
India's Experience with Sub-National Fiscal Responsibility Legislation: Performance and Challenges*

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1 Introduction

In this paper, we examine the working of fiscal responsibility legislation (FRL) in the states of India over the past 14 years. We look at the evolution of the macro-fiscal structure of the states taken collectively. We also look at dimensions of the budget and financial management that have implications for the overall integrity and structure of the general government public finances.

There is limited literature on the link between sub-national and national macro-fiscal management. Claeys et al. (2007), looking at the experience of European federations, find that sub-national governments tend to bear less than their fair share of the fiscal burden (though this effect is more pronounced in Europe than in the United States). Ahrend et al. (2013) also allude to the fact that sub-national governments tend to be more profligate as they expect to be bailed out by the national government, especially when they face special shocks such as natural disasters.

We analyse the Indian situation to assess whether such trends are indeed extant in India. In doing so, we also study features of debt dynamics that are particular to the sub-national government sector in India. Finally, we also look at whether state-specific characteristics display heterogeneity that may require our conclusions on the general government fiscal responsibility to be calibrated.

2 Fiscal Consolidation in the Post-FRL Period

The post-FRL period saw the sharpest ever sub-national fiscal consolidation in India. The consolidated deficit indicators of the states improved in each of the four years between 2003-04 and the onset of the global financial crisis in 2008-09. There was an equally dramatic fall in consolidated state liabilities and debt (see Table 1 for a summary of the fiscal trends during this period).

However, this improvement in state finances could have been driven by macro-fiscal factors that were concurrent to the implementation of the FRLs (see the reports of the Thirteenth and Fourteenth Finance Commissions for a detailed survey). These included (i) high economic growth and the consequent increase in central and state tax collections, (ii) a rise in the states' revenue collections due to the introduction of the value-added tax (VAT) by most states in 2005-06, (iii)

an increase in the devolution of central taxes to the states by the Twelfth Finance Commission, (iv) the Debt Consolidation and Relief Facility (DCRF) offered by the Twelfth Finance Commission that included both debt write-offs and restructuring, and (v) a liberal interest rate regime.

Given the positive economic scenario in pre-crisis years following the implementation of state-FRLs, it is hard to ascertain the extent to which the fiscal correction that followed can be attributed to an FRL-induced discipline in the fiscal conduct of the states. Nevertheless, some expenditure rationalisation efforts by the states deserve mention. For instance, to arrest the growing pension bill, many states increased the retirement age, introduced voluntary retirement schemes, imposed restrictions on new recruitments, and tweaked discount rates for the commutation of pensions. In addition, some states such as Tamil Nadu have taken steps towards the imposition of ceilings on guarantees while others have created sinking funds and guarantee redemption funds. It is also noteworthy that five states¹ enacted their FRLs even before the Twelfth Finance Commission had submitted its report.

2.1 Key Deficit Indicators of the States

To understand the causes behind the recent sub-national fiscal consolidation, we analyse the sources of the year-on-year changes in key deficit indicators of the state governments. Figure 1 decomposes the year-on-year changes in the fiscal deficit to GDP ratio into its revenue and expenditure components as follows.

$$\Delta \left(\frac{FD_t}{GDP_t} \right) = \Delta \left(\frac{Exp_t}{GDP_t} \right) - \Delta \left(\frac{Rev_t}{GDP_t} \right)$$

where Δ denotes the change from one year to the next.

In terms of the contribution of expenditure and receipts to the fiscal deficit, an increase in the revenue to GDP ratio would mean a lower deficit and its magnitude is shown below the x -axis in Figure 1. Likewise, a decrease in the expenditure to GDP ratio would be recorded below the x -axis. For example, in the year 2000-01, the fiscal deficit fell by 0.42 percent of GDP.

¹These included Karnataka, Punjab, Kerala, Tamil Nadu and Uttar Pradesh.

