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**Need to Rationalize Rising Interest Burden on Public Debt
of the Central Government**

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Abstract

Interest payments are significant component of expenditure, and are a part of the obligatory category of expenditures of the government. A substantial share of the tax collections of the government of India is taken away by interest costs. In 2014-15, interest payments were 3.3 per cent of the GDP. In 2014-15, while net interest payments (difference between the interest payments and interest receipts) were around 23 per cent of the total receipts, this spending blocked over 34 per cent of the revenue receipts. High interest payments could put off other developmental activities due to availability of lesser funds. It is therefore imperative to look into measures to reduce borrowing costs. Some of the components of domestic borrowings, as also interest payments are examined in the paper. This paper explores approaches to reduce interest expenditure incurred by the central government and considers possible options by which interest cost savings could be attempted.

Keywords: Interest Payments, Revenue Expenditure, Inflation Indexed Bonds, Buybacks.

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Introduction

Higher expenditure in comparison with revenues contributes to increasing deficit. In order to meet the deficit gap, governments generally tend to borrow from the market. The resultant interest costs further affect the expenditure levels of the government, besides crowding out private investment.

Expenditure rationalization is one of the important aspects of fiscal reforms. In this context, interest payments, though a large component of the expenditure, generally get neglected. High interest payments can place pressure on government finances. Interest payments are often the most inflexible element of revenue expenditure. In India, expenditure on interest payments is one of the main components of the Centre's revenue expenditure. In 2014-15, interest payments were 3.3 per cent of the GDP.

Therefore, to contain interest expenditure, there is a need to keep the deficits within limits. In situations of high debt ratio resulting in high interest payments, the Government needs to adopt corrective actions. A focussed approach towards containing deficit could aid in containing interest payments within critical limits. Accordingly, it is imperative for a government to efficiently manage the revenue and expenditure as also the debt components of the government.

The remaining part of the paper is organised in six sections. Section 2 of this paper briefly discusses fiscal deficit and fiscal consolidation in India. Section 3 examines trends in interest payments in the country. Further, details about debt scenario in the country are provided in Section 4. A possible attempt of reducing interest costs could be explored by way of inflation indexed bonds, as detailed in Section 5. Alternative strategies to reduce interest burden include debt restructuring measures, which we discuss in Section 6. Finally, concluding observations are presented in Section 7.

Section 2: Fiscal Consolidation

OECD defines fiscal consolidation as, "... a policy aimed at reducing government deficits and debt accumulation".² A deficit situation arises, when a government's ability to raise revenues is inadequate to cover the expenditures assigned to be fulfilled.

In India, economic liberalisation of the 1990s improved growth performance of the economy. However, due to the Fifth Pay Commissions' award and industrial slowdown, the fiscal deficit of the centre which had some reduction up to 1996-97, underwent a reversal during the subsequent few years (Mohan, 2008). The early phase of fiscal consolidation during 2004-08 was made possible by higher growth (GoI, 2014a). The state of public finances underwent considerable improvement during the five years period ending 2007-08 (GoI, 2009). Mainly due to rise in global commodity prices and financial meltdown, fiscal situation deteriorated sharply in 2008-09 (GoI, 2009). Due to global as well as domestic factors, there was a sizable slippage in 2011-12 and around 58 per cent of the slippage was because of lower receipts and the balance due to overshooting of expenditure (GoI, 2013a).

² <https://stats.oecd.org/glossary/detail.asp?ID=984>

Earlier, an attempt of gradually setting up a system of fiscal discipline had been made through the Fiscal Responsibility and Budget Management (FRBM) initiative in India. The Fiscal Responsibility and Budget Management Act, 2003, came into force in July 2004. A key element of the FRBMA is an efficient and effective expenditure management (GoI, 2015a). As per the FRBM framework, the government is required to pursue a specified roadmap for fiscal consolidation, in order to reduce the deficits to a specific level in a recommended time frame. In 2010-11, gradual fiscal consolidation process was restarted and in October 2012 a revised fiscal consolidation roadmap was published by the government (GoI, 2014a). As per the revised plan, a fiscal deficit target of 4.8 per cent of GDP was set for 2013-14 and afterwards, by 2016-17 the fiscal deficit is to be brought down to 3 per cent of GDP, by a correction of 0.6 percentage point every year (GoI, 2014a).

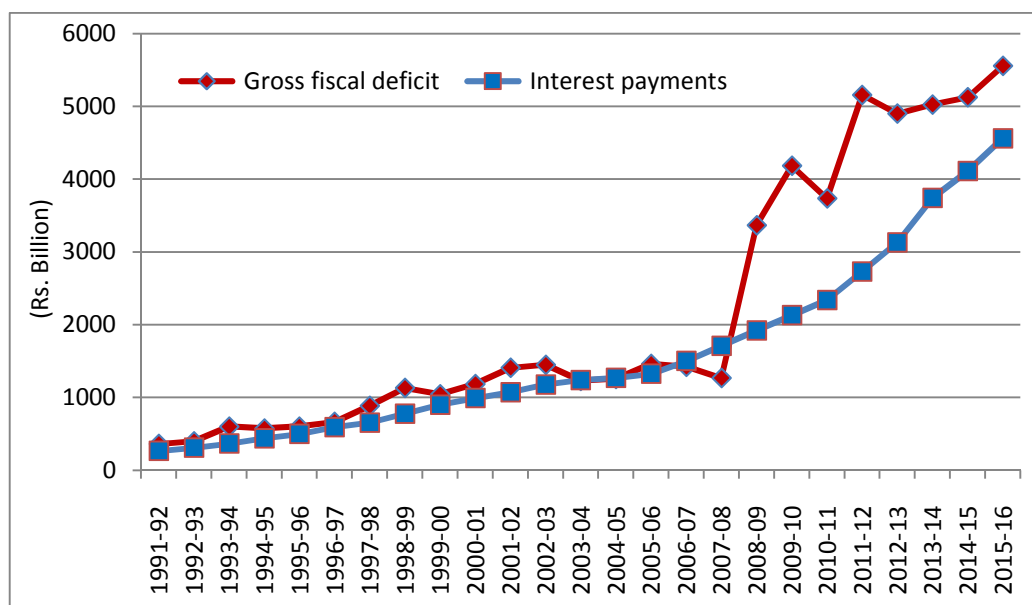
During 2001-02 to 2006-07, a period which also involved fiscal consolidation, the average annual growth rate of fiscal deficit and interest payments was much lower than the average annual growth rate during 1991-92 to 2000-01. The average annual growth rate during 2007-08 to 2015-16 (that is around the financial crisis period) increased in the case of both, GFD as well as interest payments; wherein the average annual growth rate of interest payments was up at about 13 per cent (lesser than during 1991-92 to 2000-01), and GFD went much higher at almost 24 per cent (Table 1).

Table 1: Average annual growth rates

Period	Interest Payments	Gross Fiscal Deficit (GFD)
1991-92 -- 2000-01	16.6	11.9
2001-02 -- 2006-07	7.2	3.7
2007-08 -- 2015-16	13.2	23.8

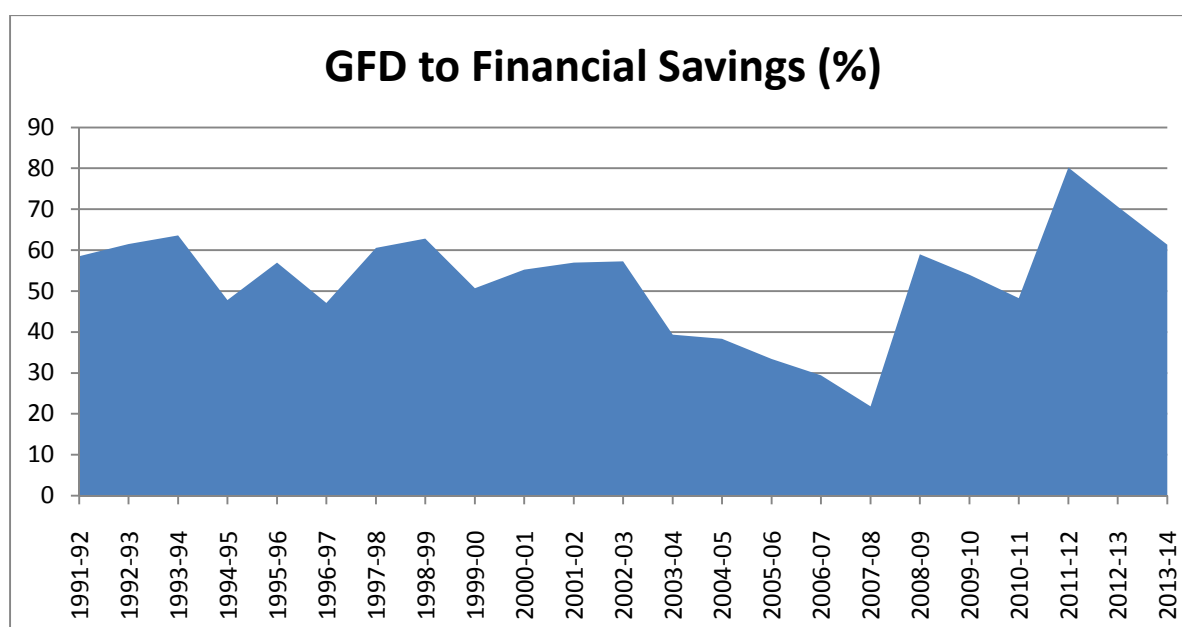
Source: Reserve Bank of India; Authors' calculations.

Interest payments have been rising since 1991-92, while GFD shows irregular declines (Graph 1). After 2007-08, while fiscal deficit shot up, the trend of irregular declines in GFD continued; and the interest payments started rising faster.

Graph 1: Interest payments and Gross fiscal deficit

Source: Reserve Bank of India; Data in Annexure Table I.

A share of the household financial savings goes towards government borrowings. As percentage to GDP at current market prices, household financial saving dropped sharply to 7.1 per cent in 2012-13 from 12 per cent in 2009-10 (RBI, 2014a). GFD has been rising significantly as proportion of financial savings, crowding out flow of resources to other sectors (Graph 2).

Graph 2: Gross Fiscal deficit and Financial Savings

Source: Reserve Bank of India; Data in Annexure Table III

During 2015-16, factors such as drop in international crude prices and other commodity prices, have contributed in managing the expenditures better, and working towards fiscal targets. In 2014, an Expenditure Management Commission was constituted in India, in order to examine various aspects of expenditure reforms. Constitution of the expenditure management commission has been a significant move towards the endeavour of fiscal consolidation.

