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Fiscal Sustainability of National Food Security Act, 2013 in India

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FISCAL SUSTAINABILITY OF NATIONAL FOOD SECURITY ACT, 2013 IN INDIA

Krishanu Pradhan∗

Abstract

Forward looking approach to fiscal sustainability generally seeks to assess the fiscal implication of expected program specific expenditure in future. In this regard, the paper attempts to assess the future fiscal implication of National Food Security Act (NFSA), 2013 in India. The results, under baseline scenario based on projected debt/GDP ratio shows modest increase in it till 2021-22, and then declines towards the current level of 70% in 2012-13 and hence signify fiscal sustainability. The dynamics of projected baseline debt/GDP ratio is largely shaped by the provisions in the Act and underlying demographic factors to be experienced by India during the projection horizon. The sensitivity analysis under different assumptions about productivity growth, interest rate on government borrowing and primary deficits/GDP ratio show mixed results and hence provide necessary policy implication to restore fiscal sustainability under the Act. Keeping the primary deficits/GDP ratio below 1.5% by way of periodic upward revision of issue price of food grains, as envisaged in the Act, coupled with higher productivity growth and lower interest on government debt would ensure long-term fiscal sustainability of the Act.

Key Words: GDP, Food Subsidy, Budget Deficits, Fiscal Projection, Budget deficits, Demographic Transition and Food Security.

JEL Code: E01, H24, H62, H68, J11 and Q18.

1. Introduction

Fiscal sustainability is a multi-dimensional concept. It incorporates government solvency, stable and robust growth, buoyant and stable tax regimes, capacity to absorb adverse macroeconomic shock, and generational equity (OECD, 2009). There are different approaches to define and assess the long-term fiscal sustainability in a country. For example, solvency of government and stability of key deficits and debt indicators are two desirable requirement of fiscal sustainability. Solvency requires that government should repay all its liabilities either in finite or infinite future in a *dynamically efficient economy*[1]. It crucially depends on currency composition, ownership pattern and maturity profile of debt, and overall macroeconomic health. Stability implies the debt/GDP ratio or deficits/GDP ratio is either to fall or remain constant over the time to ensure macro objectives like growth and stabilization. In generational accounting framework, a fiscal policy is sustainable if the estimated 'generational imbalance' is non-positive. In the budget forecasting models, a fiscal policy is sustainable when the forecasted debt/GDP ratio does not explode in the context of projected revenues and expenditures or programme specific expenditures or reforms.

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[1] Cost of borrowing (r) on government debt strictly not less than growth rate of economy (g) i.e. r≥g.

However, in practice the assessment of fiscal sustainability mainly focuses on either the *backward looking or forward looking indicator analysis* (UK's HM Treasury Report, 2008). Assessment based on backward looking analysis focuses on time series analysis of historically given information on important fiscal and macro variables. Applying time series econometric techniques, the stationary properties of discounted or undiscounted debt and deficits series, or co-integration between government revenue/GDP and expenditures/GDP series, or the functional response of primary surplus/GDP to the debt/GDP ratio overtime are checked. It implicitly assumes the continuation of historical trends and patterns of the relevant variables and empirical results in future, and accordingly addresses the issue of fiscal sustainability (Hamilton and Flavin, 1986, Wilcox 1989, Buiter and Patel, 1992; Bohn, 1998 and Afonso, 2005). A major limitation of the backward looking analysis is that it focuses on past and says nothing about the future sustainability of fiscal policy. The forward-looking analysis focuses on the comprehensive projection of future expenditures and revenues of government and their impact on future debt and deficits. As forward looking analysis focuses on projection of important fiscal and macroeconomic variables, it entails wide-ranging indicators like demographic changes, productivity, and growth of GDP, interest rate on government borrowing, and impact of expected program specific expenditures.

In the present context, an attempt is made to assess the fiscal implication of National Food Security Act (NFSA), 2013. To maintain the spirit of forward looking approach to fiscal sustainability in India, the present study is focused to assess the future fiscal implication of the Act. The concern of fiscal sustainability of the Act haunts the policy makers in India due to the gigantic financial burden of existing food security system in India. The combined Central and State government spending on existing food subsidy as a share of total revenue deficits exceeded 25% during 2004-05 to 2011-12[2]. Similarly, the share of spending on food subsidy in total primary revenue expenditures and revenue receipts of combined Central and State governments stood at 4.5% and 4.1% respectively during 2004-05 to 2011-12, and the ratio of food subsidy to GDP has far exceeded 1% mark since 2008-09 (Government of India, 2013). Hence, it necessitates to study whether the provisions and implementation of the Act would be fiscally sustainable in India. However, in the present context, we define that the Act would be fiscally sustainable[3], if its implementation does not cause the debt/GDP

[2] In the absence of data on effective revenue deficits (ERD), a new deficit concept introduced in Union government budget since 2009-10, for combined Central and State governments, the share of Central government spending on food subsidy in its ERD stood at 38% in 2010-11. If, before the implementation of NFSA, 2013, total food subsidy burden (including State government spending on it) were financed from Central budget, the computed ratio of food subsidy to Central ERD would have been at 41% in 2010-11.

[3] Determining optimum or sustainable level of debt/GDP ratio is difficult. It depends on variety of factors like taxable capacity, currency composition, maturity and ownership structure of debt, and overall macro health, which vary from country to country. In the absence of such clearly defined sustainable level, current level of debt/GDP ratio has been considered as a measure of 'benchmark' in present context. The rational of such consideration is the need to assess how much extra pressure the implementation of NFSA would exert to cause the debt/GDP ratio to grow or not grow from current level. However, grateful thanks are due to the referee for suggesting to shed some light and discussion on the issue of optimum or sustainable level of debt/GDP ratio and then to assess the fiscal implication of the Act.

ratio to grow from the current level of 70% (Revised Estimate) in 2011-12 (Government of India, 2013) explosively during the projection horizon from 2013-14 to 2030-31[4].