Table 1: Sources of Sub-National Fiscal Consolidation: 2000-01 to 2015-16 (Percent of GDP)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
A. Total Revenue	10.68	10.59	10.79	10.88	11.21	11.67	12.35	12.51	12.34	11.86	12.02	12.57	12.58	12.15	14.46	14.82
I. Own Revenue	6.64	6.56	6.78	6.73	7.05	7.05	7.35	7.29	7.17	6.98	7.1	7.52	7.76	7.5	7.83	8.24
<i>i) Own Tax Revenue</i>	5.22	5.23	5.39	5.42	5.61	5.75	5.88	5.75	5.72	5.6	5.92	6.38	6.58	6.32	6.54	6.87
<i>ii) Own Non Tax Revenue</i>	1.42	1.33	1.38	1.31	1.44	1.3	1.47	1.55	1.45	1.38	1.18	1.13	1.18	1.18	1.29	1.38
II. Total Transfers	4.04	4.02	4.01	4.15	4.16	4.62	5	5.21	5.17	4.88	4.92	5.06	4.83	4.65	6.63	6.58
<i>i) Share in Central Taxes</i>	2.33	2.22	2.23	2.36	2.42	2.55	2.8	3.04	2.86	2.55	2.82	2.93	2.93	2.82	2.93	3.58
<i>ii) Grants</i>	1.71	1.81	1.78	1.79	1.74	2.08	2.2	2.18	2.31	2.33	2.1	2.13	1.9	1.83	3.7	3
B. Revenue Expenditure	13.22	13.15	13.04	13.11	12.42	11.86	11.77	11.65	12.11	12.34	11.98	12.3	12.38	12.24	14.61	14.42
<i>Of which: Interest Payments</i>	2.34	2.61	2.72	2.83	2.67	2.27	2.17	2	1.83	1.74	1.6	1.57	1.51	1.5	1.54	1.61
C. Capital Expenditure	2.39	2.5	3.13	4.99	4.65	3.35	3.53	3.44	3.56	3.34	2.91	3.17	3.04	2.9	3.56	3.59
D. Total Expenditure	15.61	15.65	16.17	18.1	17.07	15.21	15.3	15.09	15.67	15.67	14.89	15.47	15.42	15.14	18.16	18.01
E. Gross Fiscal Deficit	4.04	4	3.93	4.25	3.32	2.44	1.8	1.51	2.39	2.91	2.07	1.93	1.96	2.2	2.93	2.46
F. Revenue Deficit	2.54	2.56	2.25	2.23	1.21	0.19	-0.58	-0.86	-0.23	0.48	-0.04	-0.27	-0.2	0.09	0.15	-0.4
G. Gross Primary Deficit	1.7	1.39	1.21	1.42	0.66	0.16	-0.36	-0.49	0.56	1.17	0.47	0.36	0.45	0.7	1.38	0.84
H. Primary Revenue Deficit	0.2	-0.05	-0.47	-0.6	-1.46	-2.09	-2.75	-2.86	-2.05	-1.26	-1.64	-1.84	-1.72	-1.4	-1.4	-2.01
I. Total Liabilities	27.29	29.32	31.01	31.79	31.28	31.08	28.91	26.63	26.11	25.45	23.50	22.82	22.17	21.92	22.30	22.87
Of which: Internal Debt	8.22	10.38	12.85	16.78	18.35	18.92	17.79	16.53	16.59	16.57	15.37	15.14	14.63	14.52	15.14	15.96

Notes: Years denote the end of a financial year. For instance, data for 2001 pertains to data for the year 2000-01. Data for 2014-15 relate to Revised Estimates while 2015-16 are Budget Estimates. Data relate to 29 state Governments. Source: Handbook of the Indian Economy, Reserve Bank of India.

Figure 1 (A) shows that this fall in the fiscal deficit can be decomposed into a rise in the revenue to GDP ratio of 0.65 percent and a rise in the expenditure to GDP ratio of 0.23 percent of GDP. Thus, rising expenditures partly countervailed the downward impact of rising revenues on the fiscal deficit in that year. Panel 2 (B) shows the percent that each component contributes to changes in the fiscal deficit in each year. In 2000-01, about 74 percent of the total change in the fiscal deficit was due to higher revenues whereas rising expenditures contributed the residual 26 percent. Analogously, Figures 1 (C) and 1 (D) calculate the actual and proportional contributions of the sub-components of revenue and expenditure on the fiscal deficit.