Fiscal consolidation is effected mostly by compressing capital expenditures. Capital expenditures were 1.5 per cent of GDP in 2014-15, as against 5.4 per cent in 1990-91. While abiding by the fiscal consolidation path holds importance, it is also imperative to ensure that the approach of achieving these objectives maintains a suitable balance within the components.

Section 3: Interest Payments Trends

Rising fiscal deficit creates concern, especially if the expenditure is primarily of the category to fulfil current spending requirements. It is important to ensure that within the expenditure components, the revenue expenditures do not come in the way of developmental and capital expenditure.

About 87 per cent of the total non-plan revenue expenditure in the budget estimate of 2014-15 was for interest payments, subsidies, defence services, pensions, and non-plan grants and aid to states and UTs (GoI, 2015a). High revenue expenditures could affect availability of funds for other important development activities, and it is important for components of revenue expenditure to be controlled. Accordingly, interest expenditure also needs to be kept within suitable limits.

CAG (2005) states, “A necessary condition for stability is the Domar’s Debt Stability Equation. It states that if the rate of growth of economy exceeds the rate of interest on the debt, the debt-GDP ratio is likely to be stable provided primary balances are either zero or positive or are moderately negative. In a situation where the rate of interest is higher than the rate of growth of output, the debt-GDP ratio would continue to rise unless the primary balances turn positive”.

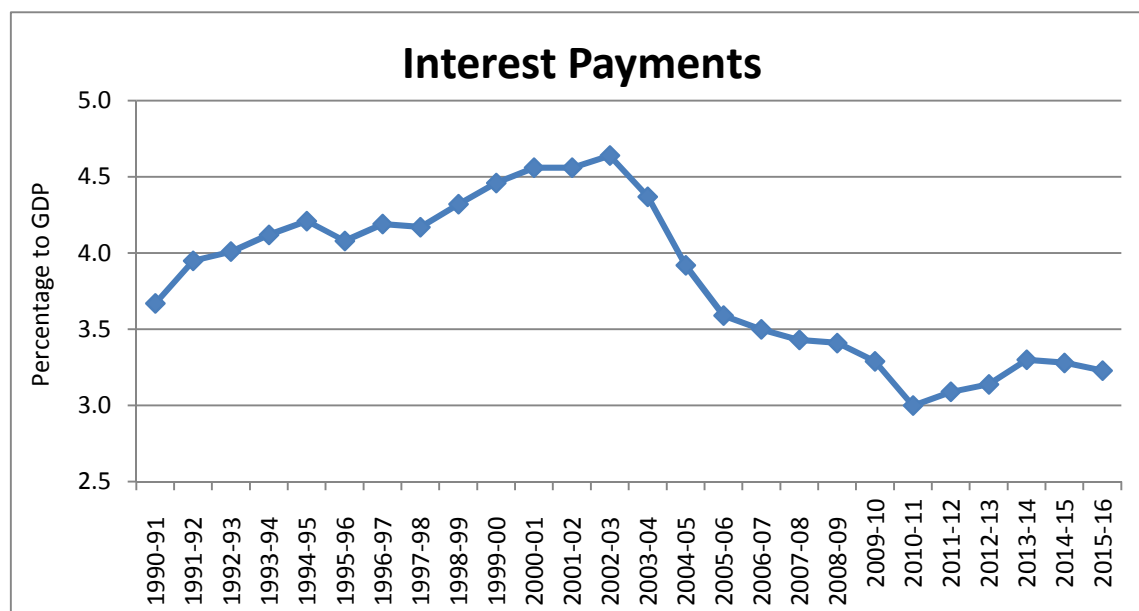
Amount of interest payments would typically depend on the amount of accumulated debt, except if specific measures to limit the interest payments are implemented by the government. Interest burden could be eased by reducing the debt-GDP ratio. Kumar and Soumya (2010) mention that a sound fiscal system needs to have appropriate measures in place, in order to control debt-GDP ratio.

As part of the economic reforms of the early nineties, deregulation of interest rates on market borrowings was undertaken. The average cost of market borrowings was 11.4 per cent in 1990-91 and went up to 13.7 per cent in 1996-97. This was in spite of a decline in weighted average maturity from 18.4 years to 5.5 years during this period (GoI, 2004). Later, the average cost of market borrowings had a declining trend, especially in 2003-04, when these costs reduced to 5.7 per cent.

Interest payments in India are mostly insulated from interest rate volatility, since most of the public debt is at fixed interest rates (GoI, 2013a). In 2002-03, interest payments went up to 4.6 per cent of GDP. During the post-FRBM period, interest payments as a proportion of GDP were generally

declining (Graph 3). The interest payments as a percentage of GDP, increased during the post-crisis period mainly due to fiscal expansion measures during the financial crisis, as also fiscal slippage during 2011-12 and a relatively tight interest rate regime (GoI, 2014a).

Graph 3: Interest Payments



Source: Reserve Bank of India; Data in Annexure Table II

Net interest payments (difference between the interest payments and interest receipts) in India have been increasing since 1970-71 (Table 2) and the amounts are sizeable in the recent years.

Table 2: Net Interest Payments

(Rupees Billion)

Year	Net Interest Payments (Interest Payments- Interest Receipts)	Revenue receipts	Revenue expenditure
1970-71*	0	33	31
1980-81	8	124	144
1990-91	128	550	735
2000-01	665	1926	2778
2010-11	2143	7885	10407
2011-12	2529	7514	11458
2012-13	2924	8792	12435
2013-14	3524	10147	13718
2014-15	3892	11263	14888
2015-16	4325	11416	15360

* Net Interest Payments in 1970-71 were Rs. 170 million approximately.

Source: Reserve Bank of India.

Table 3 presents net interest payments as percentage of the tax revenues, revenue receipts, total receipts, revenue expenditure, total expenditure and the GDP. In 1970-71, all the net interest

payments ratios were less than a percent, and in 1980-81 the ratios were in single digits. During 1970-71 and 2000-01, all these ratios indicate a considerably rising trend. In comparison with the 2000-01 levels, the ratios are lesser in 2010-11, after which, other than Net IP to GDP, the other ratios have generally increased. However, the rise is in a lower range, as against the rise during the years up to 2000-01 presented in the table. A large chunk of tax revenues, that is a main stream of revenues for the government, gets absorbed by interest payments.

Table 3: Net Interest Payment Ratios

(Per cent)

Year	Net IP/ Revenue Receipts	Net IP/ Tax Revenue	Net IP/ Total Receipts	Net IP/ Revenue Expenditure	Net IP/ Total Expenditure	Net IP/ GDP at Market Prices (Current Prices)
1970-71	0.5	0.7	0.3	0.5	0.3	0.0
1980-81	6.5	8.6	4.0	5.6	3.6	0.5
1990-91	23.2	29.7	13.6	17.4	12.1	2.2
2000-01	34.5	48.7	20.4	23.9	20.4	3.1
2010-11	27.2	37.6	18.0	20.6	17.9	2.8
2011-12	33.7	40.2	19.2	22.1	19.4	2.9
2012-13	33.3	39.4	20.0	23.5	20.7	2.9
2013-14	34.7	43.2	22.3	25.7	22.6	3.1
2014-15	34.6	42.8	22.9	26.1	23.1	3.1
2015-16*	37.9	47.0	24.5	28.2	24.3	3.1

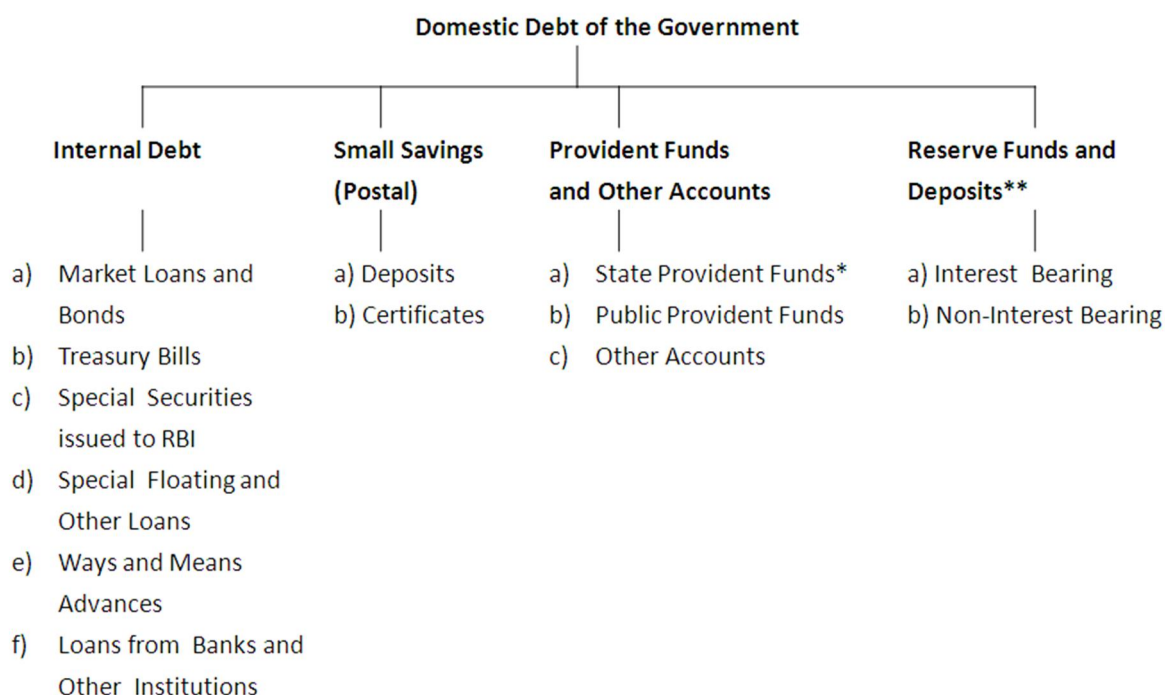
IP: Interest Payments; *GDP Computed

Source: Reserve Bank of India.

Section 4: Debt Scenario

Deficit financing of expenditure generally adds to the indebtedness of the government. During 1980-81 to 2012-13, in India, on average, one-third of the total government expenditure was financed by way of borrowing (RBI, 2012). During 2000-01 to 2009-10, market borrowings were utilised to finance nearly 74 per cent of the total gross fiscal deficit (RBI, 2012).

The public debt in India is predominantly at fixed interest rates. Domestic debt mainly comprises of internal debt, small savings, reserve funds and deposits, and provident funds and other accounts (Table 4). Internal liabilities are a major component of the total liabilities of the government (Table 5).