Pioneering research on empirically examining the future sustainability of public debt based on a particular fiscal structure in global context can be found in Chouraqui *et.al* (1986), Blanchard (1990), Auerbach (1994), HM Treasury Report of UK (2008), Fiscal Sustainability Report (2011) of government of Canada and Miller *et.al* (2011) for Latin American countries. Most of the above studies made projection of GDP based on projected population, labour force participation, labour productivity and international migration. Based on GDP projection, revenue and expenditure have been projected using baseline value of revenue/GDP and expenditure/GDP to derive baseline primary deficits/GDP ratio. For sensitivity analysis, expenditure/GDP has been projected based on expected reforms, mainly because of population ageing, growing social security burden etc. As the projection of debt/GDP ratio crucially depends on primary deficits/GDP ratio, borrowing cost to finance deficits and GDP growth rates, different hypothetical interest rates on borrowing, GDP or productivity growth rates and primary deficits/GDP ratio have been assumed in the studies to provide necessary policy prescriptions.

In Indian context, the official reports like Reports of Taskforce on Implementation of the Fiscal Responsibility and Budget Management (FRBM) Act (2003) in 2004, Report of Twelfth Finance Commission (2004a), and Report of Thirteenth Finance Commission (2010) mostly provide medium term projection of key fiscal variables on the specific objectives entrusted to them. Individual researchers like Pattnaik *et.al* (2004) projected key fiscal variables to assess sustainability of India's fiscal policy with respect to fiscal rules like FRBM Act for Central government and Fiscal Responsibility Legalization (FRL) for State governments. Rangarajan and Srivastava (2005) projected debt/GDP ratio from 2004-05 to 2036-37 based on policy simulation. Assuming nominal GDP growth of 12% and fiscal deficits/GDP ratio of 6% of combined Central and State governments under FRBM Act for Central government and under FRL for State governments, they have shown that debt/GDP ratio will stabilize around at 60% by 2036-37. According to them, in longer-term, India will achieve sustainable debt/GDP ratio if the high growth continues and fiscal reforms started both by Centre and State governments are implemented effectively. Using the integrated methodology of the National Transfer Accounts and Budget Forecasting Model, Narayana (2012) forecasted the impact of population ageing on India's public finance from 2005 through 2050, based on the fiscal structure in 2004–2005. The results showed that forecasted share of total public expenditure on elderly individuals increases largely accounted for expenditure on civilian pensions and other cash transfers, government services, and poverty and other social protection. Overall, elderly individuals are found to be not very expensive in terms of public health expenditure. Tax revenues increase results in a decline of debt-to-GDP ratio because population ageing does not lower tax buoyancy in the long run. Overall, the increasing total budget surplus and fiscal support ratio implied that the long-term impact of population ageing might be fiscally sustainable.

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[4] The period is considered to have a medium-term perspective of assessing the fiscal implication of the Act from the viewpoint of policy makers. The long-term projection (generally 50 years or more) is based on several assumptions about the relevant variables and estimated parameter values under study, and any change in the assumptions or the estimated parameter value would dramatically change the results and implications. Moreover, without accommodating numerous policy changes and possible future reforms due to the reality of political business cycles in a country like India, the long-term projection might end up as a hollow technical exercise.

Based on the key objective and review of literature, the focus of the study is to project debt/GDP ratio of combined Union and State governments from 2013-14 to 2030-31 in order to assess the fiscal impact of NFSA (2013) under a baseline scenario. Towards this end, sensitivity analysis is carried out with respect to different productivity growth, interest rates and primary deficits to provide essential policy guidelines.

Organization of rest of the paper is as following. Section.2 briefly describes the salient features of the NFSB, 2011 and the NSFA, 2013 and their differences. Section.3 depicts the analytical framework to assess the fiscal implication of NFSA, 2013, while Section.4 presents the description, measurement and data sources of different variables. Section.5 is devoted to the baseline values of required variables like GDP growth, borrowing cost, primary deficits/GDP ratio under baseline scenario. Section.6 illustrates the projection of additional financial burden of NFSA, 2013 and its baseline fiscal impact on projected debt/GDP ratio. Section.7 highlights the subsequent sensitivity. The major conclusions and implications are in Section.8.

2. Salient Features of NFSB, 2011 and NFSA, 2013

The National Food Security Bill (NFSB), 2011 introduced in Indian parliament has been a paradigm shift in the discourse on addressing the issue of food security – from the currently welfare based approach to right based approach. The main objective of the Bill is to provide highly subsidized food grain to around 67% of country's 1.24 billion populations (2011 Census figures). The provisions of the Bill would be perhaps the biggest ever experiment in the world to distribute subsided food grain to ensure food and nutritional security. The Bill provides legal entitlement to receive food grain at subsidized prices by the persons belonging to *priority household* (**PHH**) and *general household* (**GHH**) under the targeted public distribution scheme. The other provisions of the Bill are to provide guaranteed nutritional supports to special groups like – pregnant and lactating mother (**PLM**); children aged 6 months to 6 years and 6 years to 14 years, destitute and homeless persons, people affected by disaster, calamities and people living under starvation. The NFSB, 2011 could not become Act due to longstanding debate and discussion in Indian parliament over the identification of PHH and GHH, the perceived differences in providing subsidized food grains and differential allocation to the PHH and GHH. Subsequently, the NFSB, 2013 after having resolved the contentious issues of NFSB, 2011 was introduced again in Indian parliament for debate and discussion. The NFSB, 2013 has removed the concept of PHH and GHH, and instead has merged the GHH into PHH to simplify the identification of beneficiaries. The individuals or the beneficiaries indentified under PHH are entitled to receive, per month, 5 kg of food grains at a price of Rs. 3, Rs. 2 and Rs. 1 for rice, wheat and coarse grains respectively. The individuals of Antyodaya Anna Yojana (AAY) households will receive additional 10 kg per month to protect their existing allocations (i.e. 7 kg, per month/persons, means total 35 kg subsidized food grains). Rest of the provisions under the NFSB, 2013 to *other and special groups* remain broadly same as mentioned in NFSB, 2011. The Indian parliament passed the NFSB, 2013 in its present form to make it Act on 12th September 2013, and named it as National Food Security Act (NFSA), 2013. The detailed provision of entitlements for different group of population under NFSB, 2011 and NFSA, 2013 is provided in Table.1. The long-term feasibility of NFSA, 2013 broadly depends on three distinct issues – *fiscal burden*,

operational challenges and *ramification on Indian agriculture* in implementing the provisions of the Act in full spirit (Basu, 2011 and Galati *et.al*, 2012). However, the focus of the present study is the assessment of the fiscal burden of the Act under study. The fiscal burden is the additional expenditures over and above the existing spending on different food and nutritional security programmes. Assuming other things remaining the same, the question in this context is how it would affect the debt/GDP ratio in future years if the additional financial burden of the Act is debt financed,

Table 1: Provision of entitlements for different group of population under NFSB, 2011 and NFSA, 2013.