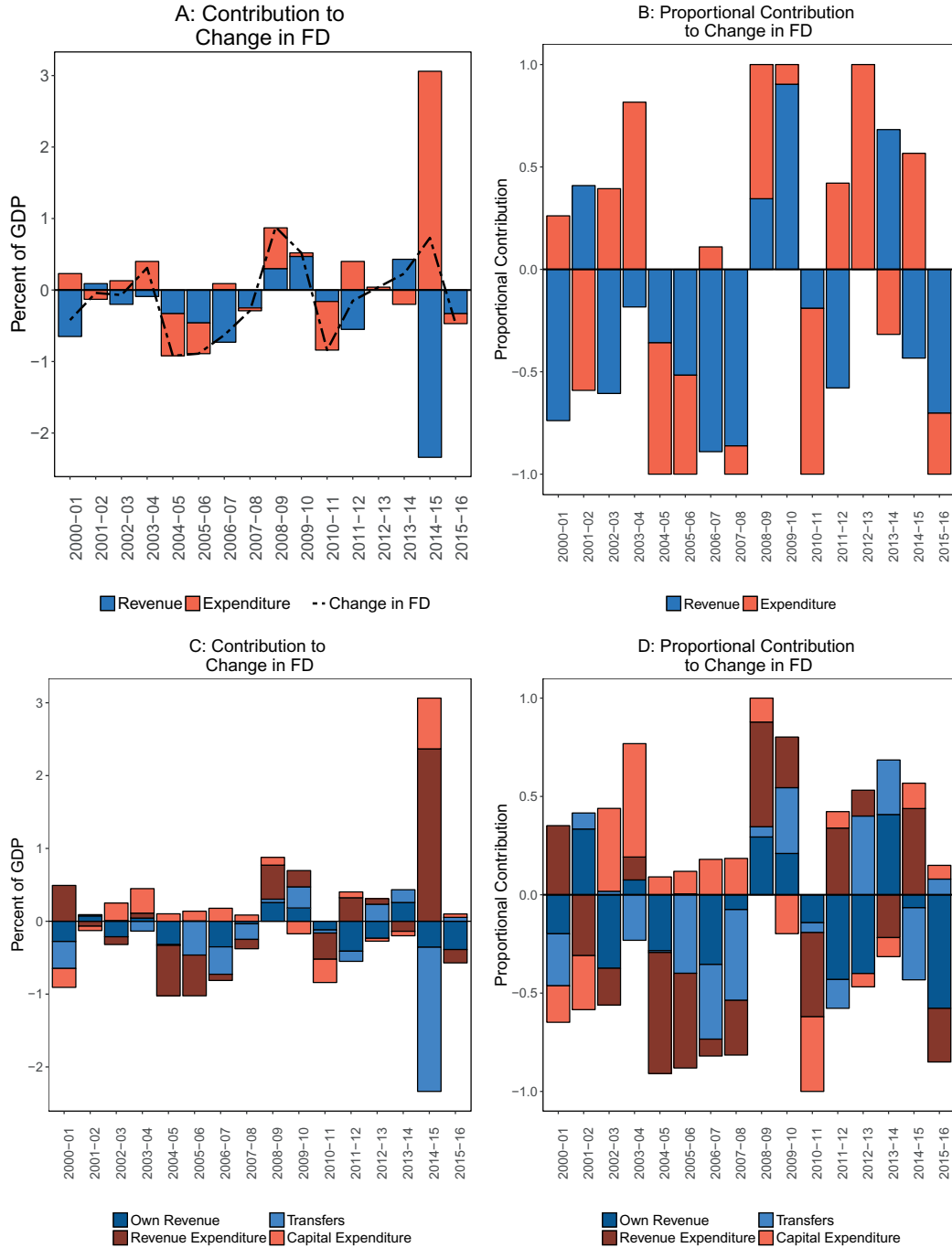
It is evident from Figure 1 (B) that in the boom years, the sharp correction in sub-national fiscal deficits was on account of both buoyant revenues and expenditure control. It was not the case that state governments responded in good times by fully utilising their higher revenues to increase spending. In particular, revenue expenditure as a percent of GDP fell in each of these four years, even as capital expenditure was protected (see Panels (C) and (D) of Figure 1). Following the crisis, the fiscal deficit increased sharply after 2008-09. During this time, as part of its countercyclical measures, the Centre had raised the market borrowing limit of states by Rs. 30,000 crore in 2008-09. Additionally, the states were also allowed to exceed their fiscal deficit target by 0.50 percentage points, to 3.5 percent of GSDP in 2008-09. This limit was further revised to 4 percent of GSDP in 2009-10. It is clear that transfers played a limited role in the fiscal consolidation of the states whereas the improvement in own-revenues was not trivial across this period. In years of fiscal stress, such as 2010-11, the states were also not shy in cutting both revenue and capital expenditure.