Table 4: Domestic debt of the Government³**Table 5: Liabilities of the Government**

Year	As per cent to the Total			As per cent of GDP		
	Internal Liabilities	External Liabilities	Total Liabilities	Domestic liabilities	External liabilities	Total liabilities
1980-81	78.2	21.8	100	32.4	9.0	41.4
1990-91	81.0	19.0	100	48.3	11.3	59.6
2000-01	85.3	14.7	100	50.6	8.7	59.4
2010-11	93.1	6.9	100	48.6	3.6	52.2
2011-12	93.1	6.9	100	49.2	3.7	52.9
2012-13	93.6	6.4	100	49.0	3.3	52.3
2013-14	93.6	6.4	100	48.4	3.3	51.7
2014-15	93.8	6.2	100	48.5	3.2	51.7
2015-16	94.2	5.8	100	47.4	2.9	50.3

Source: Reserve Bank of India

Dated securities issued at market related rates in auctions form a large component of the internal debt. Hence, the focus of the remaining paper is on dated securities. As at end of March 2014, dated securities were 76 per cent of public debt (GoI, 2014b). Dated securities are issued to meet requirement for longer term resources in order to finance fiscal deficits. In India, financing of the

³ * State Provident Funds include provident funds of the states and central governments.

** Reserve Funds in the Public Account include balance sheet reserves of commercial undertakings, grants by other governments and public subscriptions, National Calamity Contingency Fund, Guarantee Redemption Fund, Central Road Fund, Railway Safety Fund etc.

fiscal deficit is mainly by way of domestic borrowings, and dated securities are the main instruments utilised to finance such deficit. In 2014-15, net market borrowings by way of dated securities was estimated at Rs. 4,46,922 crore, to finance over 87 per cent of the GFD (GoI, 2015b). Fiscal stimulus package to revive demand in 2008-09 had involved a large expenditure hike, and so, in 2008-09 and 2009-10, plan as well as non-plan expenditure went up considerably (GoI, 2012). With the fiscal stimulus packages, the deficits and debt significantly increased in 2008-09 and 2009-10, and was largely financed by dated securities.

Section 5: Inflation Indexed Bonds

Inflation is one of the significant concerns for investors in financial assets as it can quickly erode investors' wealth. Milton Friedman (1973) remarks about the citizens getting fleeced, and states "If you have invested your savings in Treasury savings bonds, you have been taken for a ride. The sum you get for the bonds when they mature will buy less at today's prices than the amount you paid for the bonds would have bought at the earlier prices. To add insult to injury, you are required to pay taxes on the so-called "interest"!".

Back in the 1740's, the concept of indexation got official endorsement and was embodied in the Massachusetts legislation (Humphrey, 1974). Bodie, Kane, and McDonald (1986) mention that, economists such as Milton Friedman and James Tobin have favoured the idea of the Federal Government issuing indexed bonds.⁴ A few of the views favouring Indexed Bonds are listed in Table 6:

Table 6: Some of the Views

1924	John Maynard Keynes	Index-Linked Government Bonds <ul style="list-style-type: none"> - Protection to the holders from depreciation of the value of money - Decrease the cost of borrowing to the Treasury as expectations get anchored
1941	George Bach and Richard Musgrave	Indexed Government Bonds <ul style="list-style-type: none"> - Protection to the small savers and other investors looking for security of capital primarily in terms of purchasing power (yield as the secondary aspect) - May boost incentive to save - Might induce people towards the relatively non-inflationary form of holding of their wealth - Incentive for Government to control inflation

Source: Humphrey (1974)

⁴ Bodie, Kane, and McDonald (1986): "...indexed bonds, that is, bonds whose principal and interest payments are linked to some index of the cost of living...".

The concept of Inflation Indexed Bonds (IIBs) has been supported by economists such as Marshall, Keynes, Irving Fisher and Milton Friedman.⁵ Inflation indexed bonds are financial instruments which provide protection from uncertainty regarding inflation, to the investors. A government issuing such bonds offers a choice to the participants in the financial markets, to hedge against inflation risk and to earn a positive real return. Essentially, these bonds are an endeavour to guard investments from getting eroded by inflation.

According to Shiller (2003), the first known inflation-indexed bonds in the world, were issued in 1780, by the Commonwealth of Massachusetts. A number of countries have issued inflation indexed bonds since then; Table 7 presents a list of some of these countries. Table 8 provides details about different domestic bonds and notes of the central governments in different countries, including inflation linked bonds.

Table 7: Inflation-Linked Bonds in Different Countries

Country	Year of Introduction
Israel*	Mid-1950s
Chile	1956
Brazil	1964
Argentina (Discontinued in 1991)	1973
United Kingdom ^s	1981
Australia	1985
Mexico	1989
Canada	1991
Poland	1992
Sweden	1994
New Zealand (Other series issued during 1977 and 1984)	1995
United States	1997
India	1997
France	1998
Greece	2003
Italy [#]	2003
Japan	2004
Germany	2006

* Government started indexing its borrowing as well as lending (Price, 1997).

^s In 1975, non-marketable index-linked retail retirement savings bonds were first issued (Price, 1997).

[#] In 1983, Italy had issued just one indexed bond, which was not very successful (Price, 1997)

Source: Garcia and Rixtel (2007), Price (1997), Reserve Bank of India.

⁵ IMF, World Economic Outlook (October 1996):

<https://books.google.co.in/books?id=yWyeKsxktWMC&pg=PA118&dq=%22inflation+indexed+bonds%22+marshall&hl=en&sa=X&ved=0ahUKEwiqjqiS2Z7JAhUXC44KHa0TB8oQ6AEILTAD#v=onepage&q=%22inflation%20indexed%20bonds%22%20marshall&f=false>

Table 8: Domestic Bonds and Notes

(Billions of USD, Amounts Outstanding)

Countries	Floating rate		Fixed rate		Inflation linked		Exchange rate linked	
	2013	2014	2013	2014	2013	2014	2013	2014
Argentina	13	...	0*	...	25	...	24	...
Australia	–	–	207	239	16	19	–	–
Brazil	172	161	348	328	311	302	5	5
Canada	–	–	407	373	35	34	–	–
Chile	...	...	6	8	22	22	...	...
Germany	56	43	1476	1312	74	78	25	25
Hong Kong	–	–	8	9	4	4	1	–
India	1	...	641	...	–	...	...	...
Indonesia	11	10	69	84	–	–	0*	1
Israel	11	11	67	62	59	54	1	1
Korea	...	...	435	456	8	8	...	...
Malaysia	–	–	150	155	–	–	–	–
Mexico	82	79	156	161	69	70	–	–
Russia	...	...	110	62	1	0*	–	–
Singapore	–	–	68	68	–	–	–	–
South Africa	–	–	86	87	27	30	...	...
United Kingdom	–	–	1730	1689	519	552	–	–
United States	–	164	9290	9805	973	1078	–	–

Note: ... Not Available; – Nil or Negligible.

*Argentina: 0.1; Indonesia: 0.2; Russia: 0.3 (Billions of USD)

Source: BIS (2015)

5.1 Cross-Country Experience

Viceira (2010) mentions, while inflation indexed bonds are issued in many developed economies on a regular basis, these bonds have begun to be issued by governments in some developing economies also. Viceira also comments that these bonds should aid the governments in decreasing the cost of public deficit financing. The following sub sections provide a few details about such bonds in the United Kingdom, United States, Brazil and France.

i. United Kingdom

One of the earliest developed economies that issued inflation-indexed bonds for institutional investors was the United Kingdom (UK).⁶ The gilt market in the UK mainly consists of two types of securities with different features, viz., the conventional gilts, and the index-linked gilts. The first index-linked gilt was issued in 1981. Expectation of reducing the overall cost of servicing the government debt was one of the reasons of issuing indexed gilts in the UK (DMO, 1981).

⁶ UK Debt Management Office (<http://www.dmo.gov.uk/index.aspx?page=gilts/indexlinked#keyevents>)

The UK indexed debt market, as Reschreiter (2004) expresses, is one of the largest and most liquid in the world. About 25 per cent of the gilt portfolio consists of the index-linked gilts.⁷ The semi-annual coupon payments and the principal are adjusted according to the UK Retail Prices Index.

Earlier, index-linked gilts were issued with an eight month indexation lag. In 2005-06, the first index-linked gilts with a three-month indexation lag were issued. Since September 2005, all the new index-linked gilts use the three-month indexation lag structure (DMO, 2010). Some of the events in the progress of the index-linked gilt market in the UK are listed in Table 9.

Table 9: UK index-linked gilt market

Year	Developments
1980	Wilson Report published - Recommended - UK government should issue index-linked gilts for pension funds
1981 March 10	Announcement about the Government's intention to issue index-linked gilts
1981 March 27	<ul style="list-style-type: none"> • £1 billion nominal of first index-linked gilt issued by single price auction • Indexation was to General Index of Retail Prices • Initially ownership was restricted to pension funds or similar institutions writing pension business
1982 March	Removal of restrictions on ownership of index-linked gilts
1983 May 5	Convertible index-linked gilt issued; gave investors the option to convert their holdings into a conventional gilt
1988	Taps replaced single price auctions
1997 March 12	Intention to re-introduce auctions of index-linked gilts, announced by Government
1998 November 25	Single price index-linked auctions re-introduced. Taps now used only for market management in exceptional circumstances.
2005 September 20-22	Syndicated offering of 1.25 per cent Index-linked Treasury Gilt 2055 took place. This was the first index-linked gilt issued with a three-month indexation lag.
2005 October 25	First auction of 1.25 per cent Index-linked Treasury Gilt 2055

Source: UK Debt Management Office

(<http://www.dmo.gov.uk/index.aspx?page=gilts/indexlinked#keyevents>)

ii. United States

Treasury Inflation-Protected Securities (TIPS) have been issued by the U.S. Treasury since 1997. These Securities provide a possibility of investment, to the investors, which protects from the effects of inflation. Interest payments are made semi-annually and are linked to the Consumer Price Index for Urban Consumers.⁸

