rate of output (GDP) because according to him for a growing economy, the tax income of the government may very well rise without any necessary increase in the tax rate simply because tax is a positive function of income. Supporting this argument Das (2007) stresses that “If income increases, the revenue would also go up in the same proportion, for any given tax- GDP ratio.”8
It is worth noting here that

- Domar sustainability condition is only for internal debt financing, and not for external debt financing.
- Though in his paper Domar had stressed rate of growth of output to be a cause for increase in debt servicing capacity because of increase in tax income of the government, the condition eventually comes down to the comparison between rate of growth of GDP and rate of interest on public debt, rather than on focussing like issues whether actually increased GDP growth rate lead to increased tax revenue or not.

To show the sustainability of public debt in India in post reform period, a comparison of weighted average interest rate on the government borrowings and the GDP growth rate is shown in figure 7.1 from 1992 to 2007.

Figure 7.1 : Relative trends in GDP growth rate and Interest rate

There are a number of instruments through which government raises its debt and incurs other liabilities; there is no single rate of interest which could represent interest rate on government debt. By taking both growth rate and interest rate in nominal terms as suggested by RBI (2002), the results are shown in figure 7.1. The stress of Domar was on real growth rate and real interest rate. Here weighted average interest rate on government securities is taken as interest rate on government debt. Figure 7.1 shows that between 1992 and 2007 period, only in financial year 1997-98 and for three years from 1999 to 2002, the weighted average interest rate on central government securities exceeded the output growth rate. In most of the post reform period years, rate of growth of GDP was more than rate of interest on government debt. Even for the years, where interest rate was higher than growth rate, reason was low growth rate of the economy and not increase in interest rate.

As the results based on data taken in real terms are considered more relevant and reliable, the analysis is further extended to real terms by taking growth rate of GDP at factor cost (at constant 2004-05 prices), as real rate of growth of economy. As far as real rate of interest is concerned, it is calculated by subtracting rate of growth of inflation from nominal rate of interest. Figure 7.2 shows the real growth rate of economy and real rate of interest on government securities. The growth rate of GDP at factor cost at 2004-05 prices is considered to be an indicator of real growth rate. To calculate real rate of interest on public debt, rate of inflation (based on WPI) has been deducted from weighted average interest rate on the government borrowings. Figure 7.2 shows that for most of the years, the real growth rate has remained above the real effective interest rate on public debt implying a negative interest-growth differential. On calculation we found that for the fifteen year period (1992-93 to 2006-07), average cost of borrowing was 10.32 percent, and average rate of inflation was 6.3 percent; and hence average real rate of interest was 4.02 percent. Average GDP growth rate at 6.6 percent was more than real rate of interest for 1992-2007
Figure 7.2: Relative trends in real GDP growth rate and real Interest rate

Source (Basic data):
1. For real rate of growth, see Handbook of Statistics on the Indian Economy (2011-12), table 224.
2. For weighted average interest rate on the government borrowings; see Handbook of Statistics on the Indian Economy (2011-12), Reserve Bank of India, table 119.

ReaI rate of interest calculated by deducting rate of inflation (based on WPI) from weighted average interest rate on the government borrowings.

It is worth mentioning here that Domar in his 1944 paper had considered total taxable income to be cumulative total of national income and interest income i.e.,

\[ T = Y + U \]

Where,

Y = national income;
U = interest charges on the debt

That is, interest earnings were considered to be part of national income, which was to be taxed (rate of tax being \( U / T \)). At the same time, it was suggested that real rate of interest will be rate of interest earned minus taxes paid on the interest income.

In practice it is difficult to do this because,
• In practice, it is empirically difficult to estimate real rate of interest as interest rate net of tax earnings because of interest income, especially when interest income is taxed only if it crosses a threshold level. (For example, as per clause (iv) of Section 193 of the Income Tax Act, 1961, no tax is to be deducted from any interest payable on any security of the central government or a state government effective from June 1, 1997. However, as per Finance Act, 2007 and government of India Notification No. F.4(10)-W&M/2003 dated May 31, 2007, tax has to be deducted at source on the interest exceeding Rupees ten thousand payable during a financial year on 8% Savings (Taxable) Bonds, 2003 with effect from June 1, 2007\textsuperscript{10}.

• There are many schemes like National Savings Scheme etc. (as shown in table 4.2, Chapter 4) where income tax exemptions are allowed.

• In an open economy debt can be generated from internal as well as external sources, and interest payments on external debt do not constitute part of national income of a country.

• As stated earlier, to calculate real rate of interest through deduction of taxes is difficult and hence real rate of interest is calculated by subtracting rate of growth of inflation from rate of interest, which brings in the role of inflation rate in debt sustainability condition.

Domar’s sustainability condition has been very convincingly criticised by Mallick (2005). He writes, “Domar criteria have limited relevance as it assumes that debt grows at the rate of interest rates. Furthermore, keeping the rate of interest artificially at low level, government may go on accumulating more and more debt.”\textsuperscript{11} Though he advocates the comparison between rate of growth of debt (rather than rate of interest on debt) with rate of growth of economy, he agrees that such a comparison does not take into account the level (i.e. amount) of debt and considers only rate of interest on debt.

But the negative interest-growth differential is not unique to India. According to International Monetary Fund (IMF), a number of emerging markets have gone through relatively long periods in which the real growth rate has outpaced on average the real effective interest rate.\textsuperscript{12} Topalova and Nyberg (2010)\textsuperscript{13} calculated the real interest cost for a number of emerging economies by taking the United States long-
term real rate, measured by the long-term government bond yield minus CPI inflation (inflation based on Consumer Price Index) and the sovereign spread from JP Morgan’s Emerging Market Bond Index (EMBI) Global and concluded that for most of the emerging markets, for the period 1998 to 2008, the average growth-interest differential \((i-g)\) was substantially higher. Fischer and Easterly (1990) also stress that the real interest rate is very likely to be below growth rate in economies that are growing rapidly, such as newly industrialised Asian economies.  

At least for the post reform period, public debt of central government appears to be sustainable (as shown in figure 7.1 and 7.2). But, given the fact that in India, debt was historically raised from captive holders (as explained in Chapter 4) and the interest rates on debt were administered and artificially kept at low levels, whether the debt will remain sustainable in long run in the wake of interest rate deregulation and increased global financial integration cannot be predicted yet.

7.1.2 : Debt sustainability under inter-temporal budget constraint approach (also called present value budget constraint (PVBC) approach)

Domar’s debt sustainability condition focuses on comparison between interest rate on debt with that of growth rate of economy. But, mere comparison of these two rates is not a sufficient sustainability condition. If the interest rate exceeds the output growth rate, the larger is the gap between the two rates, the higher would be the growth in debt-GDP ratio. This would require generation of adequate primary surplus to fill the gap between the interest rate and the output growth rate to stabilise the debt-GDP ratio.

Even if the rate of output growth is more than the interest rate, a large primary deficit can still lead to rise in the debt-GDP ratio. RBI (2002) observes, “The positive differential between the output growth rate and the interest rate is not the sufficient condition for sustainability. Sufficient condition for sustainability requires that the initial debt stock equals the present discounted value of primary surpluses in the future”.  

This argument justifies the importance of Present value budget constraint approach (PVBC, also called as inter-temporal budget constraint). According to Present value budget constraint approach, suggested by Hamilton and Flavin (1986)
and Blanchard (1990), the condition for sustainability of public debt is the equality between ‘total outstanding debt’ and ‘present value of future primary surpluses’. Or, debt will be called sustainable if the present value of public debt in the future tends towards zero or remains constant over an infinite period of time.