	Provisions to PHH and GHH under NFSB, 2011		**Modification under NFSA, 2013**	
	PHH	**GHH**	**Coverage under PHH**	**AAY HH**
Food grain entitlement	7 kg per person per month	3 kg per person per month	5 kg per person per month	7 kg per person per month
Price	Not exceeding Rs. 3 per kg for rice, Rs. 2 per kg for, Rs. 1 per kg for coarse grains	Not exceeding 50% of the MSP for wheat & coarse grains; not exceeding 50% of derived MSP for rice.	Not exceeding Rs. 3 per kg for rice, Rs. 2 per kg for, Rs. 1 per kg for coarse grains	Not exceeding Rs. 3 per kg for rice, Rs. 2 per kg for, Rs. 1 per kg for coarse grains
Periodic revision of issue price (IP)	No mention of periodic revision of IP		Mention to revise IP after three years of implementing the Act, i.e. after 2016.	
Coverage – Rural Population – 75%, Urban Population - 50%	At least 46% of rural population. At least 28% of urban population	Up to 29% of rural Population. Up to 22% of urban population	It will cover 75% of rural and 50% of urban population including the existing 2.5 crore AAY households or 12.5 crore AAY individuals.	

Provisions for Nutritional Security and Entitlements to Others and Special Groups		
Other Target Groups	**Entitlements under NFSB, 2011 and NFSA, 2013**	
Pregnant and Lactating mother (PLM)	Meal free of charges during pregnancy and six months after child birth, calories 600 kcal and protein 18-20 gm. Maternity benefits of Rs. 1000 per months for a period of six months	
Children 6 months to 3 years	Take home ration calories 500 kcal and 12 to 15 gm protein	
Children 3 years to 6 years	Morning snacks and hot cooked meals calories, 500 kcal and 12 - 15 gm protein	
Children 6 months to 6 years who are malnourished	Take home ration calories 800 kcal and 20 -25 gm protein	
Lower primary classes	Hot cooked meals, calories 450 kcal and 12 gm protein	
Upper primary classes	Hot cooked meals, calories 70 kcal and 20 gm protein	
Special Groups	**Entitlements under NFSB, 2011**	**Entitlements under NFSA, 2013**
Destitute Persons	At least one meal everyday free of change	There is no detailed definitions of these special groups, but the Act mentions special focus on 'destitute', 'vulnerable' 'disabled' 'needy' and people living in 'remote', 'hilly' and other areas which are difficult to access to ensure their food security.
Homeless persons	Affordable meals at community kitchen	
Emergency and disaster affected persons.	Two meals free of charges for a period of 3 months from the date of disaster.	
Persons living in starvation	Free meals two times in a day for 6 months from the date of identification.	

Source: NFSB, 2011 and NFSB, 2013 as introduced in Lok Sabha, the respective Bill no. 132 of 2011 and 109 of 2013

3. Analytical Framework

To project debt/GDP ratio, the following simple framework is developed. Let, D_t and D_{t-1} be the stock of debt at period t and t-1. Y_t, g_t, r_t and PD_t be the nominal GDP, its annual growth rate, interest rate on government borrowing (i.e. bond yield), and primary deficits at period t, respectively. We know that change in stock of debt at period t, denoted, as ΔD_t (i.e. $D_t - D_{t-1}$) is the amount of borrowing called fiscal deficit is defined as the sum of primary deficits at period t and interest payments on the stock of debt in previous period, t-1. Thus, we have,

$$\Delta D_t = D_t - D_{t-1} = r_t D_{t-1} + PD_t \quad (1)$$

Rearranging eq. (1), we get $D_t = (1+r_t) D_{t-1} + PD_t$ (2)

Dividing eq. (2) by GDP, the resultant equation can be re-written as

$$d_t = \{(1+r_t)/(1+g_t)\}d_{t-1} + pd_t \quad (3)$$

Thus, to project debt/GDP ratio (i.e. future path of d_t in eq. 3), we need projected information on r_t, g_t and pd_t, as the debt/GDP ratio in previous year (i.e. t-1) is currently known. Future dynamics of debt/GDP ratio depends on how the aforementioned elements evolve in future.

To assess the fiscal implication of NFSA, 2013, we need to evaluate whether the additional expenditures over and above the existing expenditure on food security and other welfare schemes like Mid Day Meal (MDM) and Integrated Child Development Scheme (ICDS) would be sustainable or not. In other words, whether additional expenditure on account of NFSA, 2013, would have make debt/GDP ratio to grow explosively in future or not. Accordingly, the eq. (3), is modified as

$$d_t = \{(1+r_t)/(1+g_t)\}d_{t-1} + pd_t + x_t \quad (4)$$

where x_t is the additional expenditure/GDP over and above the existing spending on food security and other welfare schemes because of the NFSA, 2013. Without x_t, the pd_t in (3) takes into account the existing spending on food security and other welfare schemes. Thus, the sum of pd_t and x_t in eq. (4) can be called as modified primary deficits/GDP ratio because of NFSA, 2013. In this context, it can be pointed out that so long pd_t remains positive (i.e. deficits), x_t would be financed by debt or borrowing[5]. Thus, apart from projecting, r_t, g_t, p_t, we need to project the value of x_t to evaluate the fiscal implication of NFSA, 2013.