⁷ http://www.dmo.gov.uk/index.aspx?page=gilts/about_gilts

⁸ <https://www.treasurydirect.gov/indiv/research/research.htm>

One of the expected benefits of the issuance of inflation-linked securities in the USA was a reduction in the government's financing costs. In 1996, a statement announcing the intention of issuing inflation protected bonds was made, wherein Treasury Secretary stated: "We believe these bonds will offer savers value-added in the form of protection against inflation, plus a real rate of return backed by the full faith and credit of the United States, and in return for offering that value-added, over time the cost of financing to the federal government will be lower than it otherwise would be." (Rubin, 1996). According to Wrase (1997), considering that despite the Treasury's resistance on issuing indexed bonds for many years, the U.S. Treasury eventually went ahead with issuance of these bonds, indicates the Treasury's conclusion that the benefits outweigh the concerns regarding these bonds. Roush (2008) expressed optimism regarding future issuance of TIPS and observed that since 2004, the TIPS issues yielded net savings for the Treasury. Dudley, Roush and Ezer (2009) suggest an ex ante approach instead of ex post analysis approach, in order to evaluate the costs and benefits of TIPS over the long run.

iii. Brazil

In Brazil, formal sanctioning of indexation of financial instruments took place in 1964 (Price, 1997). Notas do Tesouro Nacional, B series (NTN-Bs) and Notas do Tesouro Nacional, C series (NTN-Cs) are the inflation-linked securities in Brazil. These pay semi-annual coupons and one principal payment on the date of maturity (Brazilian National Treasury and the World Bank, 2010). Indexed bonds were issued in Brazil for facilitating the economic reforms but these bonds were not really a success initially (Kopcke and Kimball, 1999). Viceira (2013) states that, among emerging market economies, Brazil has become a large issuer of the inflation-linked bonds.

iv. France

France is the first Euro zone country which issued index-linked bonds. Index-linked OATs (OATs: Obligations Assimilables au Trésor -- French Government bonds) are bonds intended to protect the purchasing power of the investments of investors. Protection against the French inflation (OATi) or the European inflation (OAT€i), is by index-linking the principal to a daily reference point computed in relation to an index [For OATi: French Consumer Price Index (excluding tobacco); For OAT€i: Harmonised Price Index for the Euro zone (excluding tobacco)]. Also, the coupon is a fixed fraction of the indexed principal. These coupons are paid annually.⁹

The first inflation-linked OAT (July-2009 OATi) was launched in 1998. Later, in 2001, the first OAT linked to the Euro-area price index was launched.¹⁰

A press release announcing the launch of the first inflation-indexed government bond (OATi) in France mentioned that, the debt burden on the French Treasury would decrease due to the inflation-indexed bonds, since the risk premium demanded by the investors would disappear (AFT, 1998). Further, AFT (2005) states that among other positives, inflation indexed bonds create a saving on the

⁹ http://www.aft.gouv.fr/articles/index-linked-oats_1717.html

¹⁰ http://www.aft.gouv.fr/rubriques/a-brief-history_68.html

inflation risk premium, and that accordingly, from the issuers' perspective, issuance of inflation indexed bonds was justified for several reasons.

5.2 Advantages of IIBs

The following Sub-Section provides details about the advantages of IIBs and possible issues which can impact gains from IIBs.

Some of the benefits of IIBs, as listed out in RBI (2010) are, insulation from inflation for the investor, a constant real yield, cost saving for the issuer, risk diversification and, aid in gauging the inflation expectations. Analysis of benefits and costs of issuing inflation protected bonds, mostly with focus on TIPS in the USA, are covered in Bekaert and Wang (2010). Select few advantages of inflation indexed bonds are listed as follows:

i. Reduction in Borrowing Costs

The aspect of uncertainty about future inflation and any possible losses involved, make investors desire to get compensated for the uncertainty about inflation. Accordingly, the investors demand a premium for the risk they undertake. This inflation risk premium is compensation for the investors who put up with the risk of rising prices.

A government could bring a reduction in its borrowing costs by way of inflation indexed bonds. Investors' willingness to pay a premium in order to safeguard from inflation, would aid in having a lower yield that a government pays on such instruments. Essentially, this would make it possible for the government to bring reduction in its cost of financing. Garcia and Rixtel (2007) mention this possibility of decreasing the financing cost, as the "first standard argument" in support of issuance of inflation-linked bonds by a government. Price (1997) also observes such cutback of borrowing costs, by way of capture of inflation risk premium of investors valuing this kind of insurance, as one of the possible benefits of introducing indexed bonds.

Deacon, Derry and Mirfendereski (2004) mention Australia, Canada, France, New Zealand, South Africa, Sweden, the UK and the USA as the countries which started issuing indexed bonds in the last two decades, with possible cost savings as one of the main motives.

One of the reasons for issuance of inflation indexed bonds by the developed countries, is to enable the governments to decrease borrowing costs, by avoiding the requirement of compensating the investors on account of inflation uncertainty premium, which is included in the case of nominal bonds (RBI, 2006). In order to compensate the investors for a risk that inflation will be more than expected, Neely (1997) states that the nominal bond yields include an inflation risk premium. Neely (1997) remarks that the uncertainty about inflation gets eliminated by way of the indexed bonds, and that, the issuers of such bonds benefit since they do not need to pay this inflation risk premium. Neely also discusses some advantages and drawbacks of indexed bonds.

A number of studies have remarked that IIBs can lead to reduction in interest costs. Wrase (1997) also mentions one of the benefits to the US Treasury, of issuing inflation-indexed bonds is that these can reduce the Treasury's borrowing costs. Wrase (1997) explains about the aspect of inflation risk in the case of conventional bonds and so the demand for a risk premium by the investors via higher yields, relative to instruments that do not involve this kind of a risk; and further states that, such inflation risk of the investors gets eliminated in the case of inflation indexed bonds. In the case of riskier assets, Shen (1995) states, the issuer usually has to pay higher yields to the investors, as a compensation for taking up the extra risk. Shen (1995) also mentions, the yield on nominal bonds typically includes inflation risk premium, and that issuing of indexed bonds, as against the nominal bonds, would save the U.S. Treasury money, by removing such inflation risk premium. Fitzgerald (2005) studies the advantages and disadvantages, if the Irish Government were to consider issuing Irish-Inflation-linked government bonds, and accordingly proposes in favour of the Irish Government issuing such securities. One of the possible benefits to the Irish government, as Fitzgerald (2005) discusses, is regarding decrease in the long-term servicing cost on the national debt. Fitzgerald also mentions that, these bonds would be of interest to the investors who are inflation-averse and may be prepared for a slightly lower real yield.

ii. Assess inflation expectations

IIBs aid in getting an estimate of the inflation expectations and even moderating it. According to Bernanke (2004), "...inflation-indexed securities would appear to be the most direct source of information about inflation expectations and real interest rates". The spread between the nominal and the inflation-indexed yields could be a useful indicator for central banks about the expected inflation, if the market for these indexed securities is liquid and reasonably stable (RBI, 2006).

Price (1997) mentions, circumstances wherein, if the future inflation gets overestimated by the market, the government will issue indexed bonds instead of nominal bonds, and decrease the borrowing costs. Price (1997) also states that, one of the reasons for the introduction of indexed bonds in the UK and the reissue in New Zealand, was the view that the inflation expectations were excessive.

The first index-linked gilt issued in the UK was with a break-even inflation rate of about 11.5 per cent, and this level, was to some extent an indication of the markets' lack of faith that inflation could be significantly reduced by the government (Knight, 2013). But, the Government's efforts were effective and inflation was brought under control, and Knight (2013) brings out that, as a result of this negative inflation surprise, the index-linked issuance was highly cost effective for government, in comparison with its fixed-coupon counterpart.

Dudley, Roush and Ezer (2009) mention that, forecast mistakes of the investors would not be repeated indefinitely, as they are likely to pick up from their errors in the past. Accordingly, Dudley, Roush and Ezer (2009) state that, inflation surprises should not matter, over the long run.

Referring to information about expected inflation and its changes, Shen (1995) suggests, the monetary policymakers can get such information by way of indexed bonds, and this would aid them to have a

better understanding of the inflationary pressures and accordingly make better adjustments to the monetary policy. Shen further states, such information could also be utilized by the monetary authorities to evaluate the credibility of their anti-inflation policies.

iii. Requirements of Pension funds

Reschreiter (2004) observes, it is the medium and long-term inflation risks that the investors are largely concerned about. In a response to a Consultation Document issued by the UK Debt Management Office, on CPI-linked gilts, the National Association of Pension Funds (NAPF, 2011) expressed about considerable potential demand for the CPI index-linked gilts from the pension schemes, and emphasised the requirement of increased issuance of long-dated gilts, particularly the long-dated index-linked gilts. As the payments obligations of pension funds are linked to inflation, Kumar and Chander (2012) comment that IIBs are particularly useful to such institutional investors.

The Euro area and the UK have a strong demand for linkers, especially from the pension funds, as pensions there are usually indexed to inflation (Viceira, 2013).¹¹ Deacon, Derry, and Mirfendereski (2004) remark that pension funds may assign greater value to real assets. Further, they mention that, in many countries, the single largest group of indexed bond holders comprise the pension funds and insurance companies.

5.3 Potential factors affecting the benefits of IIBs

While the indexed bonds have certain advantages, some factors could affect the positive features of these instruments. RBI (2010) states about possibility of the benefit of IIBs as a cost saving instrument for the government, turning into a disadvantage, for example, the cost of indexed bonds may actually end up being more than the cost of nominal bonds, in case if, the ex-post (actual) inflation is higher than the ex-ante (expected) inflation.

i. Illiquidity premium

Illiquidity premium is a compensation that investors may desire, for holding a bond which may be less liquid as against other liquid instruments. Illiquidity premium could then lower cost savings to government.

Developing a liquid secondary market for inflation-indexed government securities has been difficult for most countries, and so the yields that the governments pay could be including a premium for liquidity, essentially as compensation to the investors (RBI, 2006). A liquid, vibrant secondary market, a broad investor base are some of the important aspects of the debt market. Roush (2008) observes that, the costs of TIPS to Treasury were large mainly due to illiquidity during initial years of the program. Similarly, one of the several reasons that Italy's indexed bond issue in 1983 did not

¹¹ In the financial markets, "inflation-linked" and "index-linked" bonds are typically referred to as "linkers" (Garcia and Rixtel, 2007).

"Government securities whose realized yields depend on inflation, known on the Street as "linkers,"....." (Bernanke, 2004)

succeed, as Foresi, Penati and Pennacchi (1996) point out is that, “The issue was too small to be liquid..”. Deacon, Derry and Mirfendereski (2004) also mention that, usually, indexed bonds are less liquid as against nominal bonds, and that, this could be one of the factors for investors to get dissuaded from buying IIBs. Consequently, lack of liquidity could cause investors to demand a liquidity premium.

ii. Tax

In cases where the tax rules cause a lower after-tax yield, inflation indexed bonds could end up reducing the advantage factor of the bonds. If the tax structure in a country is not appropriate to bring in attractive returns, these bonds may not appear lucrative to the investors. Ghose (2013) explains the disadvantage on account of the tax aspect in India. Ghose (2013) remarks about no special tax concessions on IIBs applicable in India, and that the real returns on these bonds get reduced since both the interest received as well as the capital gains on the bonds would be taxable.