Buiter and Patel (1992) empirically tried to ascertain the sustainability of public debt in India by taking discounted debt series for annual data on Debt/GNP ratio for 1970-71 to 1986-87. If such a series comes out to be stationary, then debt of a nation will be called as sustainable. They accepted that in their empirical tests of the stationarity for Indian public debt, annual time series taken was short (17 annual observations and hence limited degrees of freedom meaning low power for tests). They concluded that while interest rate can be below the growth rate for extended finite periods of time, in the Indian economy there are no ‘social free lunches’ to be earned by increasing the public debt. They found debt to be unsustainable and concluded their paper by warning that continuation of patterns of fiscally irresponsible behaviour will eventually threaten the solvency of the government and unless measures to reduce the primary deficit are taken, a fiscal crisis is bound to come.

RBI Report on Currency and Finance (2000-01) assessed sustainability of central government debt with the help of unit root tests. These tests show that discounted series of nominal stock of central government debt remain non-stationary, implying that central government debt continues to be unsustainable.

As per Abiad and Ostry (2005), the choice of a debt target should be informed by inter-temporal solvency considerations, as captured in the present discounted value of expected future primary surpluses and concluded that a 60 percent debt-to-GDP ratio can be sustained under reasonable assumptions for India’s long-run primary balance and discount factor.

Mallick (2005) also tried to assess the sustainability under PVBC approach by taking data for 1960-2000 for public debt in Indian economy. By taking discounted debt series on real market debt as ratio to real GDP, as well as various other sub-components (for example real market debt plus small savings and provident funds as ratio to real GDP; discounted value of other real liabilities other than small savings
and provident funds etc.), he concluded that there is presence of unit root in all the series, and the debt series were found to be non-stationary and unsustainable.

The main flaws in PVBC approach can be listed as

- The methodology does not take into account the uncertainties faced by economy. Assuming that a country’s past track record provides a good guide for the future, IMF (2003) estimated that the ideal debt-to-GDP ratio which is equal to the present discounted value of primary surpluses among emerging markets is only 25 percent of GDP and that the average emerging market economy has a ratio of public debt to GDP that is 2.5 times larger than its fiscal policy track record would suggest is warranted.

- According to some critics this methodology is not easily adaptable in the case of India. Over the past years, India has been running primary deficits, thus, a historical scenario would imply a negative net present value of public debt.

- The problem related to the choice of interest rate to use for discounting the debt using discount factor (i-g), as the rates of interest are not same for all debt instruments.

RBI Report on Currency and Finance (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. The report concluded that the reduction in combined government debt to a sustainable level in the medium-term horizon, therefore gains immense relevance.

Observing trend in primary deficit and surplus as percentage to GDP for 15 years (1992 to 2007) as shown in figure 7.3, except for three years of primary surplus (in 2003-05 and 2006-07) in all remaining years India had primary deficit. Though overall it seems that gradually we are moving from a deficit to surplus in a linear trend, there are wide fluctuations in trend. While in early nineties there is decline in
primary deficit, it kept on showing wide fluctuations till 2002, after which improvement is seen as shown in figure 7.3.

Figure 7.3 : Gross primary surplus ( % of GDP)


Note: Positive value shows surplus while negative value shows deficit.

7.1.3 : Debt sustainability represented by stationarity of debt series - an empirical analysis

Rajaraman and Mukhopadhyay (2005) stress that though discounted time series conveys information about addition to debt over time, constancy in the discounted debt stock does not necessarily imply constancy in debt/GDP because discounting incorporates a scaling factor for the disparity between interest rates and nominal growth rates. Using structural time series model for non-monetised domestic debt series (i.e. net of securities held by RBI), for periods between 1952 to 1997 they show that time series properties of historical series do not lead towards stabilisation at any level.
On the similar lines, in present section an empirical attempt has been made to see whether public debt of central government in India is stationary or not. As long as debt/gdp ratio does not become explosive debt can be said to be sustainable. For this purpose an attempt has been made to test the stationarity of debt/GDP ratio series.

Data on total internal liabilities (debt liabilities and other liabilities) as well as total liabilities (internal and external) as percent to gross domestic product (GDP) also called as debt GDP ratio for central government is taken. As sustainability is a long term phenomena, data from 1980-81 to 2006-07 (total of 26 observations) was taken. The data is available at current prices in RBI publications, WPI deflator is used to convert the series at constant prices.

Augmented Dickey-Fuller Test (ADF) tests is used by taking null hypothesis as ‘presence of unit root’ (i.e. presence of non-stationarity) against the alternative hypothesis ‘series is stationary’. If the absolute computed value exceeds the absolute critical value, then we reject the null hypothesis and conclude that series is stationary and vice-versa.

Table 7.1 : ADF Test Results for Public Debt of Central Government as % of GDP

<table>
<thead>
<tr>
<th>Series</th>
<th>With drift only</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total liabilities of Centre</td>
<td>-2.30392 (-2.991878) ( \not \in ) 0.1788</td>
<td>H0 accepted.</td>
</tr>
<tr>
<td></td>
<td>(Intercept found to be significant)</td>
<td>Series is not stationary.</td>
</tr>
<tr>
<td>Internal liabilities of Centre</td>
<td>-2.222955 (-2.986225) ( \not \in ) 0.2036</td>
<td>H0 accepted.</td>
</tr>
<tr>
<td></td>
<td>(Intercept found to be significant)</td>
<td>Series is not stationary.</td>
</tr>
</tbody>
</table>

Note:
1. Augmented Dickey-Fuller T (tau) test statistics are shown in ( ) brackets.
2. MacKinnon (1996) one-sided p-values are given in \( \not \in \) brackets.
3. All results are at 5 per cent level of significance.

Source: Author’s calculations
It is clear from table 7.1 that the null hypothesis of presence of unit roots is accepted only if the ADF test statistic value was less than the critical values at five percent levels of significances. Thus, both the series viz., domestic as well as total liabilities of centre as % of GDP were found to be non stationary.

7.1.4: Debt Sustainability and Credit-ratings

As discussed in Chapter 6, the level of public debt is an important determinant of sovereign ratings in the quantitative models of all three major credit ratings agencies (Fitch, Moody’s and S&P). Though it is not the only determinant and a number of other factors are taken into account while assigning a sovereign rating, reduction in debt may be needed to attract a higher rating. Nyberg and Topalova (2009)\textsuperscript{27} of IMF tried to estimate public debt targets for India and concluded that public debt thresholds of debt intolerance for India range from 40 to 75 percent of GDP. The methodology relates a country’s sovereign rating (Institutional Investor Rating, IIR\textsuperscript{28} taken as proxy for sovereign rating) and its public debt-to-GDP ratio, controlling for inflation and default history, to determine the level of debt at which the country will be considered more credit-worthy.

7.1.5: Debt sustainability in terms of debt servicing

Debt servicing, represented by ratio of interest payments to revenue receipts remarkably increased in 1991 as compared to 1981, which represents crowding out of government’s revenues. From 1992-93 to 2003-04, this ratio further increased, but has shown improvement after 2004-05.

As per RBI (2002)\textsuperscript{29} the major contributing factor imparting a downward rigidity to the revenue expenditure relates to items of committed expenditure, of which, interest payments and expenditure on wages and salaries are prominent. Interest payments as a ratio to GDP increased from 3.77 per cent in 1990-91 to 4.50 per cent in 2003-04.

During the phase of fiscal consolidation, even though the debt to GDP ratio for the central government fell from 61.33 per cent in 1990-91 to 55.93 per cent in 1996-97, the rise in the weighted average interest rate on central government market borrowings, following the progressive alignment of coupon rates with market interest rates, led to the rise in interest payments.
Table 7.2: Interest Payment Burden and Sustainability of public debt of Central Government in India

<table>
<thead>
<tr>
<th>Year</th>
<th>Interest payment</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% to GDP</td>
<td>% of revenue expenditure</td>
<td>% of revenue receipts</td>
</tr>
<tr>
<td>1981-82</td>
<td>1.87</td>
<td>20.74</td>
<td>21.05</td>
</tr>
<tr>
<td>1991-92</td>
<td>4.06</td>
<td>32.32</td>
<td>40.20</td>
</tr>
<tr>
<td>1992-93</td>
<td>4.13</td>
<td>33.52</td>
<td>41.92</td>
</tr>
<tr>
<td>1996-97</td>
<td>4.31</td>
<td>37.42</td>
<td>47.10</td>
</tr>
<tr>
<td>2003-04</td>
<td>4.50</td>
<td>34.27</td>
<td>47.04</td>
</tr>
<tr>
<td>2004-05</td>
<td>3.92</td>
<td>33.02</td>
<td>41.48</td>
</tr>
<tr>
<td>2005-06</td>
<td>3.59</td>
<td>30.18</td>
<td>38.21</td>
</tr>
<tr>
<td>2006-07</td>
<td>3.50</td>
<td>29.20</td>
<td>34.59</td>
</tr>
</tbody>
</table>

Source: calculated by author.