[5] The future value of x_t can be affected by several factors. The most important is the change in issue price, which is subject to review after three years as per the Act, and any short fall in production of food grain causing import and escalating the cost of implementing the Act in spirit. In present context, primary deficits (PD) or fiscal deficits (FD) are more important than revenue deficits (RD) to project the debt/GDP ratio and to assess the additional fiscal burden of the Act. Thus, so long PD or FD is positive, any additional spending on account of implementing the Act would be debt financed. However, the referee has rightly pointed that if the revised roadmap for fiscal consolidation under FRBM is achieved by 2016-17 and ongoing subsidy reforms (eliminating petroleum and diesel subsidies) might cause the RD to be zero, but not necessarily the PD or FD. Though, the spending to implement the Act is considered as revenue expenditure, in present context, it is treated as part of total expenditures including revenue expenditures, and hence is part of PD or FD. However, grateful thanks are due to the referee for providing an elaborate discussion and comments on this aspect.

4. Data and Variable Descriptions

Table.2 summarizes the description, measurement and data sources of different fiscal and non-fiscal variables used to compute the additional financial burden of NFSA, 2013 and projection of debt/GDP ratio under different scenarios to assess the fiscal implication of the Act.

Table 2: Variable description, measurement and data sources for projection of debt/GDP ratio

Variable	Measurement	Data Source (s)
Nominal interest rate on government borrowing	Average of long-term government bond yield with maturity of 10 years or more of Union and State governments, and effective average interest on government borrowing defined as the ratio of interest paid in a year to the stock of debt in previous year from 1999-2000 to 2009-2010.	RBI Handbook of Statistics on Indian Economy, 2012
Growth rate of productivity (i.e. technical progress)	Average annual growth rate of GDP at constant prices per worker, using 2005 purchasing power parity (PPP) over the period 2000-2005 and 2005-2010.	Asian Productivity Organization (2012), APO Productivity Data book.
Inflation rate	Wholesale Price Index (WPI) based inflation assumed at 5% per annum based on Reserve Bank of India's upper limit of comfort level of inflation.	Not Applicable
GDP	Gross Domestic Product at current market prices (base year 2004-05)	RBI Hand Book of Statistics on Indian Economy, 2012
Total Outstanding debt stock	Liabilities position of Central and State government at the end of March 2013.	*Indian Public Finance Statistics,* Government of India, 2013
Total government revenue	Combined revenue receipts of Central and State governments	Various issues of *Indian Public Finance Statistics* since 1995 to 2012, Government of India
Total government expenditures	Combined revenue and capital expenditure of Central and State governments	
Food Subsidy	Average share of expenditure to GDP incurred by Central and State governments on food subsidy, Mid-Day Meal (MDM) and Integrated Child Development Scheme (ICDS) since 2007-08 to 2011-12.	*Indian Public Finance Statistics* since 1995 to 2013 by Government of India and www.indiastat.com
Spending on Mid-Day Meal		
Spending on ICDS		
AAY beneficiaries	Number of AAY HH or individuals as identified by Central and State government as available in 2012	www.indiastat.com
Projection of growth of labour force	Growth of population in the age group 15 to 64 for India from 2013-14 to 2030-31.	UN's Population Division, World Population Prospects, The 2010 Revision.
Projection of Rural and Urban PHH population	Projection of Rural and Urban population for India from 2013-14 to 2030-31 to determine the number of people intended to be identified under PHH category based on NFSA, 2013 definition.	UN's Population Division, World Urbanization Prospect, The 2011 Revision.
Projection of Pregnant and Lactating Mother (PLM)	Projection of childbearing age female population in age group 15 to 49. Estimated ratio of PLM to total child bearing age female population in 2012 by Kannan (2012) is used to project the number of PLM from 2013-14 to 2030-31.	UN's Population Division, World Population Prospects, The 2010 Revision and Kannan (2012).

Projection of Malnourished Children (MC) in age group 6 months to 6 years	Estimated ratio of MC in age group 6 months to 6 years to total number of child population in the same age group in 2011 by Kannan (2012) is used to project the number of MC from 2013-14 to 2030-31.	UN's Population Division, World Population Prospects, The 2010 Revision and Kannan (2012)
Projection of Children in the age group 6 to 14 years	Due to lack of data on number of children with age group 6 years to 14 years, the child population with age group 5 to 14 years is used as proxy.	UN's Population Division, World Population Prospects, The 2010 Revision
Destitute and Homeless and such other persons.	Estimated ratio of number of such people to total population in the Census of 2011 by Kannan (2012)	Kannan (2012)
Food grain required for Pregnant and Lactating Mother	Yearly estimate of food grain needed to supplement the nutritional requirement of every pregnant and lactating mother by Kannan (2012).	Kannan (2012)
Food grain for children in age 6 months to 6 years, including MC and children with age 6 to 14 years	Yearly estimate of food grain needed to supplement the nutritional requirement for every child in each group of children by Kannan (2012).	Kannan (2012)
Food grain required for Destitute, Homeless and etc.	Yearly estimate of food grain needed for such people by Kannan (2012).	Kannan (2012).

Source: Author

5. Baseline projected values of GDP growth, interest rate and primary deficits/GDP

To assess the fiscal implication of the NFSA, 2013, we need projected information on nominal GDP and its growth rate, interest rate, primary deficits/GDP ratio and additional spending over and above the spending on existing food security and other welfare schemes.