Wilcox (1998) examines the initiation of indexed debt in the USA and states that the inflation indexed securities provided considerably greater protection from inflation risk, than other available options before these bonds were introduced in the US. However, Wilcox (1998) also mentions these securities did not provide perfect protection, and points to the tax aspect as one of the reasons for that. Similarly, Neely (1997) observes tax treatment of inflation indexed bonds as one of the reasons which could dampen the demand for these bonds. Deacon, Derry and Mirfendereski (2004) also bring up the tax treatment of IIBs as one of the key reasons that could discourage investors from buying these bonds.

iii. Imperfect estimations

Investors do not have complete information to fully evaluate the steps the authorities take to manage inflation. Therefore, Ghose (2013) remarks, a distorted picture could get depicted, with any sudden or temporary movements in the yields. Further, Price (1997) mentions, better information regarding future course of inflation may be available with government, and also that, expectations of investors may not be rational or completely forward-looking. Hence, distort market expectations.

5.4 Indexed Bonds in India

Indexed bond flotations in India, some of the issues, as also possible opportunities for indexed bonds are covered in the following sub-sections.

Flotation

In India, a variant of Inflation Indexed Bonds, that is the Capital Indexed Bonds, were first issued in 1997, in which the principal repayment at the time of redemption was indexed to inflation (RBI, 2013b). The Union Budget of 2013-14 made an announcement regarding launch of instruments so as to protect the savings of the poor and middle classes, from inflation, and referred to financial instruments such as the Inflation Indexed Bonds and, the Inflation Indexed National Security Certificates (GoI, 2013b). Consequently, in June 2013, IIBs linked to the Wholesale Price Index were

issued by the Government of India, through the RBI. After this issuance, these bonds were issued on a monthly basis, till December 2013 (RBI, 2015a). Unlike Capital Indexed Bonds, the IIBs provide protection to both, the principal and the interest payments.

While the IIBs launched in June 2013 were for institutional investors, later in December 2013, Inflation Indexed National Saving Securities-Cumulative (IINSS-C), were launched for retail investors. In IINSS-C, inflation compensation is linked to combined CPI. The interest rate has two components, a fixed rate of 1.5 per cent per annum, and an inflation rate based on CPI, with a lag of three months (RBI, 2014b).

Issues

No further issuance of indexed bond was made after the 1997 issuance for nearly a decade and a half, primarily because this instrument received a dull response in primary and secondary markets. Complexities in pricing and, the factor that only the principal was protected from inflation, were brought up as some of the reasons for such lacklustre response (RBI, 2004a).

Ghose (2013) observed that, since the bonds issued in June 2013 were linked to the WPI, and not the CPI, these could provide only partial hedge against inflation. Further, Ghose observed that these IIBs received a lacklustre response from medium and small investors, suggesting the view of these investors about the inability of such bonds to offer complete hedge against inflation.

RBI (2014a) mentions that the bonds issued in December 2013 also garnered a subdued response as a result of some of the design features, as also because the timing coincided with the issue of various tax free bonds by PSUs, and due to the retail investors' lack of awareness about the product.

Potential Opportunities

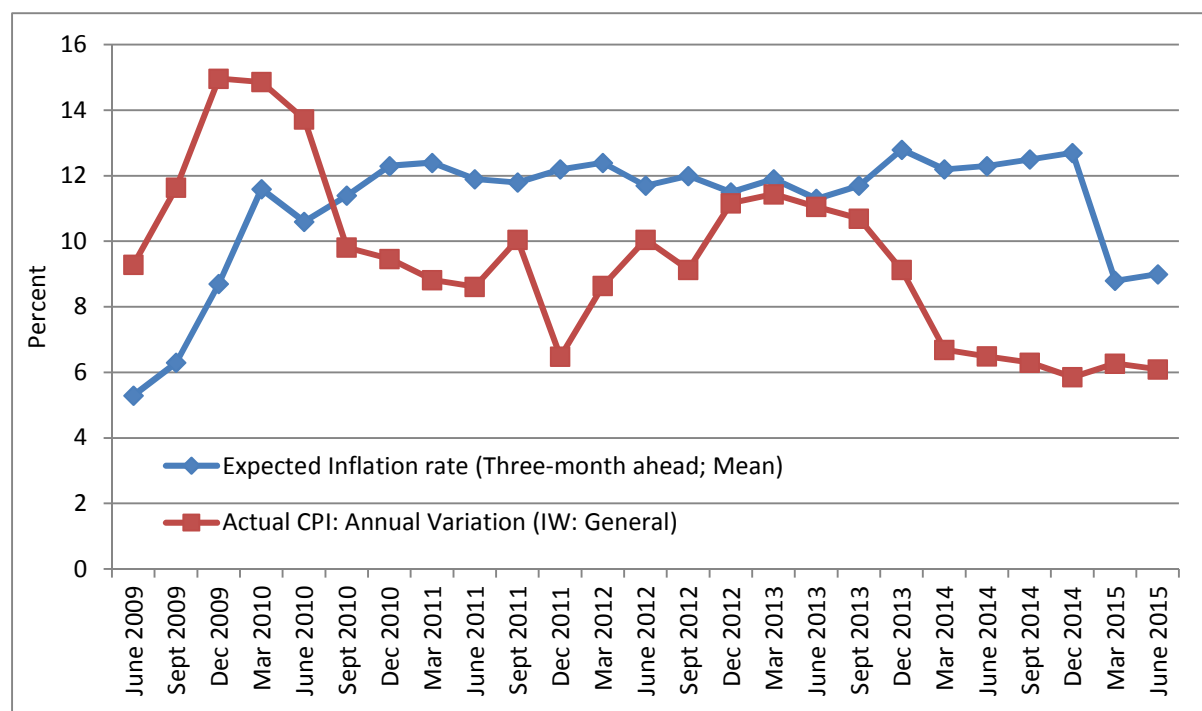
Khan (2014) mentions that a range of instruments, including zero coupon bonds, fixed rate nominal bonds, floating rate bonds, and inflation indexed bonds were issued in India, and that the share of linkers in the total issuances continued to be less than five per cent.

With high inflation, investors in India tend to invest in gold, as this is commonly observed as a hedge against inflation. The re-introduction of IIBs and later introduction of CPI linked saving certificates were part of plan in order to persuade investors to invest in financial assets (RBI, 2013c). IIBs may also encourage savings and more importantly, these instruments may aid in weaning investors away from gold.

IIBs could cut down the borrowing cost of the Government, by taking away the uncertainty premium for inflation. GoI (2013c) adds, long-term investors, for instance, the pension funds and insurance companies prefer instruments that offer to protect from inflation. Accordingly, a decrease in the borrowing cost may also occur due to a strengthened demand for government securities and broader investor base, possibly created by IIBs (GoI, 2013c).

Inflation and expected inflations are presented in Graph 4. As can be observed, expected inflation has been higher than the actual inflation since around September 2010. Such a scenario, wherein the inflation in the future is expected to be higher, makes a case supporting the concept of inflation indexed bonds in India.

Graph 4: Expected Inflation



Source: Reserve Bank of India.

Estimation of Opportunity Cost

To understand if issuance of Inflation Indexed bonds would have resulted in savings for Government, data available on inflation, interest payments and outstanding debt was utilized to estimate net savings, if inflation indexed bonds were issued.

The calculations were done on outstanding balances for government bonds from 2002-03 to 2013-14. For calculations, it was assumed, that 20 percent of government bonds post 2002 were to be inflation indexed bonds. This meant that 20 percent of the net increase in outstanding balances would have been issued as inflation indexed bonds. The Consumer Price Index (Industrial Workers) was used as the measure of inflation to which bonds are indexed. For calculations, real interest rate is considered as 3 percent.

The interest payments and outstanding balances are calculated on the basis of three separate methodologies:

- a) Methodology 1: The principal is inflation indexed annually. The interest for the inflation indexed bonds is paid annually on the indexed outstanding balances at a fixed interest rate. Hence, the principal is inflated, whereas the interest payments are reduced in comparison with the plain vanilla bonds. An estimate of the net savings is provided in Table 11. It is equal to:

Interest Payment (Actual) – Interest Payment (Estimated) – Increase in Outstanding Debt.

- b) Methodology 2: The interest payment is inflation indexed and paid annually on the original principal. In this case, the principal is not inflation indexed. The interest rate is floating, that is, it has a fixed real interest rate and an inflation rate component. Depending on the inflation rate for a given year the interest payment for inflation indexed bond is either inflated or deflated. An estimate of the net savings under this method is provided in Table 12. It is equal to:

Interest Payment (Actual) – Inflation Indexed Interest Payment (Estimated)

- c) Methodology 3: Both the principal as well as the interest payment is inflation indexed. The calculation of the interest payment is done annually on the basis of the original principal. The rate at which interest is paid is real fixed interest rate plus inflation. The total inflation indexed principal is paid on maturity. An estimate of the net savings is provided in Table 13. It is equal to:

Interest Payment (Actual) – Inflation Indexed Interest Payment (Estimated) – Increase in Outstanding Debt.

The results of the analysis can be better understood with the help of Graph 5. The inflation rate during the initial years of the analysis is significantly below the effective interest rate. This implies that during this time it would have benefited the government to have had inflation indexed bonds. However, during the latter part of the analysis, inflation rate is higher than effective interest rate. This means that the government saved on interest expenditure by having plain vanilla bonds. However, the lenders lost as the principal shrunk in real terms. To have inflation indexed bonds would have stabilized the gains and losses of each party over time.