On the other hand, in the latter half of the 1990s, though the cost of borrowings declined because of fall in market interest rates, but interest payments burden continued to increase.  

Column four of table 7.2 shows interest payment burden of Public debt for central government in India. Nearly one third of revenue receipts (34.6 %) were going towards interest payment obligations in 2006-07. While commenting on higher interest payment burden, Report of the Task Force on Implementation of the Fiscal Responsibility and Budget Management Act-2003 observed, “A government that has a revenue deficit is taking debt in order to finance current (revenue) expenses. This recurrent bond issuance has led to a substantial build-up of debt, and interest payments have risen to enormous proportions. In 2000-01 and 2001-02, more than half of the revenue receipts of the government were used up in merely paying interest on the accumulated debt. If India had prudent fiscal policies, this expenditure could
Table 7.2 however also shows that after 2004 the ratios have shown decline, which reflects the realisation about fiscal responsibility, but even in 2006-07 nearly one third of revenue receipts were to be utilised in interest payments only.

To see effect of Interest Payment burden on Capital Expenditure, an empirical analysis was conducted by Rangarajan and Srivastava (2005). They took data on government capital expenditure, interest payments and revenue receipts with reference to the combined account of central and state governments. Data was converted into real terms by deflating with the GDP deflator. All the three series were found to be stationary in first difference and the relationship estimated within the error correction mechanism (ECM) framework showed that while interest payments in real terms affect negatively the real government capital expenditure, revenue receipts in real terms have a positive impact.

7.1.6 : Debt sustainability in terms of Cointegration between Government expenditures and Revenues

Papadopoulos and Sidiropoulos (1999) suggested that a test for sustainability should check for the cointegration of government expenditures and revenues. Following their methodology Jha and Sharma (2004) carried out empirical tests to ascertain whether government expenditures and revenues are cointegrated in India using long time series data. According to the study if public expenditure and public revenue are I (0) public debt is sustainable but if these are I (1) and not cointegrated or have a cointegrating vector different from [1, -1] the public debt is said to be unsustainable. On the basis of time series data for 1871 to 1997 after allowing for endogenous structural breaks for two data sets - the British period and the post independence period, they concluded that India’s public debt is sustainable and Revenue and expenditure series (nominal as well as real) are trend stationary with structural breaks, at least for the post independence period.
This argument loses its validity if we consider the fact that financing of expenditure through deficit financing will only lead to an increase in public debt. So, mere cointegration is not sufficient. Cointegration implies adjustment in revenues and expenditures that takes place so that these move together. For example, if interest payments to GDP ratios increase, adjustments in other components of expenditure (e.g. government capital expenditure) would take place so that the co-movement of expenditure with revenues is maintained which, by itself, may not be desirable from the growth point of view.

**Figure 7.4 : Revenue and Expenditure of Central Government**

![Graph showing Revenue and Expenditure of Central Government]


Trends in revenue and expenditure of central government at constant (2004-05) prices are shown in figure 7.4. While total receipts and expenditure series are superimposing each other, the gap between revenue receipts and revenue expenditure is widening. In our opinion, finding cointegration between revenue receipts and revenue expenditure is a better option. Though the stress should be on generating revenue surplus in the long run, but getting a zero revenue deficit means entire revenue expenditure is being financed by revenue receipts only and then capital receipts including borrowing and
other liabilities can be utilised in capital account expenditure. No doubt revenue expenditure primarily depends on revenue receipts, but a cointegration will strengthen the argument that for revenue expenditure, the receipts are generated from revenue account only and though there might be fluctuations in the short run, the government is not forced to borrow or depend on other capital receipts in long run to finance its day to day expenditure.

Figure 7.4 indicates that in past four decades, revenue receipts and expenditures have continued to move in the same direction. As already discussed, a major portion of revenue receipts in India goes for debt servicing. Though this is a matter of concern as the money which could be used in providing valuable assistance in health, education or other priority sectors is being clearly diverted in interest payments, but at the same time cointegration suggests that India is not in a situation where borrowings and other liabilities (which constitute a part of revenue receipts) are being incurred to fulfil the debt obligations in terms of interest payments.

Debt receipts constitute a part capital account receipts and the spending should be made primarily in capital expenditure (asset creation). It will help in channelizing the savings in productive manner. This line of thought is being stressed worldwide as a part of prudent fiscal policy. For example in United Kingdom, apart from the Maastricht Treaty norms, Golden Rule is operating since 1997 whereby borrowing is done only to finance capital spending. Similarly the provinces and territories of Canada generally have fiscal rules with balanced budgets requiring them to take on debt only for the purpose of financing investment projects.

### 7.1.7: International Monetary Fund’s Debt Sustainability Analysis simulations (IMF-DSA)

To ascertain sustainability of public debt for a nation, international monetary fund (IMF) has started DSA (debt sustainability framework). IMF has a standard DSA template and the analysis is presented for a chosen country with reference to a baseline scenario for the debt-to-GDP ratio over a five-year projection horizon. The sensitivity of the baseline scenario is examined with reference to two alternative
scenarios, along with a series of six bound tests. The selected alternative scenarios are 
(1) Key variables (real GDP growth, real interest rate, and primary balance) at 
historical averages (calculated over a 10-year period) and, (2) No policy change – constant primary balance / GDP (fixed at level projected in first year) Both scenarios help in showing as to what extent the assumptions made for the future diverge from historical macroeconomic experience (1) or the current fiscal stance (2). In this regard, they allow the reader to judge the degree of optimism or pessimism of the projections.

As per IMF Country Report on India (2010), determining the appropriate level for a public debt target is challenging. Cross-country studies wide range of ‘optimal’ levels of public debt is there for different countries and depending on countries’ circumstances and policy priorities, debt targets range from as low as 25 percent to as high as 60-70 percent of GDP. Most countries appear to have followed convergence criteria of regional economic agreements and peers’ debt ratios.

Accepting the fact that economic theory provides little guidance on the optimal level of debt, IMF has used various approaches to examine the prudent and feasible debt ratio for India.

Nyberg and Topalova (2009) using debt sustainability analysis of IMF (IMF-DSA) technique generated debt simulations under a set of fiscal reforms and concluded that India’s public debt could follow a number of paths depending on the fiscal reforms that the government implements. By 2015-16, public debt could decline only marginally under a no-reform scenario, while a combination of a fuel subsidy reform, enhanced revenue performance, and partial privatization of public enterprises could bring its level to about 62 percent of GDP. They suggest that a reasonable and feasible public debt ceiling for India by 2015-16 could be in the order of 60-65 percent of GDP. They concluded that such a debt ceiling, while still above the average for emerging markets, would allow for a countercyclical fiscal policy and provide some headroom for large contingent liabilities.

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7.2 : Fiscal Responsibility and Budget Management (FRBM) Act, 2003 and Sustainability of Central Government Debt

In India while the focus of debt management policy is on structure, composition and ownership of debt (as shown in Chapter 4 and 6), there are no constitutionally defined debt ceilings. Deliberate attempt to rely less on external debt finance was one of the major decisions of public debt policy of India. Similarly as shown in chapter 4, since 1992 many steps have been taken to make government debt market wide, deep and manageble. On the similar lines, enactment of Fiscal Responsibility and Budget Management Act (FRBM), 2003 was another significant attempt towards fiscal restructuring, where it was believed that a deliberate stress on deficit reduction will eventually lead to decrease/control of public debt.