5.1. Nominal GDP

To project growth of real GDP, we need to assume that the economy stays in *steady state* as the growth of GDP can be inferred from the growth rate of employment and labor productivity (Government of Canada 2010). To project real growth rate of GDP, the following equations are used.

$$Y = (Y/L).L \quad (5)$$

where Y = real GDP, L = labour employment and (Y/L) = average labor productivity. Expressing eq. (5) in growth rate form we have,

$$(dY/dt)/Y = (dy/dt)/y + (dL/dt)/L \quad (6)$$

where y = Y/L. Eq. (6) states that the growth rate of real GDP (Y) is equal to the sum of growth rate of labor productivity and growth rate of employment. To project GDP growth rate from 2013-14 to 2030-31, we need to have projected growth rate of labor productivity and employment growth. Growth rate of employment has been projected based on projected workforce for India from 2013-14 to 2030-31 by the UN Population Division – The 2010 Revision. For labor productivity growth, the 'Asian Productivity Organization (APO) Productivity Data Book – 2012 has been used. The average

of labor productivity growth as reported by the APO (2012) during 2000-2005 to 2005-2010 has been assumed to remain fixed at 5.5% during the projection period. The nominal GDP growth rate is obtained by adding the wholesale price index (WPI) inflation at 5% per annum to real GDP growth rate.

Table 3: Projected real GDP growth and nominal GDP (2010-11 to 2030-31)

Year	Labor productivity growth rate (%)	Growth rate of employment (%)	Real GDP Growth rate (%)	Average WPI inflation (%)	Nominal GDP Growth rate (%)
2013-14 to 2014-15	5.5	1.74	7.24	5	12.24
2015-16 to 2019-20	5.5	1.4	6.9	5	11.9
2020-21to 2024-25	5.5	1.2	6.7	5	11.7
2025-26 to 2029-30	5.5	1.01	6.51	5	11.51
2030-31	5.5	1.01	6.51	5	11.51

Source: Author's computation based on UN Population Division – 2010 Revision and Asian Productivity Organization's Productivity Data Book – 2012 data.

5.2. Interest rate

One method of projecting interest rates on government borrowing is the decadal average of bond yield of Central and State governments taken together. An alternative method of projecting interest rate is the computation of long run average of effective interest rates defined as the ratio of total interest payment in a year to the total stock of debt in previous year. In India, automatic monetization of deficit ceased to exist in 1997-98, and since then cost of borrowing has been largely market determined. Due to growing importance of long-term debt financing as an important objective of debt management policy in India, it is logical to expect that the average of Central and State governments long-term bold yield and effective average interest rate would converge. This argument gets support when one computes the decadal average of bond yield and effective average interest rate, which stood at 8.3% and 8.07% respectively during 1999-2000 to 2009-10. There are arguments in favor of effective interest rate, as it is neutral to the maturity structure of debt. The bond yield, even if it is long-term, varies depending on maturity structures, currency composition, liquidity and other factors. However, bond yield figures indicate soundness of fiscal health and creditworthiness of government, which might not be possible to know from a simple computation of effective interest rates on government debt. Given these premise, it is reasonable to assume that the average of effective interest rates and long-term bond yield from 1999-2000 to 2010-11 would remain constant during the projection period at 8.2%.

5.3. Primary Deficits/GDP

Primary deficits are the difference between the fiscal deficits and interest payments. Interest payments depend on the stock of debt and its future path is determined by the interest rate on existing debt and on fresh borrowing to finance deficits. However, in Section 5.2, the average interest rate on government borrowing is assumed to be around 8.2% per annum during the projection period. Thus, the exercise left is the primary deficits/GDP ratio, which is the difference between non-interest expenditures and

total non-debt creating revenue and capital receipts. Therefore, to project the primary deficits/GDP ratio, it is important to focus on the different components of non-debt creating receipts and non-interest expenditures.

Table.4 provides a detailed summary of different components of revenue, spending and deficits as percentage of GDP. In revenue structure, tax and non-tax sources of revenue, on an average contributed to around 86% and 14% of total revenue receipts from 1990-91 to 2010-11 in India, as revealed in Table.4. Indirect tax and direct tax contributed respectively around 77% and 33% to total tax revenue during the same period. However, contribution of direct and indirect tax have changed over the years. A substantial increase in direct tax buoyancy during 1991-95 to 2006-10 has occurred due to almost a three-fold jump in personal income tax and corporate tax collection. However, there was a decline in contribution of indirect tax during the same period due to reduction in customs revenue resulting from the WTO led reforms and rationalization of customs tariffs. The average tax/GDP from 1990-91 to 2009-10 stood around 15%. The collection of both the taxes depends on the tax base (i.e. GDP) and tax rates. The high revenue buoyancy of direct tax reflected in the higher contribution of income tax and corporate tax during 2005-06 to 2009-10 is unlikely to hold in future as argued by the report of Thirteenth Finance Commission (2010). It is likely to be moderated in future due to moderation in GDP growth in recent years and ongoing direct tax reforms in the form of Direct Tax Code (DTC) which seek to simplify tax laws, reduce tax rates and compliance cost will increase exemption limit of income tax, and reduction in corporate tax rates. The Committee on Roadmap for Fiscal Consolidation (Government of India; 2012) in its report supported the above view and expressed concern about the revenue loss from implementation of DTC. Given this premise, it is reasonable to assume that the direct tax to GDP ratio during the projection horizon to be around 4.6% which is the average of direct tax to GDP ratio from 2000-01 to 2009-10.

Similarly, for indirect tax, there is likely to be slight reduction in the contribution of customs revenues due to phasing out of protectionism and a move towards ASEAN (Association of South East Asian Nations) tariff level in the coming years (Government of India; 2004b). Besides, there is an ongoing reform in indirect taxes in the form of Goods and Service Tax (GST). Being revenue neutral in principle, the GST is expected to stabilize the collection of indirect taxes. However, according to Thirteenth Finance Commission report, implementation of GST would boost the overall revenue in coming years. Thus, higher revenue buoyancy of GST would compensate or outweigh the fall in customs revenue. Based on this, it is reasonable to assume that during projection horizon contribution of indirect taxes would be around 11.2% of GDP, which is the average contribution since 1900-91 to 2009-10. The non-tax revenue would maintain or increase its contribution around 2.64% of GDP, which is the average contribution since 2000-01 to 2009-10, due to growing importance on disinvestment and higher realization of dividends from the public sector undertaking in recent years.