Table 10: Effective Interest Rate¹²

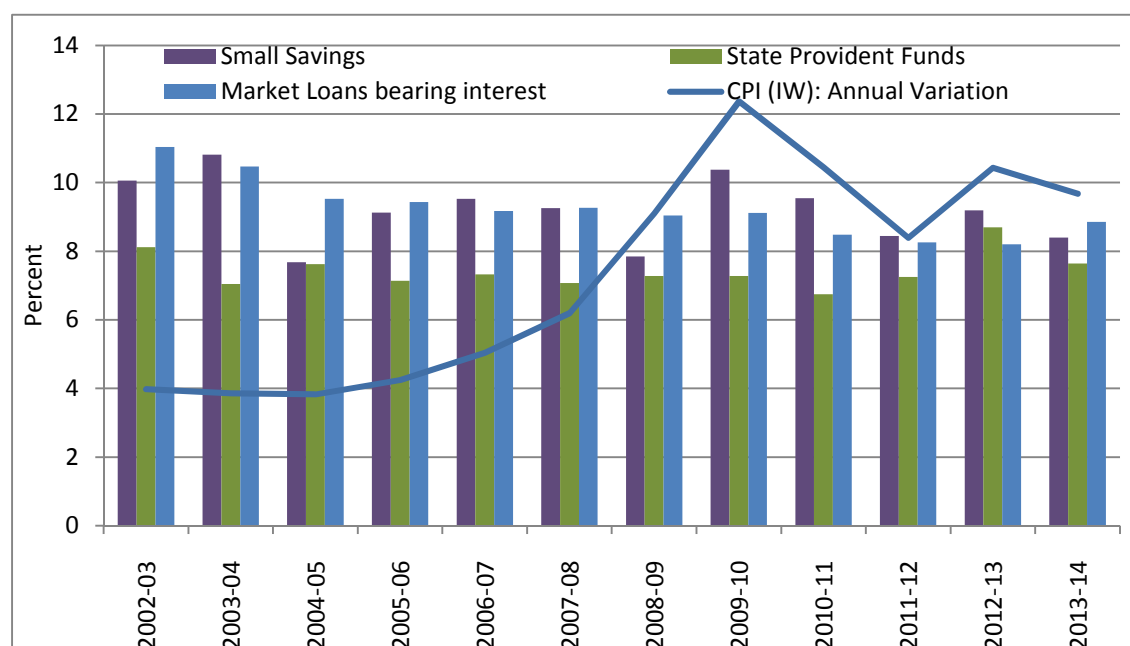
(Percent)

Year	CPI (IW)	Small Savings	State Provident Fund	Market Loan (Bearing Interest)
2002-03	4.0	10.1	8.1	11.0
2003-04	3.9	10.8	7.0	10.5
2004-05	3.8	7.7	7.6	9.5
2005-06	4.3	9.1	7.1	9.4
2006-07	5.0	9.5	7.3	9.2
2007-08	6.2	9.3	7.1	9.3
2008-09	9.1	7.8	7.3	9.0
2009-10	12.4	10.4	7.3	9.1
2010-11	10.4	9.5	6.7	8.5
2011-12	8.4	8.4	7.2	8.3
2012-13	10.4	9.2	8.7	8.2
2013-14	9.7	8.4	7.6	8.9

Note: During 2008-09, Interest Payment on Public Provident Fund was Rs. -26194187 (In thousands of rupees); the negative figure was due to adjustment of previous years (Ministry of Finance, Government of India).

Source: Reserve Bank of India, Government of India, Authors' calculations

(Refer Annexure Tables IV to IX for the Effective interest rates and Real Effective interest rates).

Graph 5: Effective Interest rate vs Inflation rate

Source: Reserve Bank of India, Government of India, Authors' calculations; Table 10.

¹² Effective interest rate has been calculated as a ratio of the interest payments to the average of opening and closing stock of debt for a particular year.

Table 11: Inflation Indexed Bonds – Estimate of net savings

(Thousands of Rupees)

Net Savings (Methodology 1)				
Year	CPI (IW) (%)	Small Savings	State PFs	Market Loans (Bearing Interest)
2002-03	4.0	1826197	50053	3111737
2003-04	3.9	4896204	-177590	5849917
2004-05	3.8	-7728821	-608431	-3209884
2005-06	4.3	-15965446	-1882751	-19552428
2006-07	5.0	-42277290	-3893093	-50805105
2007-08	6.2	-93081802	-7498928	-105839521
2008-09	9.1	-184797213	-13992430	-230471704
2009-10	12.4	-288973070	-26566354	-485408909
2010-11	10.4	-421318348	-42013859	-818499783
2011-12	8.4	-552362165	-56690621	-1170824097
2012-13	10.4	-713240849	-77545997	-1741910707
2013-14	9.7	-898831901	-105215927	-2384546756

Source: Reserve Bank of India, Government of India, Authors' calculations.

Table 12: Inflation Indexed Bonds – Estimate of net savings

(Thousands of Rupees)

Net Savings (Methodology 2)				
Year	CPI (IW) (%)	Small Savings	State PFs	Market Loans (Bearing Interest)
2002-03	4.0	1862169	52808	3158094
2003-04	3.9	7571009	26968	9302987
2004-05	3.8	3036415	192210	11067864
2005-06	4.3	10151513	-39848	12309706
2006-07	5.0	10173145	-329038	8817980
2007-08	6.2	422448	-1170129	686958
2008-09	9.1	-31072470	-3228004	-42416994
2009-10	12.4	-39219513	-7369387	-126759223
2010-11	10.4	-35357597	-8014632	-137152641
2011-12	8.4	-28529088	-5921930	-110694353
2012-13	10.4	-42288768	-7811841	-232720567
2013-14	9.7	-45660978	-9350762	-205574307

Source: Reserve Bank of India, Government of India, Authors' calculations.

Table 13: Inflation Indexed Bonds – Estimate of net savings

(Thousands of Rupees)

Net Savings (Methodology 3)				
Year	CPI (IW) (%)	Small Savings	State PFs	Market Loans (Bearing Interest)
2002-03	4.0	-535980	-130870	67650
2003-04	3.9	-2307399	-708995	-3834126
2004-05	3.8	-20978966	-1504172	-18287108
2005-06	4.3	-37882659	-3304191	-42292302
2006-07	5.0	-74750839	-6072920	-87782335
2007-08	6.2	-135652145	-10679357	-165175768
2008-09	9.1	-245944650	-19694525	-349529195
2009-10	12.4	-377715717	-37132775	-722716619
2010-11	10.4	-503996871	-53378785	-1083808856
2011-12	8.4	-617819817	-67084630	-1433165806
2012-13	10.4	-797089965	-92539324	-2157048542
2013-14	9.7	-976641685	-120224217	-2836114410

Source: Reserve Bank of India, Government of India, Authors' calculations.

The opportunity cost estimations demonstrate that if inflation indexed bonds were issued using methodology 2, then the government would have benefited during the years of low inflation and incurred loss during the years of high inflation.

The estimations arrived at using methodology 1 and methodology 3 do not take into consideration the maturity date for inflation indexed bonds. However, as the time period taken for the analysis is 12 years, it is safe to assume that this would have only a negligible impact on the estimations. The analysis shows that as the inflation indexed principal cumulates, there is an exponential increase in the outstanding debt. Hence, methodology 2, based on the calculations done proves to be a better cost-reduction technique for the government.

Estimations using methodology 3, similarly predict that the government would have faced losses if the bonds issued were inflation indexed. As both the principal as well as the interest payment is inflation indexed the government has to bear the inflation cost at both ends.

Section 6: Restructuring

Switch operations are cash-neutral, as these entail simultaneous swapping of government security of a specific maturity with government security of another maturity (RBI, 2013b). Buyback operations could be made to be cash-neutral by buying back outstanding government securities that are due for redemption in the same year; Buybacks would entail net cash outgo, if these are not backed by further market borrowings of equivalent amount in the year (RBI, 2013b).

The RBI has been making efforts in the direction of passive as well as active consolidation. Passive consolidation has been attempted by the RBI, since April 1999, by way of re-issuance of the existing stocks (RBI, 2002). During 2014-15, 95 per cent of securities were reissued (RBI, 2015b). In July

2003, debt buyback scheme was initiated and active consolidation of government securities was attempted under this.¹³

Following sub-sections comprise some details about buybacks, switches and regarding maturity period of government securities.

Cross Country Experience

USA

In the USA, by 1982, a regular and predictable schedule of new notes and bonds offerings was being followed by the US Treasury (Garbade, 2007). The Treasury's strategy of following regular and predictable issuances, Garbade (2007) observes, helped in decreasing the element of surprise in the Treasury offering announcements and facilitated investor planning, and also that this move was credited with decreasing the borrowing costs for Treasury. In 1998, a Treasury meeting (Bond Market Association, 1998) included a discussion regarding repurchase of older, higher coupon Treasury securities, by the Treasury; Opinion that, a repurchase program should be available to the Treasury was the consensus among the members. While decrease in Government's borrowing cost was mentioned as one of the possible benefits of repurchase program, other benefits stated were that this would allow Treasury to maintain issue sizes of new securities and also that this would aid Treasury in smoothening out increases in cash balance (Bond Market Association, 1998). Later in August 1999, the Treasury issued proposed rules regarding redemption operations of securities (Marketable Treasury Securities Redemption Operations), for public comment (Department of the Treasury, 1999). The Treasury's requirement to borrow had reduced significantly as a result of improved fiscal position of the government, and accordingly, Treasury had been adjusting the government's borrowing program (Department of the Treasury, 1999). One of the possible advantages of debt buybacks as mentioned in this document of proposed rules, is about enhanced market liquidity, and that over long term, such liquidity could decrease interest expense of the government (Department of the Treasury, 1999). In January 2000, debt buyback was introduced as a new tool for Treasury to manage public debt; and among some "concrete advantages" of debt buybacks for federal debt management, was the argument that, over time, these should help in decreasing the interest costs of the government (Summers, 2000). While commenting, that buybacks could aid in enhancing liquidity, GAO (2012) also mentions, "A buyback program could.....as Treasury's previous experience shows, reduce borrowing costs over the long term".

Other Countries

The GAO (2012) report studied Canada, France, Germany, and the United Kingdom, and brings out that each of these countries use buybacks, for smoothening the peaks in their maturity profiles, including during times of budget deficits; and that all these countries use debt buybacks, in order to mitigate rollover risk. The GAO (2012) report also states that buybacks could decrease borrowing

¹³ RBI (2003) mentions market buy-backs, debt swaps and debt reduction agreements as three basic approaches of debt restructuring.

costs over the long term, and mentions that, all its case study countries, cited decreasing the overall cost of borrowing as an advantage of the buyback programs. Blommestein, Elmadag and Ejsing (2012) give an account of a survey conducted amongst OECD government debt managers, regarding the use of bond buybacks and exchange operations; and bring out that exchanges and buybacks are intended for lowering refinancing risk, and that, these operations may also help in reducing the funding costs for governments. Medeiros, Polan, and Ramlogan (2007) observe that reduction of the debt service payments is one of the three main reasons for governments of emerging market countries to engage in debt buybacks and swaps.