Fiscal consolidation as represented by decrease in major deficit indicators is closely related to the idea of debt sustainability. Tobin (1963) while differentiating between internal debt management and fiscal policy stresses that total debt is the net accumulation of past deficits and surpluses of the government. The size of the debt will depend on fiscal policy while the composition will depend on debt management policy. Tarapore (2002) further elaborates this by saying that the fiscal effect of debt depends on the rate at which debt is changing rather than the absolute size of debt itself.

Under the Maastricht treaty of European Union (EU), total annual government deficits should not exceed 3% of nominal GDP and the total sovereign debt should not exceed 60% of GDP. One of the factors affecting FRBM target is the Maastricht treaty. In literature, there is no definite economic rationale for these targets. As Bertelsmann et al. (2012) put it, “It is by no means clear whether a government debt ratio of 30% is better or worse than a 70% government debt ratio. Most of the studies agree upon the presence of definitional correlations between debt GDP ratio, deficit ratio and GDP growth rate and any attempts made in literature to reconcile debt and deficit data.”
7.2.1: Fiscal Responsibility and Budget Management Act-2003

Though long term fiscal policy announced in the mid-1980s was a step towards aware fiscal policy, at the central government level comprehensive fiscal reform programme started in early 1990s as part of the structural adjustment programme. A committee (headed by E. A. S. Sarma) was set up in January 2000 to make recommendations on fiscal responsibility. Its report was submitted in July 2000 and a related bill was introduced in Parliament in December 2000, which got enacted as law in August 2003, after a period of extensive discussion. FRBM required government to undertake appropriate measures to reduce the fiscal deficit and revenue deficit so as to eliminate revenue deficit by 31st March 2008 and thereafter build up adequate revenue surplus. Parliament further amended target date for the elimination of the revenue deficit to 2008-09. In addition, the FRBM required that three reports be placed before houses of Parliament every financial year:

- Macroeconomic Framework Statement: It defines the macroeconomic backdrop under which the fiscal policies and projections are being made.
- Fiscal Policy Strategy Statement: This report specifies the policy measures pertaining to taxation, expenditure, subsidies, administered prices and borrowing.
- Medium-term Fiscal Policy Statement: This report specifies three-year rolling targets for prescribed fiscal indicators, and the underlying assumptions.

The opening lines of FRBM act state that it is “An Act to provide for the responsibility of the central government to ensure inter-generational equity in fiscal management and long-term macro-economic 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.”

It is clear from these lines that need to monitor government borrowings as well as overall debt liabilities are strongly acknowledged in the FRBM act. In section 7 of the act in Measures to enforce compliance it is clearly stated that in case the outcome of
the quarterly review of trends in receipts and expenditure, at the end of second quarter of any financial year beginning with the financial year 2004-05 shows that - (i) the total non-debt receipts are less than 40 per cent of Budget Estimates for that year; or (ii) the fiscal deficit is higher than 45 per cent of the Budget Estimates for that year; or (iii) the revenue deficit is higher than 45 per cent of the Budget Estimates for that year, then the central government shall take appropriate corrective measures; and the Minister-in-charge of the Ministry of Finance shall make a statement in both Houses of Parliament during the session immediately following the end of the second quarter detailing the corrective measures taken, the manner in which any supplementary demands for grants are proposed to be financed and the prospects for the fiscal deficit of that financial year.45

Under FRBM rules, there are no explicit debt targets and the reform scenario is based on medium term framework, assuming that deficits mean increment to debt and if deficits will be controlled, in this process the debt will also become sustainable. Further reduction in deficits is targeted through increase in revenue (tax as well as non tax) and through contraction in expenditure. Over a period of time, it is also expected under FRBM that sufficient revenue surpluses are created, which will provide a cushion to the economy in the time of recession. With this objective, government of India appointed Task Force on Implementation of the Fiscal Responsibility and Budget Management Act, 2003, which submitted its report in July, 2004. Table 7.3 shows the performance of Indian fiscal indicators before and after FRBM act. Here total fifteen year period from 1992 till 2007 has been taken.
Table 7.3: Performance of central government Finance under FRBM Targets (1992-2007)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Fiscal Deficit (GFD)</td>
<td>To be reduced by 0.3 per cent or more of GDP every year, beginning with the year 2004-05, so that it does not exceed 3 per cent of GDP by end-March 2008 (later extended to end-March 2009).</td>
<td>5.65</td>
<td>3.88</td>
<td>3.96</td>
<td>3.32</td>
<td>3.72</td>
</tr>
<tr>
<td>Revenue Deficit (RD)</td>
<td>To be reduced by 0.5 per cent or more of GDP at the end of each year, beginning from 2004-05, in order to achieve elimination of the RD by March 31, 2008, as prescribed in the FRBM Act (later extended to end-March 2009).</td>
<td>3.41</td>
<td>2.42</td>
<td>2.50</td>
<td>1.87</td>
<td>2.26</td>
</tr>
<tr>
<td>Contingent Liabilities* (Maximum annual issuance)</td>
<td>The central government shall not give guarantees aggregating an amount exceeding 0.5 per cent of GDP in any financial year beginning 2004-05.</td>
<td>-</td>
<td>0.64</td>
<td>0.07</td>
<td>-0.02</td>
<td>0.23</td>
</tr>
<tr>
<td>Total liabilities*</td>
<td>Incremental flow capped at 9 per cent of GDP in 2004-05; this ceiling to be reduced by 1 percentage point of GDP every year.</td>
<td>-</td>
<td>8.0</td>
<td>6.4</td>
<td>6.7</td>
<td>7.03</td>
</tr>
<tr>
<td>RBI primary market purchases of GOI bonds</td>
<td>Cease on 1/4/2006</td>
<td>Ceased with effect from 1/4/2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source (Basic data):
2. For Column 3 to 6, Calculations are based on data taken from Handbook of Statistics on the Indian Economy (2011-12), Reserve Bank of India, table 234.
3. For data in rows marked @, see Reserve Bank of India, Development Research Group, Study No. 31, table 2; p.11.
If we see trends in revenue and expenditure for central government as shown in table 7.4, we find that the fiscal situation was becoming worrisome by the second half of 1990’s.\textsuperscript{46} As discussed earlier, interest payments constituted nearly 37 percent of revenue expenditure and 47 percent of revenue receipts in 1996-97. After further deterioration till 2001-02, fiscal situation of the central government started improving, and the fiscal deficit as well as revenue deficit and primary deficits as ratio to GDP started showing improvement. This improvement persisted even after FRBM act 2003, though during the post FRBM phase reduction was higher. These figures seem to show that FRBM act has shown remarkable success in controlling the fiscal indicators of the central government. Before reaching at such a conclusion, it is important to see how the reduction was achieved and whether this type of reduction can be sustained in the long run or not.

In this context Dholakia \textit{et al.} (2009)\textsuperscript{47} show that during the FRBM period, there has been significant improvement in the fiscal indicators, mainly as a result of increased revenue mobilisation and some expenditure reduction in both the revenue and the capital component of expenditure. According to their finding Improvement in the revenue followed from rise in the direct tax collection while the indirect tax collection and non-tax revenue as a proportion of GDP declined. With regard to expenditure, both the revenue and the capital expenditure as a ratio to GDP declined. According to their study, most of the decline in the revenue expenditure was due to decline in the interest payment owing to lower interest rate, and the non-interest or primary revenue expenditure actually increased due to inability to reduce the expenditure on subsidies (on food, fertilizer and oil) and the increase in grants to States. The decline in capital expenditure, however, was largely due to reduction of loans to the States.