These conclusions are confirmed by decomposing the year-on-year changes in the revenue deficit (see Figure 2). Importantly, panel 2(D) shows that, in addition to buoyant revenues and the interest rate windfall due to the debt-waiver, the compression of non-interest revenue expenditure contributed significantly to the reduction in revenue deficits in the 2000s.

In addition to the above exercise, we also analyse the cross-section means and medians of key fiscal aggregates of the states as a percent of their respective GSDP over time (see Figures 3, 4, and Box 1). Figure 3 shows that the behaviour of the fiscal, revenue, and primary deficits are qualitatively similar, with each of these indicators peaking in the late 1990s and correcting sharply in the pre-crisis 2000s.

Figure 1: Year-on-Year Decomposition of the Fiscal Deficit

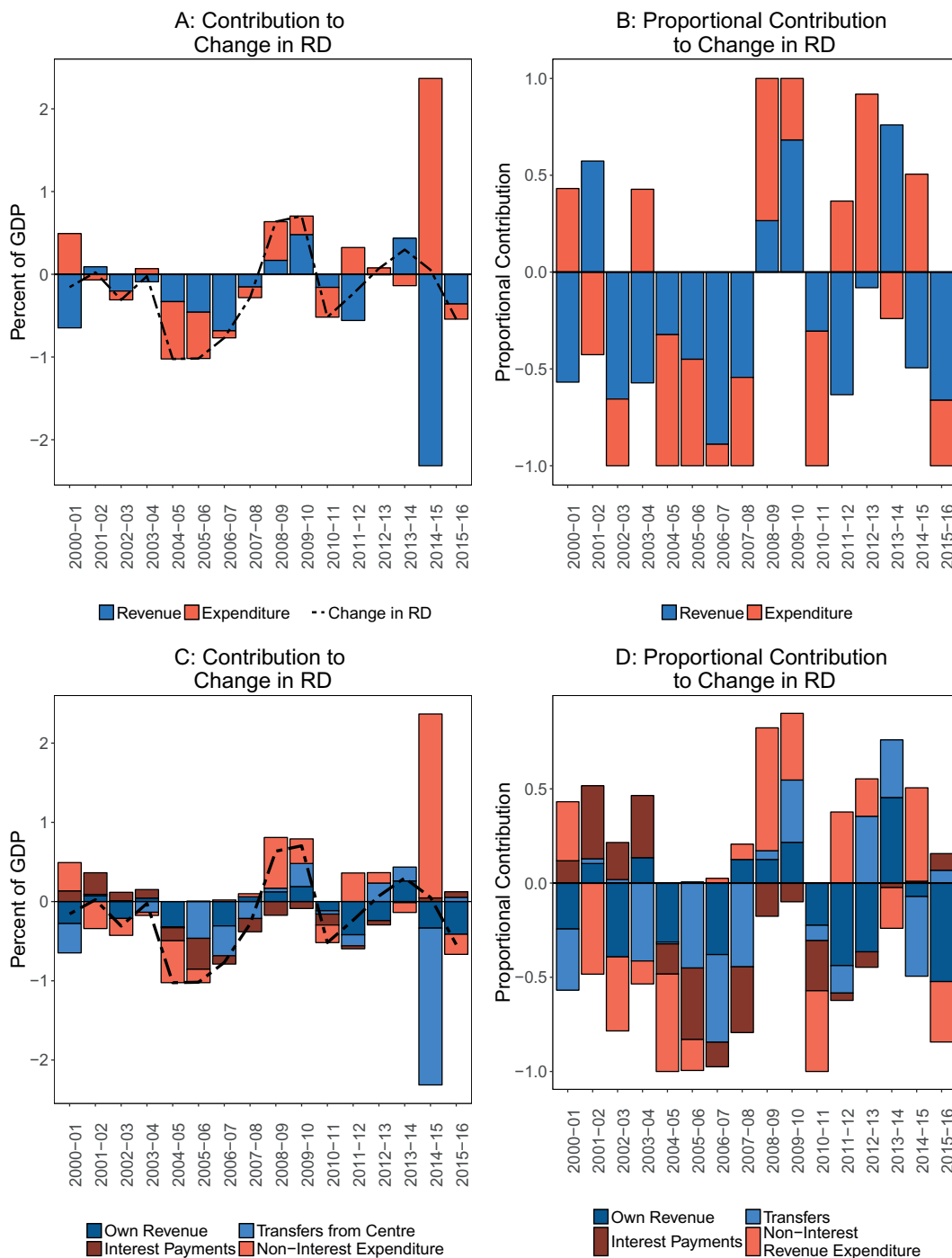
$$\Delta \left(\frac{FD_t}{GDP_t} \right) = \Delta \left(\frac{Exp_t}{GDP_t} \right) - \Delta \left(\frac{Rev_t}{GDP_t} \right)$$