India

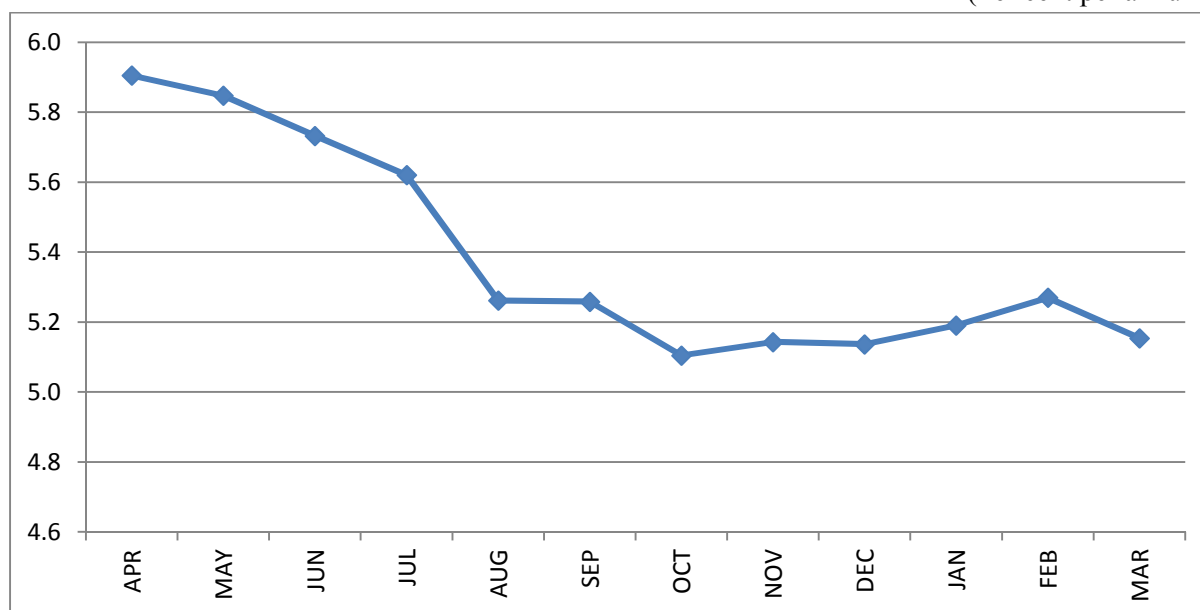
The Internal Technical Group on Central Government Securities Market (RBI, 2005) recommended active consolidation of securities; the report states, such process of consolidation would entail, in one form or another, buying back large number of small sized illiquid securities, and in exchange, issuing a smaller number of liquid securities.

The yield on G-Secs (10 year) had been declining in 2003-04 (Graph 6). The RBI carried out the first buyback operations in July 2003 (Graph 7). With the objective of lessening the government's interest burden and to help the banks in offloading illiquid securities, the government debt buyback scheme was put into effect (RBI, 2005).

This first buyback involved, buyback auction of high coupon but relatively illiquid securities. This was conducted for select 19 Government of India dated securities with participation on a voluntary basis. Altogether, 131 offers adding up to Rs. 14,434 crore (face value) were received. Four existing liquid securities of the equivalent face value were reissued by the Government, in exchange for the securities bought back. The Government saved Rs.1,488 crore. (RBI, 2004b).

Graph 6: Yield of SGL Transactions (Term to maturity: 10 years) — 2003-04

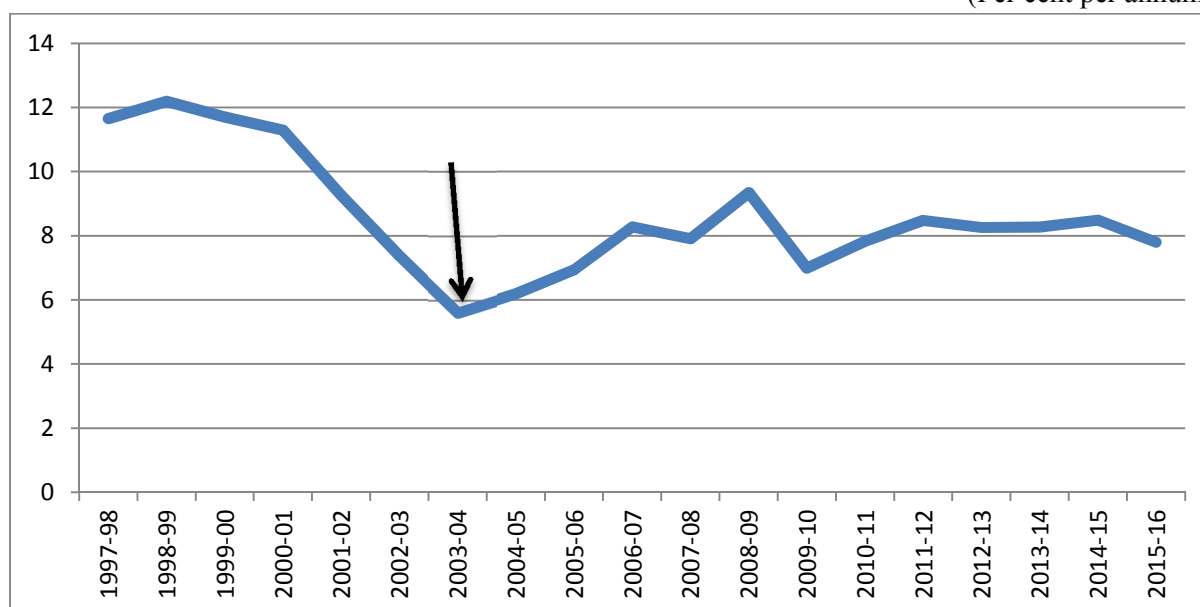
(Per cent per annum)



Source: Reserve Bank of India.

Graph 7: Yield of SGL Transactions (Term to maturity: 10 years) – July

(Per cent per annum)



Source: Reserve Bank of India.

During 2013-14, repurchases of G-secs amounting to Rs. 15,590 crore were carried out in March (GoI, 2014c). Switching of government securities to longer tenor was also carried out during 2013-14. These operations involved swapping of securities from 2014-15 and 2015-16 maturity buckets for face value of around Rs. 27,000 crore and about Rs. 4,400 crore to longer tenor security with institutional investors, in January 2014 and March 2014, respectively (GoI, 2014c). The buyback/

switch operations implemented during 2013-14, contributed to strengthening of the government debt maturity structure, improving debt market liquidity and in mitigation of rollover risks (RBI, 2014a).

During 2014-15, the RBI continued with debt consolidation by way of reissuances. The Reserve Bank ensured about elongating maturity of outstanding debt while containing rollover risks; in order to smoothen the maturity profile of the GoI securities and ease redemption pressures, buybacks/ switches were carried out (RBI, 2015b). Repurchases worth Rs. 18,805 crore were carried out during 2014-15 (GoI, 2015c). In February 2015, switch operation of the securities was conducted with a scheduled commercial bank, in which securities with a face value of around Rs. 8,800 crore were switched to longer tenor securities (GoI, 2015c). Also in March 2015, two securities maturing in 2015-16 for a total face value of around Rs. 30,228 crore were converted to a longer tenor security maturing in 2026-27 (GoI, 2015c).

In January 2016, the Government of India announced buyback of WPI-Linked Inflation Indexed Bond, for an aggregate amount of Rs. 6,500 crore (GoI, 2016).¹⁴

Transparency in auction processes in the domestic markets is being followed by most countries, in order to diminish market uncertainty and reduce the borrowing costs. In India, buybacks and switches are being planned to be part of the regular calendar of issuances from the second half of 2015-16 (RBI, 2015b).

There is a trade-off in elongating maturity and interest cost. To reduce interest payments, short term securities can be issued but that would raise refinance risk. Therefore, a balance has to be maintained in the maturity profile of debt.

RBI (2002) remarks, that short-term borrowing raises the refinancing or rollover risk. Mohan (2004) states that the Central government issuances maturity, ranged up to 10 years, during most of the 1990s. Accordingly, some factors that called for elongation of maturity of the bond issuance include possible redemption pressure and refinancing risk and, a need of developing the yield curve for longer tenors (Mohan, 2004).

The period during 1992-93 and 1997-98, when market was getting attuned to the auction method of issuing new securities as different from the earlier fixed coupon flotations, involved shortening of maturity (hence bunching of the redemptions), which was reversed from 1998-99 when elongation of maturity of new issuances was implemented (RBI, 2002). One of the reasons for the decision of elongation of the maturity profile of issues was, to avoid bunched repayments. Hence, efforts were made to elongate weighted average maturity of loans which increased from 5.5 years (1996-97) to 14.3 years (2001-02) (RBI, 2002). In 2002-03, the maximum maturity of securities issued was further increased to 30 years. The weighted average maturity of dated securities issued during a year increased to 16.9 years in 2005-06.

¹⁴ After the repurchase auction was conducted, RBI in consultation with the Government of India, decided not to accept any offer (RBI, 2016).

The maturity profile of the outstanding stock of government securities was elongated by the RBI, by issuing securities of longer maturity. The weighted average maturity of the outstanding stock of government securities increased from 6.5 years at end of 1998 to 10.23 years at end March 2015.

In order to contain rollover risk, focus of debt management strategy during 2013-14 was again on elongation of maturity. Taking into account the requirements of the long term investors, such as insurance companies and pension funds, a 40-year security is proposed to be issued in 2015-16 (RBI, 2015b).

The maturity pattern of issuances of dated securities is presented in Table 14. For each year mentioned in the table, almost 65 per cent or even more, of the total dated securities fall in the maturity bracket of 5 to 14.99 years. After the maturity buckets of 5 - 9.99 years and 10 - 14.99 years, the next highest maturity bracket is the 20 years and above. Securities with maturity of less than 5 years indicates significant variations, wherein it was at 12 per cent in 2009-10 and reduced to nearly 3 per cent in the following year, again increased to 8 per cent in 2012-13 and then down to nil in 2014-15.