Rao (2009)\textsuperscript{48} also shows that substantial portion of the adjustment was achieved by compressing capital expenditures and whatever adjustment was achieved was attributable mainly to increase in tax revenues arising mainly from improvement in computerised information system. He blames the government for failing to achieve the adjustment as envisaged in the FRBM act, particularly in ‘weeding out’ unproductive expenditures and in protecting capital expenditures.
Table 7.4: Performance of Central Government Finance (1992-2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Tax Revenue as % to GDP</th>
<th>Non-Tax Revenue as % to GDP</th>
<th>Revenue Receipts as % to GDP</th>
<th>Revenue Expenditure (inclusive of i and ii)</th>
<th>ii)Interest Payments</th>
<th>ii)Subsidies</th>
<th>Capital Expenditure</th>
<th>Total Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992-93</td>
<td>7.18</td>
<td>2.67</td>
<td>9.85</td>
<td>12.32</td>
<td>4.13</td>
<td>1.44</td>
<td>3.98</td>
<td>16.29</td>
</tr>
<tr>
<td>1993-94</td>
<td>6.17</td>
<td>2.54</td>
<td>8.71</td>
<td>12.49</td>
<td>4.24</td>
<td>1.34</td>
<td>3.89</td>
<td>16.38</td>
</tr>
<tr>
<td>1994-95</td>
<td>6.64</td>
<td>2.33</td>
<td>8.97</td>
<td>12.02</td>
<td>4.34</td>
<td>1.17</td>
<td>3.80</td>
<td>15.82</td>
</tr>
<tr>
<td>1996-97</td>
<td>6.80</td>
<td>2.36</td>
<td>9.16</td>
<td>11.53</td>
<td>4.31</td>
<td>1.12</td>
<td>3.05</td>
<td>14.58</td>
</tr>
<tr>
<td>1997-98</td>
<td>6.26</td>
<td>2.50</td>
<td>8.77</td>
<td>11.81</td>
<td>4.30</td>
<td>1.21</td>
<td>3.39</td>
<td>15.20</td>
</tr>
<tr>
<td>1998-99</td>
<td>5.98</td>
<td>2.56</td>
<td>8.54</td>
<td>12.36</td>
<td>4.45</td>
<td>1.35</td>
<td>3.59</td>
<td>15.95</td>
</tr>
<tr>
<td>1999-00</td>
<td>6.57</td>
<td>2.73</td>
<td>9.30</td>
<td>12.76</td>
<td>4.62</td>
<td>1.25</td>
<td>2.51</td>
<td>15.27</td>
</tr>
<tr>
<td>2000-01</td>
<td>6.50</td>
<td>2.66</td>
<td>9.16</td>
<td>11.77</td>
<td>4.72</td>
<td>1.28</td>
<td>2.27</td>
<td>15.39</td>
</tr>
<tr>
<td>2001-02</td>
<td>5.86</td>
<td>2.97</td>
<td>8.83</td>
<td>11.23</td>
<td>4.72</td>
<td>1.37</td>
<td>2.67</td>
<td>15.90</td>
</tr>
<tr>
<td>2002-03</td>
<td>6.46</td>
<td>2.95</td>
<td>9.40</td>
<td>13.80</td>
<td>4.80</td>
<td>1.77</td>
<td>3.04</td>
<td>16.84</td>
</tr>
<tr>
<td>2003-04</td>
<td>6.79</td>
<td>2.79</td>
<td>9.58</td>
<td>13.14</td>
<td>4.50</td>
<td>1.61</td>
<td>3.96</td>
<td>17.11</td>
</tr>
<tr>
<td>2004-05</td>
<td>6.93</td>
<td>2.50</td>
<td>9.44</td>
<td>11.85</td>
<td>3.92</td>
<td>1.42</td>
<td>3.51</td>
<td>15.37</td>
</tr>
<tr>
<td>2005-06</td>
<td>7.32</td>
<td>2.08</td>
<td>9.40</td>
<td>11.90</td>
<td>3.59</td>
<td>1.29</td>
<td>1.80</td>
<td>13.69</td>
</tr>
<tr>
<td>2006-07</td>
<td>8.18</td>
<td>1.94</td>
<td>10.11</td>
<td>11.98</td>
<td>3.50</td>
<td>1.33</td>
<td>1.60</td>
<td>13.58</td>
</tr>
</tbody>
</table>

Table 7.5: Performance of Central Government Finance (1992-2007)

<table>
<thead>
<tr>
<th>Year</th>
<th>a) Gross Direct Tax as % to GDP</th>
<th>b) Gross Indirect Tax as % to GDP</th>
<th>Total Gross Tax as % to GDP</th>
<th>Net Tax Revenue as % to GDP</th>
<th>Non-Tax Revenue as % to GDP</th>
<th>Revenue Receipts as % to GDP</th>
<th>Capital Receipts as % to GDP</th>
<th>Revenue Exp. (inclusive of i) and ii)</th>
<th>i)Interest Payments</th>
<th>ii) Subsidies</th>
<th>Defence (Revenue + Capital)</th>
<th>Capital Exp.</th>
<th>Total Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average (1997-08 to 2003-04)</td>
<td>3.18</td>
<td>5.58</td>
<td>8.76</td>
<td>6.35</td>
<td>2.74</td>
<td>9.08</td>
<td>6.91</td>
<td>12.90</td>
<td>4.59</td>
<td>1.41</td>
<td>2.31</td>
<td>3.06</td>
<td>15.96</td>
</tr>
<tr>
<td>2004-05</td>
<td>4.10</td>
<td>5.31</td>
<td>9.41 (10.23)</td>
<td>6.93</td>
<td>2.50 (2.43)</td>
<td>9.44 (9.96)</td>
<td>6.18</td>
<td>11.85 (12.42)</td>
<td>3.92 (4.17)</td>
<td>1.42</td>
<td>2.34 (2.48)</td>
<td>1.51 (2.97)</td>
<td>15.37 (15.59)</td>
</tr>
<tr>
<td>2005-06</td>
<td>4.27</td>
<td>5.48</td>
<td>9.95 (11.05)</td>
<td>7.32 (8.14)</td>
<td>2.08 (2.33)</td>
<td>9.40 (10.27)</td>
<td>4.86</td>
<td>11.60 (12.03)</td>
<td>3.59 (4.07)</td>
<td>1.29</td>
<td>2.18 (2.24)</td>
<td>1.30 (2.87)</td>
<td>13.69 (14.01)</td>
</tr>
<tr>
<td>2006-07</td>
<td>5.36</td>
<td>5.67</td>
<td>11.03 (12.07)</td>
<td>8.18 (8.91)</td>
<td>1.94 (1.87)</td>
<td>10.11 (10.78)</td>
<td>3.47</td>
<td>11.98 (11.85)</td>
<td>3.50 (3.92)</td>
<td>1.33</td>
<td>1.99 (2.30)</td>
<td>1.60 (2.90)</td>
<td>13.58 (14.75)</td>
</tr>
<tr>
<td>Average (2004-05 to 2006-07)</td>
<td>4.64</td>
<td>5.48</td>
<td>10.13</td>
<td>7.4704</td>
<td>2.17</td>
<td>9.65</td>
<td>4.84</td>
<td>11.91</td>
<td>3.67</td>
<td>1.34</td>
<td>2.17</td>
<td>2.30</td>
<td>14.21</td>
</tr>
</tbody>
</table>

Note:
1. Net Tax Revenue means tax revenue of centre net of states’ share.

Averages calculated by the author.

Table 7.5 shows the performance of various revenue and expenditure indicators for 1992 to 2007. The period is divided into three sub-periods, (1) 1992-93 to 1996-97, when Indian economy performed very well vis-à-vis growth performance; (2) 1997-98 to 2003-04, i.e. period before FRBM and (3) 2004-05 to 2006-07, the FRBM period. Figures in parenthesis show ‘fiscal projections under reform scenario’, as projected by July 2004 Report of the Task Force on Implementation of the Fiscal Responsibility and Budget Management Act. It is being assumed here that these projections reveal the expected performance under FRBM act, 2003.

As is seen from table 7.5, tax revenue performance of central government is less than projected by the task force under the reform scenario. Though on the non-tax revenue front performance is better than anticipated, overall revenue generation is less than expected under reform scenario. Decline in revenue expenditure and its components (interest payments and subsidies), are less but are is nearly on the same lines as projected by the task force. It is the capital expenditure and expenditure on defence, which reduced more as compared to projections.