While looking at the expenditure side, total expenditures are classified into revenue and capital expenditures. To determine primary deficits, it is more important to focus on the non-interest revenue expenditures and capital expenditures. There are numerous components under non-interest expenditures. The most notable are spending on defense, compensation of employees, pensions and other retirement benefits, major subsidies and others. It is extremely difficult to project each and every

item separately. Moreover, considering the objective, scope and simplicity of this study, it has not attempted to project each and every component of non-interest expenditure items[6]. However, for projection purposes, the average of non-interest revenue expenditure to GDP ratio, which stood at 16.8% during 2005-06 to 2009-10, is assumed to remain constant during the projection horizon. Ongoing expenditure reforms, especially by Central government to limit subsidies (elimination of petroleum and diesel subsidies in recent times), targeting the intended beneficiaries and direct cash transfers to reduce wastage, and other efforts to reduce non-plan expenditures would certainly exert downward pressure on total non-interest spending. However, experience shows that attempts to cut Central government expenditures have been mostly sporadic in nature and does not cause any substantial decline in total expenditures[7]. Given such experience, it is only natural to peg the average ratio of non-interest expenditures to GDP at 16.8% during the projection horizon.

Table 4: Average of revenues, expenditures and deficits as a percentage of GDP for Combined Central and State Governments (1990-91 to 2009-10)

	1990-91 to 1994-95	1995-96 to 1999-00	2000-01 to 2004-05	2005-06 to 2009-10	2000-01 to 2009-10	1995-96 to 2009-10	1990-91 to 2009-10
Total Revenue	16.61	16.26	16.93	19.24	18.09	17.48	17.26
Tax	14.57	13.7	14.58	16.46	15.52	14.91	14.83
of which **Direct Tax**	2.45	2.86	3.59	5.6	4.60	4.02	3.63
Income tax	1.02	1.21	1.45	1.91	1.68	1.52	1.40
Corporate tax	1.13	1.36	1.96	3.51	2.74	2.28	1.99
Indirect Tax	12.12	10.84	10.99	10.86	10.93	10.90	11.20
Customs	2.99	2.63	1.83	1.78	1.81	2.08	2.31
Union Excise	3.89	3.11	3.45	2.35	2.90	2.97	3.20
Service tax	N.A	0.09	0.23	0.9	0.57	0.41	0.41
State excise	0.83	0.71	0.72	0.74	0.73	0.72	0.75
State Sales Tax/VAT	3.15	2.88	3.4	3.56	3.48	3.28	3.25
Stamp and Registrations Fee	0.41	0.44	0.52	0.69	0.61	0.55	0.52
Non-Tax	2.61	2.41	2.61	2.67	2.64	2.56	2.58
Total Expenditures	25.27	24	25.78	26.14	25.96	25.31	25.30
of which Total Defense	2.4	2.21	2.25	2.05	2.15	2.17	2.23
Defense (Revenue)	1.67	1.62	1.56	1.26	1.41	1.48	1.53
Interest payments	4.65	5.07	6	5.17	5.59	5.41	5.22
Employee Compensations	N.A	N.A	6.82	6.36	6.59	N.A	N.A
Pension & Other retirement benefits	0.98	1.3	1.7	1.73	1.72	1.58	1.43
Social Security and Welfare benefits	0.64	0.69	0.63	0.99	0.81	0.77	0.74

[6] Grateful thanks are due to referee for commenting to provide some explanations on why the ratio of non-interest spending to GDP is fixed at 16.8% during the projection horizon.

[7] For reference, see Premchand and Chattopadhay (2002), NIPFP WP # 3.

Food Subsidies	0.47	0.48	0.8	0.74	0.77	0.67	0.62
Fertilizer Subsidies	0.64	0.45	0.4	0.82	0.61	0.56	0.58
Food + Fertilizer Subsidies	1.11	0.94	1.2	1.56	1.38	1.23	1.20
Revenue Expenditure	20.78	20.8	22.6	22	22.30	21.80	21.55
Non-interest Revenue Expenditures	16.14	15.17	16.61	16.81	16.71	16.20	16.18
Capital Expenditure	4.49	3.17	3.18	4.16	3.67	3.50	3.75
Non-interest Expenditure	10.31	9.17	9.9	19.5	10.2	9.85	10
Fiscal Deficits	8.66	7.72	8.85	6.9	7.88	7.82	8.03
Revenue Deficits	4.17	4.55	5.67	2.73	4.20	4.32	4.28
Primary Deficits	4.01	2.65	2.87	1.73	2.30	2.42	2.82

Source: Author's computation based on Indian Public Finance Statistics (Issues from 1994-95 to 2011-12) and RBI (2013)

Capital expenditure in India has always been very meager; it was on an average 3.75% of GDP during the years 1990-91 to 2009-10. It fell from 4.5% of GDP during 1991-95 to around 3.18% of GDP 1996-2000 and remained stagnant at 3.17% during 2001-05 in line with the objectives of structural adjustment and stabilization program aimed at reducing budget deficits. However, the adjustment programmes led to a reduction in capital expenditures because of high committed spending in budget. There was a trend reversal of falling capital expenditures during 2005-06 to 2009-10, which was mainly due to higher revenue realization and the furtherance of the objectives of FRBM for Central and FRL for State governments to eliminate revenue deficits and to invest in critical infrastructure facilities to sustain higher growth. Thus, it is reasonable to assume that capital expenditures would be around 4.2% of GDP which are the average capital expenditures during the years 2005-06 to 2009-10.

Based on the above assumptions about different components of revenue and expenditures, the derived primary deficits can be put at 2.56% of GDP, which includes the existing spending on ICDS, MDM and food subsidy. The spending on ICDS, MDM and food subsidy during 2007-08 to 2011-12 stood at 1.06% of GDP. Consequently, primary deficits excluding ICDS, MDM and food subsidy spending stood at roughly 1.5% of GDP. Therefore, fiscal implication of NFSA, 2013 in terms of projecting debt/GDP ratio, is based on the underlying assumption that the primary deficits excluding spending on ICDS, MDM and food subsidy would remain fixed at 1.5% of GDP. The additional projected spending of NFSA, 2013 is to be added to the baseline 1.5% of primary deficits/GDP ratio to get the modified primary deficits.