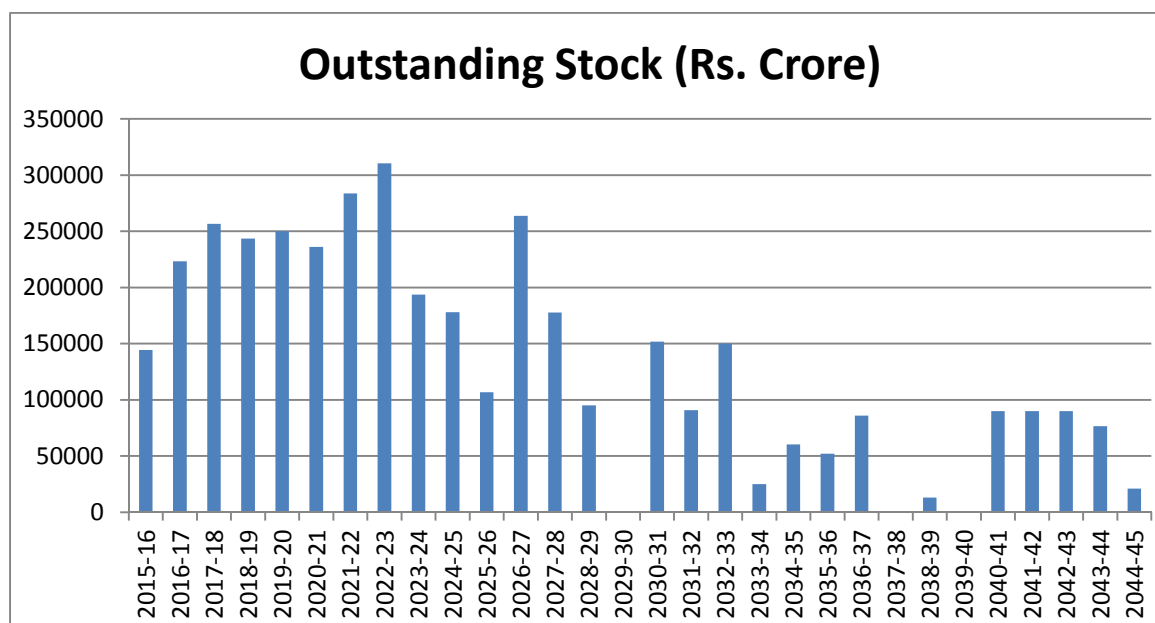
Table 14: Issuance of GoI Dated Securities – Maturity

Percentage to total

	Less than 5 years	5 -9.99 years	10-14.99 years	15 -19.99 years	20 years & above	Total
2008-09	–	29.5	37.9	5.4	27.2	100
2009-10	12.4	43.1	21.8	9.3	13.4	100
2010-11	2.5	34.8	37.5	12.4	12.8	100
2011-12	3.5	45.9	24.1	12.8	13.7	100
2012-13	8.4	34.2	31.0	4.8	21.5	100
2013-14	2.0	40.9	23.8	16.5	16.9	100
2014-15	-	39.7	25.5	16.2	18.6	100

Source: Reserve Bank of India.

The issuance of dated government securities have led to lumpiness in terms of outstanding amount of debt (Graph 8).

Graph 8: Maturity Profile -- Government Securities as on End-March 2015

Source: Government of India

Section 7: Conclusions

India is an emerging market economy and therefore, there is a constant need to review expenditure management. Interest expenditure, being a significant component of revenue expenditure, should ideally be low, mainly so as to not hamper expenditures which could be utilised for developmental and capital expenditure. This paper has made an attempt to look into alternatives to reduce expenditure on interest payments in India.

Adjustments to the maturity profile of outstanding stock of debt can be used to reduce interest payments by offering alternate maturities at lower interest rates. As the yield varies over the years, and interest rate cycles change, lower interest rate regime can be used to smoothen the profile of outstanding debt.

Reduction in the interest costs could be brought about by increasing the supply of Inflation Indexed Bonds. Another potential move that could be tried to reduce interest burden, is restructuring of debt, which has been experimented earlier, but with limited success. Buyback of government securities, switch operations, or arrangement within the maturity buckets may provide some scope for interest cost reduction. Finally, some uniform distribution of the outstanding stocks across years may yield positive results in the long run.

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Annexures

Table I: Growth Rates of Interest Payments and Gross Fiscal Deficit

Year	Interest Payments (Rupees Billion)	Gross Fiscal Deficit (Rupees Billion)	Interest Payments Growth Rate (%)	Gross Fiscal Deficit Growth Rate (%)
1991-92	266	363	24	-19
1992-93	311	402	17	11
1993-94	367	603	18	50
1994-95	441	577	20	-4
1995-96	500	602	14	4
1996-97	595	667	19	11
1997-98	656	889	10	33
1998-99	779	1133	19	27
1999-00	902	1047	16	-8
2000-01	993	1188	10	13
2001-02	1075	1410	8	19
2002-03	1178	1451	10	3
2003-04	1241	1233	5	-15
2004-05	1269	1258	2	2
2005-06	1326	1464	4	16
2006-07	1503	1426	13	-3
2007-08	1710	1269	14	-11
2008-09	1922	3370	12	166
2009-10	2131	4185	11	24
2010-11	2340	3736	10	-11
2011-12	2732	5160	17	38
2012-13	3132	4902	15	-5
2013-14	3743	5029	20	3
2014-15	4114	5126	10	2
2015-16	4561	5556	11	8

Source: Reserve Bank of India; Authors' calculations.

Table II: Interest Payments as percent of GDP

Year	Interest Payments
1970-71	1.27
1971-72	1.31
1972-73	1.38
1973-74	1.29
1974-75	1.24
1975-76	1.42
1976-77	1.59
1977-78	1.56
1978-79	1.73
1979-80	1.82
1980-81	1.74
1981-82	1.82
1982-83	2.00
1983-84	2.09
1984-85	2.33
1985-86	2.59
1986-87	2.85
1987-88	3.06
1988-89	3.27
1989-90	3.54
1990-91	3.67
1991-92	3.95
1992-93	4.01
1993-94	4.12
1994-95	4.21
1995-96	4.08
1996-97	4.19
1997-98	4.17
1998-99	4.32
1999-00	4.46
2000-01	4.56
2001-02	4.56
2002-03	4.64
2003-04	4.37
2004-05	3.92
2005-06	3.59
2006-07	3.50
2007-08	3.43
2008-09	3.41
2009-10	3.29
2010-11	3.00
2011-12	3.09
2012-13	3.14
2013-14	3.30
2014-15	3.28
2015-16	3.23

Source: Reserve Bank of India.

Table III: Financial Savings

Year	GFD to Financial Savings (%)
1991-92	58
1992-93	61
1993-94	64
1994-95	48
1995-96	57
1996-97	47
1997-98	61
1998-99	63
1999-00	51
2000-01	55
2001-02	57
2002-03	57
2003-04	39
2004-05	38
2005-06	33
2006-07	29
2007-08	22
2008-09	59
2009-10	54
2010-11	48
2011-12	80
2012-13	71
2013-14	61

Source: Reserve Bank of India; Authors' calculations.

Table IV: Effective Interest Rate -- Market Loans

(Percent)

Year	Market Loans bearing interest
2002-03	11.04
2003-04	10.47
2004-05	9.53
2005-06	9.43
2006-07	9.17
2007-08	9.27
2008-09	9.04
2009-10	9.12
2010-11	8.48
2011-12	8.26
2012-13	8.20
2013-14	8.85
Average	9.24

Source: Government of India, Authors' calculations.

Table V: Real Effective Interest Rate -- Market Loans Bearing Interest (After deducting CPI-IW)

(Percent)

Year	Market Loans bearing interest
2002-03	7.06
2003-04	6.61
2004-05	5.70
2005-06	5.18
2006-07	4.13
2007-08	3.07
2008-09	-0.06
2009-10	-3.25
2010-11	-1.97
2011-12	-0.13
2012-13	-2.24
2013-14	-0.83

Source: Government of India, Reserve Bank of India, Authors' calculations.

Table VI: Effective Interest Rate -- Savings Deposits, Savings Certificates, PPF (NSSF)

(Percent)

Year	National Savings Deposits	National Savings Certificates	Public Provident Fund	Total
2002-03	8.43	11.93	8.38	10.06
2003-04	8.15	15.20	6.23	10.81
2004-05	7.90	8.19	5.84	7.68
2005-06	7.50	12.61	6.65	9.13
2006-07	8.04	10.74	11.86	9.53
2007-08	8.72	9.19	10.89	9.26
2008-09	10.16	10.29	-2.03	7.84
2009-10	10.58	8.95	11.91	10.37
2010-11	10.17	9.75	7.91	9.55
2011-12	9.47	7.36	7.59	8.45
2012-13	7.31	14.18	7.84	9.19
2013-14	6.92	12.36	7.66	8.39
Average	8.61	10.90	7.56	9.19

Note: During 2008-09, Interest Payment on Public Provident Fund was Rs. -26194187 (In thousands of rupees); the negative figure was due to adjustment of previous years (Ministry of Finance, Government of India).

Source: Government of India, Authors' calculations.

Table VII: Real Effective Interest Rate (After deducting CPI- IW rates)

(Percent)

Year	National Savings Deposits	National Savings Certificates	Public Provident Fund	Total
2002-03	4.46	7.96	4.41	6.09
2003-04	4.29	11.34	2.37	6.95
2004-05	4.07	4.36	2.01	3.85
2005-06	3.25	8.36	2.40	4.88
2006-07	2.99	5.70	6.82	4.49
2007-08	2.52	2.99	4.69	3.06
2008-09	1.05	1.19	-11.13	-1.26
2009-10	-1.79	-3.42	-0.46	-2.00
2010-11	-0.28	-0.70	-2.54	-0.90
2011-12	1.08	-1.04	-0.80	0.06
2012-13	-3.12	3.75	-2.60	-1.24
2013-14	-2.76	2.68	-2.02	-1.29

Note: During 2008-09, Interest Payment on Public Provident Fund was Rs. -26194187 (In thousands of rupees); the negative figure was due to adjustment of previous years (Ministry of Finance, Government of India).

Source: Government of India, Reserve Bank of India, Authors' calculations.

Table VIII: Effective Interest Rate -- State Provident Funds

(Percent)

Year	State Provident Funds
2002-03	8.12
2003-04	7.05
2004-05	7.62
2005-06	7.14
2006-07	7.33
2007-08	7.07
2008-09	7.28
2009-10	7.27
2010-11	6.74
2011-12	7.25
2012-13	8.69
2013-14	7.64
Average	7.43

Source: Government of India, Authors' calculations.

Table IX: Real Effective Interest Rate -- State Provident Funds (After deducting CPI- IW)
(Percent)

Year	State Provident Funds
2002-03	4.14
2003-04	3.19
2004-05	3.79
2005-06	2.89
2006-07	2.28
2007-08	0.87
2008-09	-1.82
2009-10	-5.10
2010-11	-3.70
2011-12	-1.14
2012-13	-1.74
2013-14	-2.05

Source: Government of India, Reserve Bank of India, Authors' calculations.