7.2.2 : Medium term debt sustainability

Presented here are debt deficit relationships as suggested by Rangarajan and Srivastava (2005) used by us in the empirical appraisal of Fiscal Responsibility and Budget Management Act. This is their modified form of Domar debt sustainability condition in terms of medium term debt sustainability, considering deficit to be an increment to debt. Rather than stressing on real rate of growth and real interest rate, the rates have been taken in nominal terms only. The framework suggests optimum level of deficit ceiling in the short run which will make debt sustainable in the long run.

The standard equation for debt accumulation is written as

\[ b_t = p_t + b_{t-1} \left[ \frac{(1 + i_t)}{(1 + g_t)} \right] \] (7.1)
Where,

\( b_t \): debt to GDP ratio in period \( t \)

\( g_t \): nominal growth rate in period \( t \)

\( i_t \): nominal interest rate in period \( t \)

\( p_t \): primary deficit relative to GDP in period \( t \).

Equation (7.1) can also be written as

\[ b_t = p_t + x_t b_{t-1} \quad \text{[where } x_t = \frac{1 + i_t}{1 + g_t} \text{]} \quad (7.2) \]

The debt to GDP ratio in initial period (denoted as \( b_0 \)) will be equal to primary deficit GDP ratio in initial period \( p_0 \) as there is no past debt, hence no interest payment burden, then

If \( b_0 = p_0 \),

Using equation (7.2),

We have, \( b_1 = p_1 + x_1 p_0 \) \quad (7.3)

\[ b_2 = p_2 + b_1 x_2 \quad (7.4) \]

Using value of \( b_1 \) from equation (7.3), we get

\[ b_2 = p_2 + (p_1 + x_1 p_0) x_2 \]

or, \( b_2 = p_2 + x_2 p_1 + x_2 x_1 p_0 \)

Generalising, we can write

\[ b_t = p_t + (x_t) p_{t-1} + (x_t x_{t-1}) p_{t-2} + \ldots + (x_t x_{t-1} \ldots x_1) p_0 \quad (7.5) \]

If it is assumed that \( x_t \) is constant, it implies that \( g \) and \( i \) are constant for all \( t \) (as assumed by Domar),

We can write

\[ b_t = p_t + x p_{t-1} + x^2 p_{t-2} + \ldots + x^t p_0 \quad (7.6) \]
The Domar model requires the additional assumption that p’s are also constant for all t.
Since \( x_t = \frac{1 + i_t}{1 + g_t} = x \) for all t, three cases arise

I. when \( g = i \)
II. when \( g > i \)
III. when \( g < i \)

**Case I** When \( g = i \) then \( x = 1 \)
and therefore we can write equation (7.6) as

\[
bt = Pt + Pt-1 + Pt-2 + \ldots + Po
\]

\[
t-1
b_t = p_t + \sum p_n
n=0
\]  

(7.7)
This implies that if \( g = i \), the debt GDP ratio is the cumulated sum of the primary deficits in all the previous periods.

**Case II** When \( g > i \) (i.e. Domar debt sustainability condition is fulfilled in an economy)

\[b_t = p \{ 1 + x + x^2 + \ldots + x^{t-1} + x^t \} \]  

(from equation 7.6)  

(7.8)
(Assuming that all p’s are constant)
The term within parenthesis is a geometric series with common ratio \( x < 1 \).

As \( t \) tends to infinity, this sum tends to \( 1 / (1-x) \). Then the long run value of the debt GDP ratio can be written as

\[
b_t = p \{ 1 / (1-x) \}
\]
\[ = \frac{p}{1-x} \]

\[ b_t = \frac{p}{1+g} \cdot (g-i) \text{ as } t \to \infty \]  \hspace{1cm} (7.9)

Where, \( b_t \) is debt GDP ratio and \( p \) is primary deficit GDP ratio.

**Case III When \( g < i \)**

In the third case, when \( g < i \), \( x > 1 \), and \( b_t \) will grow indefinitely.

Thus, a value of \( p > 0 \), will eventually become unsustainable for both cases when \( g = i \) and when \( g < i \). In the case, when \( g = i \), the debt GDP ratio grows linearly by the size of the primary deficit, and when \( g < i \), the debt GDP ratio grows explosively if the primary deficit GDP ratio is positive.

From (7.9), the long run equilibrium value of debt / GDP ratio at time \( t \) denoted by \( b^* \) is given by,

\[ b^* = \frac{p}{1+g} / (g-i) \]  \hspace{1cm} (7.10)

According to Rangarajan and Srivastava (2005), the fiscal deficit GDP ratio (\( f^* \)) corresponding to a stable debt GDP ratio (\( b^* \)) will be:

\[ f^* = \frac{p}{g} / (g-i) \]  \hspace{1cm} (7.11)

Using equations (7.10) and (7.11) together, the relationship between \( b^* \) and \( f^* \) can be written as:

\[ b^* = \frac{f^*}{1+g} / g \]  \hspace{1cm} (7.12)

The pair (\( b^* \), \( f^* \)) gives that level of fiscal deficit GDP ratio at which the debt-GDP ratio remains unchanged at \( b^* \). For lower growth rates, same fiscal deficit ratio will lead to a higher debt GDP ratio; if growth rates are higher, for the same fiscal deficit ratio, debt-GDP ratio will be lower.
As per Rangarajan and Srivastava, both $g_t$ and $i_t$ should be taken to be dependent on the levels of debt and fiscal deficit relative to GDP.

At any time $t$, the debt GDP ratio $b_t$ will be higher than its previous year’s level $b_{t-1}$, as long as the primary deficit to GDP ratio in the current period $p_t$ satisfies the following condition:

$$p_t = b_{t-1} \left[ \frac{g_t - i_t}{1 + g_t} \right] = p^*_t \quad (7.13)$$

Where,

- $i_t$ is the average interest rate, and
- $p^*_t$ is called the debt stabilising primary deficit GDP ratio.

As long as $p_t$ in any given year is equal to or less than $p^*_t$ for that year, debt GDP ratio will not rise in that year compared to its level in the previous year. Since $p^*_t$ depends on the difference between $g_t$ and $i_t$, it is important to consider how should $p$ be determined in any year since it may affect $g$ and $i$ in that year.  

### 7.2.3 : Sustainability of Public debt of Central government and Fiscal Responsibility and Budget Management Act - 2003

As per relation between debt / GDP ratio and primary deficit /GDP ratio (as shown by equation 7.13) an attempt is made to show the performance of these ratios for 1992-2007. The objective is to see whether in FRBM period there is any improvement on fiscal front or not.  

In present case it is necessary to analyse how much of the deficit is structural and how much of it is cyclical. While the cyclical component of the deficit may not be a serious cause for concern, the structural component needs to be attended to.  

Using Hodrick Prescott filter (HP filter), primary deficit GDP ratio was divided into trend (structural) component and cyclical component. Let us assume that primary deficit $p_t$ contained both structural component ($p_{structural}$) represented by trend, and cyclical component ($p_{cyclical}$).
The HP filter decomposes observed deficit value into a stationary cyclical component and a smooth trend component. The graphical representation of HP filtered primary deficit series is shown in figure 7.5.

We find that for 1992-2007 period, primary deficit/GDP ratio has remained widely fluctuating (as shown by blue colored line) though overall there is a smooth downward trend (shown by a red colored line) is observed. Considerable cyclical variations are observed (shown by green colored line).

Table 7.6 depicts data on decomposed primary deficit (structural as well as cyclical component) and on debt stabilising primary deficit to GDP ratio ($p^s_t$) calculated from equation (7.13).