6. Additional Financial Burden of NFSA, 2013

In order to maintain country's existing food security system, Central and State governments together spent Rs. 77093 (Revised estimates) crore in 2011-12, a six-fold jump from Rs. 12500 crore in 2000-01 (Government of India, 2013). The expenditure under ICDS for holistic development of children below 6 years of age and proper nutrition and health care of PLM has increased from Rs. 8181.72 crore during

2009-10 to Rs. 11176[8] crore during 2011-12. Similarly, under MDM, the expenditure has increased substantially from Rs. 5835 crore in 2007-08 to Rs. 9902[9] core in 2012-13. Thus, while computing the additional cost of implementing the Act, one should take care of the program specific spending under existing food security and welfare schemes, because the question of fiscal sustainability of the Act essentially depends on whether additional expenditure under the Act would be fiscally sustainable or not in terms of debt/GDP ratio criterion.

To project the future expenditure for different beneficiary groups under the Act, we need to have the number of intended beneficiaries in future, and the associated costs for each group of beneficiaries. Based on the Act, Table.1 provides information about different targeted and beneficiary groups and their entitlement. The computation of financial burden of different targeted groups under the Act is performed in the following steps.

First, compute the projected number of beneficiaries under PHH in rural and urban areas including AAY households, children in the age group of 6 months to 6 year and 6 years to 14 years, pregnant and lactating mother, destitute, homeless and such other such needy persons as per the provision of the NFSA, 2013, and their corresponding food grain requirement and cash subsidy.

Second, compute the aggregate financial burden as per the NFSA, 2013 entitlement and arrive at the additional fiscal-financial burden.

Key assumptions for the above computations are given below.

6.1. Assumptions

(1) The NFSA, 2013 coverage of 75% of rural and 50% of urban population including the existing 2.5 crore AAY households in 2012 to remain fixed till the projection period.

(2) The Issue Price (IP) of food grain to PHH and AAY households to remain fixed till the end of projection. Subsidy of providing food grain is the difference between Economic Cost (EC), which includes Minimum Support Price (MSP), storage, transportation etc., and the IP. Therefore, subsidy is equal to EC – IP. Based on the assumption of Gulati *et.al* (2012), the EC of rice and wheat is assumed to increase by 10% annually till the projection horizon. The share of rice and wheat off take through PDS based on Gulati *et.al* (2012) study at 58% and 42% is to remain same.

(3) The estimate of per year per capita food grain requirement for children in age group from 6 months to 6 years including MC and 6 to 14 years as estimated by Kanna (2012) to remain fixed.

(4) The estimate of ratio of PLM to the female population in childbearing age from 15 to 49 years based on Census-2011 and per year per capita food grain requirement of PLM as estimated by the Kannan (2012) to remain the same.

(5) The proportion of destitute and homeless population in total population based on as Census-2011 is arrived at 0.26% to remain fixed till the end of projection of horizon.

[8] http://www.indiastat.com/table/socialandwelfareschemes/27/financialprogressunderintegratedchilddevelopment servicesicdsscheme19912014/449688/540283/data.aspx (accessed on 16/11/2014).

[9] http://mdm.nic.in/Union%20Budgetary.html (accessed on 03/24/2014)

Based on the above assumptions and the detailed provision of entitlement to different targeted group of population as defined by the Act, Table.5 provides the details of financial burden.

6.2. Baseline fiscal implication of NFSA, 2013

The total financial burden of implementing NFSA, 2013 in 2013-14 would be Rs. 173316 crore, which is substantially higher than the sum of total expenditure of Rs. 98171 crore on ICDS, MDM and food subsidy taken together. Thus, the additional expenditure needed or implementation of NFSA, 2013 stands at Rs. 75145 crore in 2013-14. As a result, the modified primary deficit/GDP ratio will increase from 2.56% to 3.19% in 2013-14 and would be consistently higher than 2.56% till 2017-18. Consequently, the debt/GDP ratio will jump from 70% in 2012-13 to 72.35% in 2018-19. Thus, the quantum jump in debt/GDP ratio by more than 2% points in 2012-13 would impose only a modest fiscal burden. However, the increase in debt/GDP ratio would not be explosive as it will decline from 2021-22 onwards and will reach to current level of debt/GDP ratio around 71% by 2030-31. Such decline in debt/GDP ratio from 2021-22 onwards will be because of decline in the modified primary deficit/GDP ratio, as shown in Table.5.

Table 5: Details of projected fiscal implication of NFSA, 2013 (2013-14 to 2030-31)

in Rs. Crore

Year	Subsidy for PHH +AAY	Spending for Children	Spending for Destitute and Homeless	Spending for Pregnant and Lactating Mother	Total Financial Burden of NFSA	Financial Burden of NFSA/ GDP (%)	Modified primary deficits/ GDP (%)	Baseline Projection debt/GDP (%)
2013-14	103566	49536	630	19585	173316	1.69	3.19	70.67
2014-15	105981	50056	645	19887	176569	1.53	3.03	71.15
2015-16	108242	50598	659	20148	179647	1.39	2.89	71.69
2016-17	110557	51139	673	20413	182782	1.27	2.77	72.09
2017-18	112927	51666	688	20680	185961	1.15	2.65	72.35
2018-19	**115354**	**52156**	**703**	**20952**	**189165**	**1.05**	**2.55**	**72.51**
2019-20	117839	52599	718	21229	192386	0.95	2.45	72.56
2020-21	120132	53068	733	21447	195380	0.86	2.36	72.65
2021-22	**122478**	**53487**	**747**	**21667**	**198379**	**0.79**	**2.29**	**72.66**
2022-23	124877	53862	763	21891	201393	0.71	2.21	72.60
2023-24	127333	54206	778	22116	204433	0.65	2.15	72.47
2024-25	129846	54529	794	22344	207512	0.59	2.09	72.29
2025-26	132137	54889	809	22523	210358	0.54	2.04	72.18
2026-27	134480	55225	824	22702	213231	0.49	1.99	72.04
2027-28	136877	55536	839	22884	216136	0.44	1.94	71.85
2028-29	139328	55823	855	23067	219073	0.40	1.90	71.62
2029-30	141837	56086	871	23252	222046	0.37	1.87	71.37
2030-31	144093	56399	886	23379	224757	0.33	1.83	71.09