**Figure 7.5 : Decomposition of Gross Primary Deficit GDP ratio of central government in Trend and Cyclical components (1992-2007)**

Note: Y axis shows gross primary deficit as percent to GDP

Source: Author’s calculations

\[ p = p_{\text{structural}} + p_{\text{cyclical}} \]
Table 7.6: Primary Deficit for Central Government (1992-2007): Performance Indicators

<table>
<thead>
<tr>
<th>Year</th>
<th>( p_t )</th>
<th>( p_{\text{structural}} )</th>
<th>( p_{\text{cyclical}} )</th>
<th>( p^* )</th>
<th>( p^* )</th>
<th>( b )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992-93</td>
<td>1.208890353</td>
<td>1.710724776</td>
<td>-0.501834423</td>
<td>0.093175</td>
<td>1.617549</td>
<td>63.86</td>
</tr>
<tr>
<td>1993-94</td>
<td>2.716085031</td>
<td>1.622364318</td>
<td>1.093720713</td>
<td>0.133535</td>
<td>1.488829</td>
<td>64.50</td>
</tr>
<tr>
<td>1994-95</td>
<td>1.343225395</td>
<td>1.528955516</td>
<td>-0.185760121</td>
<td>0.17757</td>
<td>1.351416</td>
<td>62.04</td>
</tr>
<tr>
<td>1995-96</td>
<td>0.85567115</td>
<td>1.436507232</td>
<td>-0.580368082</td>
<td>0.114331</td>
<td>1.322176</td>
<td>59.02</td>
</tr>
<tr>
<td>1996-97</td>
<td>0.526252034</td>
<td>1.348900729</td>
<td>-0.822738695</td>
<td>0.091288</td>
<td>1.257703</td>
<td>55.93</td>
</tr>
<tr>
<td>1997-98</td>
<td>1.525709848</td>
<td>1.264688907</td>
<td>0.261020941</td>
<td>-0.03704</td>
<td>1.317272</td>
<td>57.91</td>
</tr>
<tr>
<td>1998-99</td>
<td>2.025240997</td>
<td>1.17362728</td>
<td>0.851613712</td>
<td>0.12152</td>
<td>1.052108</td>
<td>57.82</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.741123627</td>
<td>1.068441571</td>
<td>-0.327317944</td>
<td>-0.05294</td>
<td>1.121385</td>
<td>58.88</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.927644491</td>
<td>0.950283642</td>
<td>-0.022639151</td>
<td>-0.20772</td>
<td>1.158805</td>
<td>61.48</td>
</tr>
<tr>
<td>2001-02</td>
<td>1.469754519</td>
<td>0.817032172</td>
<td>0.652722347</td>
<td>-0.03858</td>
<td>0.855617</td>
<td>65.58</td>
</tr>
<tr>
<td>2002-03</td>
<td>1.130911483</td>
<td>0.666339452</td>
<td>0.444572031</td>
<td>0.038714</td>
<td>0.627625</td>
<td>69.08</td>
</tr>
<tr>
<td>2003-04</td>
<td>-0.029586658</td>
<td>0.502384994</td>
<td>-0.531971652</td>
<td>0.338231</td>
<td>0.164154</td>
<td>68.06</td>
</tr>
<tr>
<td>2004-05</td>
<td>-0.035161213</td>
<td>0.333794032^*</td>
<td>-0.368955244</td>
<td>0.342637</td>
<td>-0.00884</td>
<td>65.53^*</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.373777979</td>
<td>0.163872082^*</td>
<td>0.209905897</td>
<td>0.293431</td>
<td>-0.12956</td>
<td>63.90^*</td>
</tr>
<tr>
<td>2006-07</td>
<td>-0.179267219</td>
<td>-0.007764891^*</td>
<td>-0.171502328</td>
<td>0.316193</td>
<td>-0.32396</td>
<td>61.40^*</td>
</tr>
</tbody>
</table>

Notes:
1. \( p_t \) = Primary deficit to GDP ratio at year t
2. \( p_{\text{structural}} \) = Structural (trend) Component of \( p_t \)
3. \( p_{\text{cyclical}} \) = Cyclical Component of \( p_t \)
4. \( p^* \) = Debt stabilising primary deficit to GDP ratio (calculated as per equation 14)
5. \( p^* \) = Structural primary gap, defined as the difference between actual structural primary deficit and the debt stabilising primary deficit (i.e. \( p_{\text{structural}} - p^* \))
6. \( b \) = Debt to GDP ratio
7. @ depicts values of structural primary deficit which are less than \( p^* \), implying improved fiscal performance with respect to debt sustainability.
8. ^ shows debt to GDP ratio during FRBM period
9. -ive sign shows surplus.

Source: Author’s calculations.
It is clear that during the three years of FRBM period, the structural primary deficit ($\Pi_{\text{structural}}$) is lower than debt stabilising primary deficit ($\Pi'_s$). In 2006-07 structural primary deficit became negative, implying primary surplus. Though FRBM directly doesn’t focus on primary deficit and the period 2004 to 2007 is a small period to evaluate performance of FRBM, still the decline in primary deficit reflects that conscious decision to decrease deficits by legislation and policy measures leads to control of deficits which eventually help towards debt sustainability.

### 7.2.4 : FRBM Act- Post 2007 Scenario

Though the focus of the present study is time period from 1992 to 2007, 2008 recession and the resultant effects on deficits and debt needs a special mention here. Deficits can be reduced either by reducing expenditure or by increasing revenue through taxes and non-tax sources. These measures can be contractionary in nature and if an economy is faced by downturn or recession, further contraction through such measures may aggravate a cycle. Therefore one requirement of an efficient fiscal management policy is that it should be countercyclical (i.e. if need arises there should be some room for discretionary policy also).

In this context the July 2004 *Task Force on Implementation of FRBM act-2003* had observed. “The timing of fiscal consolidation has to be closely interwoven with the domestic and international business cycle. As of early 2004-05, we appear to be standing at a relatively high point in the domestic and international business cycle. Business confidence is high. Investment demand has grown well, and there is heightened interest in India as a destination for FDI, and in integrating India into global production chains for manufacturing and services. In 2002 and early 2003, there were global fears of slow economic growth and deflation. However, the international business cycle has turned around, with a distinct pickup in growth in the US and Japan. This environment constitutes an argument in favour of front-loading. As John F. Kennedy argued, the time to fix the roof is when the sun is shining.”

At that time it was expected that “If India was able to obtain substantial progress in the fiscal adjustment in 2004-05 and 2005-06, then this will recharge the guns of fiscal policy for possible use in countercyclical fiscal policy, which may be required if the domestic and the world business cycle turns around in the future.”
In its report, the task force had made projections under both baseline and reforms scenarios\textsuperscript{54} assuming that all the years from 2004-05 till 2008-09 will be ‘normal’ years. The task force in its report had accepted that “… in practice, some years will be better than normal and some years will be worse than normal”.\textsuperscript{55} It was also stressed that the requirements of the FRBM act have to be met, regardless of these fluctuations in the macroeconomy and there is need of ‘safety factors’ in policy decisions, through which the FRBM targets will be successfully achieved, even if some difficulties are encountered along the way.\textsuperscript{56}

As stated earlier also, the time period from 2004 to 2007 is too small to see the efficiency of FRBM vis-à-vis. public debt management, the period was followed by economic downturn and hence expansionary fiscal measures were taken. The success of FRBM was mainly because of increased revenues and decreased expenditures. The recession decreased revenue resources on one hand and as government increased expenditures and concessions under fiscal stimulus, deficits started increasing. Figure 7.6 (a) to (c) depict how the long run trend in deficit indicators has changed after 2007-08. If we see the performance up to 2007, all deficit indicators (viz., fiscal deficit, revenue deficit as well as primary deficit) show decline. On the other hand, if we see the overall picture till 2012-13, it simply shows that policy formulation may not always be blessed with the perfect economic environment for policy implementation and delayed responses may get further postponed because of exogenous / unforeseen factors.