Source: Author's computation

7. Sensitivity Analysis

The fiscal implication of NFSA, 2013 is sensitive to the key assumptions on productivity growth rate, interest rates on government borrowing and primary deficits/GDP ratio. We assume that the inflation rate is fixed at benchmark year (5%) and simulate the projected debt/GDP ratio for alternative values of primary deficits/GDP ratio (1.25% and 1.75%), productivity growth rates (5% and 6%) and interest rates on government borrowing (8.5%). The results of simulated debt/GDP ratio are presented in Table. 6. For given values of productivity growth rate and interest rate, assigning lower primary deficits than baseline would lower projected debt/GDP ratio and vice-versa. On the other hand, for a given value of primary deficits/GDP ratio, assigning lower productivity growth rate and higher interest rate on borrowings would be detrimental in terms of higher projected debt/GDP ratio and vice-versa.

Table 6: Projection of debt/GDP ratio under different values of productivity growth (P), interest rate (r) and primary deficits/GDP (pd)

Year	Projected debt/GDP for alternative primary deficits/GDP		Projected debt/GDP for alternative interest rate, productivity growth rate and primary deficits/GDP	
	P =5.5, r = 8.2, pd =1.25	P = 5.5, r = 8.2, pd =1.75	P =5, r = 8.5, pd =1.25	P = 6, r = 8.5, pd= 1.25
2013-14	70.42	70.92	71.01	70.30
2014-15	70.66	71.64	71.83	70.44
2015-16	70.97	72.42	72.69	70.64
2016-17	71.14	73.04	73.39	70.70
2017-18	71.18	73.52	73.96	70.65
2018-19	71.13	73.89	74.39	70.49
2019-20	70.97	74.14	74.71	70.25
2020-21	70.86	74.43	75.07	70.04
2021-22	70.68	74.64	75.33	69.77
2022-23	70.43	74.76	75.50	69.43
2023-24	70.12	74.82	75.61	69.04
2024-25	69.76	74.81	75.65	68.60
2025-26	69.48	74.89	75.76	68.25
2026-27	69.16	74.91	75.82	67.85
2027-28	68.81	74.88	75.83	67.42
2028-29	68.43	74.82	75.80	66.97
2029-30	68.02	74.72	75.73	66.49
2030-31	67.59	74.59	75.63	66.00

Source: Author's computation

A lower primary deficits/GDP ratio (1.25%) than the baseline value (1.5%) is assumed due to the ongoing fiscal reforms to augment revenue and to contain unproductive and non-plan-non-developmental expenditures by Central government in recent times. Moreover, the provision in the Act for an upward revision of the issue price of food grains after 2015-16 would dispel the fear as expressed by some prominent researchers like Gulati.*et.al*, (2012) that the cost of implementing the Act would

jump substantially in the years to come. Therefore, such provision in the Act would certainly reduce the financial burden and keep the primary deficits under check. In contrast, fiscal slippage due to political compulsions for not revising the issue price upwardly, as conceded for AAY beneficiaries to keep the issue price fixed since 2002, or inclusion of more beneficiaries and more generous provisions under the Act as demanded by the National Advisory Council (NAS) in 2011 as part of the comprehensive food security right, higher primary deficits/GDP ratio (1.75%) than the baseline value are considered. The results show that, for lower primary deficits at 1.25% of GDP, the projected debt/GDP ratio would increase slightly till 2020-21 and would fall below current level thereafter. However, the higher primary deficits would have explosive effects on debt/GDP ratio and make public debt unsustainable. Therefore, containing the primary deficits/GDP ratio below 1.5% of GDP is imperative if the Act is to be fiscally sustainable in future.

Finally, Table.6 presents figures on whether a higher interest rate (8.5%) with lower (5%) and higher (6%) productivity growth than baseline and fiscal reforms (pd = 1.25%) would be fiscally sustainable or not. The results show that higher interest rate and lower productivity growth, even with fiscal reforms, would not be enough to restore the fiscal sustainability if the NFSA, 2013 is implemented. However, a higher productivity growth (6%) with higher interest rates and fiscal reforms would be fiscally sustainable.

8. Major Conclusion and Implications

The major conclusions of the study are as following.

Firstly, the fiscal implication of NFSA, 2013 under baseline scenario does not show explosive growth of debt/GDP ratio till the end of projection horizon 2030-31 and hence the Act might be fiscally sustainable. However, projection of debt/GDP ratio under implementation of the Act shows modest increase in it till 2021-22 and a decline towards the level of debt/GDP ratio in 2012-13. The dynamics of projected debt/GDP ratio under baseline scenario is mainly shaped by the provisions of the Act and underlying demographic changes to be experienced by India during the projection horizon. Decline in child population both in absolute numbers as well as in share of total population, would substantially reduce the future fiscal burden of the Act. Growing rural to urban migration will cause a decline in the ratio of intended beneficiaries under PHH category to total population from about 67% in 2013-14 to roughly about 64% in 2030-31. Such a demographic transition would reduce the modified primary deficits/GDP ratio and its beneficial impact on projected debt/GDP ratio would ensure fiscal sustainability.

Secondly, the projections of debt/GDP ratio under different scenarios of sensitivity analysis shows mixed results about the fiscal implication of NFSA, 2013. Out of four types of sensitivity analysis results, two indicate towards fiscal unsustainability and hence provide necessary inputs for policy recommendations. The results of sensitivity analysis suggests that if the Act is to be fiscally sustainable, necessary policy corrections like periodic upward revision of issue price of food grains to keep primary deficits below 1.5% of GDP are required while maintaining productivity growth rate at 5.5% and interest rate below 8.5%. Any fiscal slippage due to political compulsion for not revising the issue prices or more generous provision and inclusion of more beneficiaries as demanded by the

National Advisory Council (NAC) in 2011 would pose challenges to the implementation of the Act in full spirit. .

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