While appreciating performance of finances of central government under FRBM, the Economic Survey (2012-13) observed, “Post the FRBM Act but prior to global financial crisis, significant fiscal consolidation was achieved with the fiscal deficit of the centre declining rapidly to 2.5 per cent of GDP in 2007-8, which was much below the threshold target of 3 per cent set in the FRBM Act.”\textsuperscript{57} It was further mentioned that “… the overshooting of the deficit targets in 2008-09 was a conscious decision to obviate the adverse impact of the global financial crisis”.\textsuperscript{58,59}
Figure 7.6 (a) : Decomposition of Gross Fiscal Deficit GDP ratio of Central Government in Trend and Cyclical components (1970-2013)

Hodrick-Prescott Filter (lambda=100)

Figure 7.6 (b) : Decomposition of Gross Revenue Deficit GDP ratio of Central Government in Trend and Cyclical components (1970-2013)

Hodrick-Prescott Filter (lambda=100)
Should there be a legal ceiling on debt and deficit or not is an issue of debate. India has already taken a step in this direction with adoption of FRBM since 2003. Though in FRBM targets are fixed with respect to deficits; explicitly there is no mention of any penalty if the targets are not fulfilled. Apart from setting explicit targets most of the fiscal responsibility legislations also talk about bringing transparency in the system. ‘Greater transparency in fiscal operations of the central government’ has been quoted in opening lines of India’s FRBM act 2003. While elaborating the concept of fiscal transparency, Rangarajan and Srivastava (2005) state that, “Transparency is best served when there is an explicit legal provision for it requiring elaboration of the guiding principles of fiscal policy, clear statement of objectives of changes in fiscal policies, the need for a long term focus on fiscal policy, and requirements for providing fiscal information to the public.”
7.2.5 : FRBM Act and ‘Other liabilities’

In the present chapter the entire analysis under FRBM act is done by considering that deficit is increment in debt and hence control of deficits is important. FRBM explicitly does not mention any regulation about debt ceiling or target, which is sustainable. This reasoning is very well justified if we consider debt as borrowing only (e.g., market borrowings and other borrowings) and exclude the other liabilities component of debt (like National Small Savings fund, provident fund, special deposits and reserve funds and deposits).

These liabilities are not direct borrowings of central government, but interest payment on these liabilities is a part of central government’s revenue expenditure. Therefore these liabilities affect revenue deficits. Moreover, these liabilities are not only unavoidable; they also act as a way of channelizing domestic savings. The FRBM act has no provision for these liabilities.

It is in this context that Dholakia et al. (2009) \(^{62}\) argue that some of the off-budget liabilities arising from the issue of oil bonds, fertilizer bonds and Food Corporation of India (FCI) bonds have mainly been done in order to keep the budget liabilities conform to the FRBM Act. Inclusion of these off-budget liabilities, which otherwise should legitimately form part of the budget, would therefore, significantly reduce the achievement of FRBM targets.

If we consider the international experiences with fiscal consolidation policy, an explicit legal ceiling on debt or deficits may lead to further economic and political repercussions, but it does act as a deterrent to the governments’ overspending. We have made a theoretical attempt to analyse the fiscal ceilings in a number of nations worldwide and the historical experience of these ceilings / targets. These targets are in terms of debt ceilings (as in US, Denmark), deficit related rules (as in Maastricht Treaty of European Union, and FRBM in India) or related to expenditure limits \(^{63}\) (as in Canada). Appendix III elaborates on the topic though a detailed analysis of rule based fiscal consolidation at world level is beyond the scope of present study.
Conclusion

Though there is plenty of work on long term debt sustainability but no single definition is there which is applicable for all times. Despite many unrealistic assumptions, Domar debt sustainability condition is still considered a landmark in the theory of public debt sustainability. Other approaches are inter-temporal budget constraint approach, debt sustainability represented by stationarity of debt series, sustainability in terms of credit ratings of a nation and sustainability in terms of debt servicing.

Given the increased global connectivity on one hand and the ever-changing economic environment on the other, it is best to opt for a fiscal restructuring policy like FRBM act which provides sustainability in short / medium term framework. We observe that for the time period under consideration, there is reduction in all deficit indicators as well and the structural primary deficit was found to be less than debt stabilising primary deficit.

The question, whether setting of explicit deficit and debt targets actually work in practice or not, can be answered in the Indian context only after next ten or twenty years. When FRBM was introduced in India in 2003, the financial crisis of 2008 as well as related complications which the world economy faced were nowhere in sight. Though the task force on FRBM had stressed on the need to accumulate primary surplus so that the unforeseen cyclical events can be countered, India had just started on the path of fiscal correction when recession hit the world economy. Once the after-effects of crises settle down, only then we can make any conclusions about long run effectiveness of FRBM in India in the context of public debt sustainability. But at the same time, given the realisation that deficits of central government are structural in nature and not cyclical; the fiscal correction needs to regain its momentum.
Notes and References:


3 In public debt management, ponzi game means a situation where the government runs a perpetual primary deficit and debt, sustained forever by paying interest on existing debt by further borrowing.


12 See, IMF-DSA (Debt Sustainability Analysis).


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In Economics, a free lunch means opportunity cost. If A gets something at no cost, B ends up paying for it. If there appears to be no direct cost to any single individual, there is a social cost.

20 Reserve Bank of India (2001-02): *op. cit.*


28 The country ratings are published biannually by the Institutional Investor magazine, which gives each country a rating from 0 to 100 for its attractiveness as investment destination (with 100 given to those countries with the least chance for default).

29 Reserve Bank of India (2001-02): *op. cit.* , p. IV 16

30 ibid.


32 The ratio of interest payments to revenue receipts is 34 percent in 2012-13 which reflects the “crowding out” of the legitimate functions of the government.


42 See, Dholakia, et al., 2004; Dholakia and Karan, 2005; Rangarajan and Srivastava, 2005; RBI, 2005


44 See annexure II for this.

45 ibid.

46 Studies (Dholakia et al. (2009). Rao (2009)) have shown that factors like pay revision, decline in central revenues from excise duty and custom duty apart from increase in interest payment and subsidy burden were instrumental in the deterioration of fiscal situation.


49 Rangarajan, C. and D.K. Srivastava (2005): op.cit

50 As we are taking the case that g is greater than i, therefore x will be less than 1. Actually in an infinite series

\[ a + ar + ar^2 + \ldots \ldots = S = \frac{a}{1-r} \]

here, \( a = 1, r = x \), therefore \( S = \frac{1}{1-x} \)

51 ibid., 49.


53 ibid., p. 40.

54 ibid., p. 26.
As per Economic Survey (2012-13) “The large slippage in 2011-12 owed to a confluence of adverse economic outcomes arising from global and domestic factors. In the year 2011-12 a sudden overshooting of the growth of the fiscal deficit as compared to growth in GDP over the previous year caused a higher fiscal deficit to GDP ratio. The high levels of fiscal deficit in the post crisis period added to the overall debt burden of the central government”. The Budget for 2012-13 introduced amendments to the FRBM Act as part of the Finance Bill. These amendments contained two important features. First is the introduction of the concept of effective revenue deficit, which excludes from the conventional revenue deficit, grants for the creation of capital assets. As per Economic Survey 2012-13, “This is an important development for the reason that while the revenue deficit of the consolidated general government fully reflects total capital expenditure incurred, in the accounts of the centre; these transfers are shown as revenue expenditure. Therefore the mandate of eliminating the conventional revenue deficit of the centre becomes problematic. With this amendment, the endeavour of the government under the FRBM Act would be to eliminate the effective revenue deficit. The second feature is the introduction of the provision for ‘Medium Term Expenditure Framework Statement’ in the FRBM Act which provides for rolling targets for expenditure, imparting greater certainty, and encourages prioritization of expenditure. It was hoped that ‘Together with the measures proposed to raise the tax-GDP ratio, the expenditure reforms are expected to yield better fiscal marksmanship, thereby mitigating key fiscal risks.”

60 See annexure II for this.

61 ibid.

62 ibid., 47.

63 These rules typically emphasise ceilings on specific areas of expenditure like discretionary expenditure as opposed to non-discretionary expenditure and in some cases with respect to particular programmes.