Note: Data for 2014-15 relate to Revised Estimates while 2015-16 are Budget Estimates. Data relate to 29 state governments. Source: Handbook of the Indian Economy, Reserve Bank of India.

Figure 2: Year-on-Year Decomposition of the Revenue Deficit

$$\Delta \left(\frac{RD_t}{GDP_t} \right) = \Delta \left(\frac{Exp_t}{GDP_t} \right) - \Delta \left(\frac{Rev_t}{GDP_t} \right)$$



Note: Data for 2014-15 relate to Revised Estimates while 2015-16 are Budget Estimates. Data relate to 29 state governments. Source: Handbook of the Indian Economy, Reserve Bank of India.

Though the states largely managed to maintain fiscal prudence, even during and after the crisis, the mean primary and revenue deficit to GSDP ratios have been rising since 2010, though without breaching FRL ceilings.

Figure 3 also shows that there was a sharp fall in the mean of the revenue expenditure to GSDP ratio, led in large part, by the precipitous decline in interest payments. However, the same period saw a modest increase in the mean and median of the capital expenditure to GSDP ratio, showing the beneficial impact of the golden rule contained in the FRLs. Figure 4 shows the mean and median of various receipts as a ratio of GSDP. There was a marked increase in the tax to GSDP ratios since the early 2000s. Though both the components of tax revenues—own tax, as well as the share of central taxes increased, the former registered a sharper rise. In the same period, the mean of the non-tax revenue receipts to GSDP ratio saw a modest decline; however, it is interesting that their medians were unmoved.

Thus, the states as a whole seem to have a prudent approach to their finances and it would be incorrect to dismiss their improved fiscal performance as being primarily due to factors exogenous to their policy action. Of course, this judgement is based on collective measures taken by all the states and could not be said to universally apply to individual states.

Box 1. Figures 3 and 4: Methodology

Figures 3 and 4 have been adapted with modifications from Wacziarg and Welch (2008). Each green point is the cross-section sample mean of a fiscal variable as percent of GSDP at time t . For instance, in the first panel of Figure 3, the green points denote the sample means of the fiscal deficit to GSDP ratio for *all* the states in a particular year t , i.e. $\sum_{i=1}^N \left(\frac{FD_{it}}{GSDP_{it}} \right)$. We fit a line through these points using a non-parametric, locally weighted scatter plot smoothing algorithm. Thus, the fitting is done *locally*. That is, for the fit at time t , the fit is made using points in a neighbourhood of t , weighted by their distance from t . The shaded area around the line denotes the 95 percent confidence interval.

Analogously, the red triangles denote the cross-section sample median at time t . A line is fitted in the same manner as through the scatter plot of sample means.

Figure 3: Trends in the Deficit Indicators and Expenditure of the State Governments (● and ▲ denote cross section sample mean and median respectively)

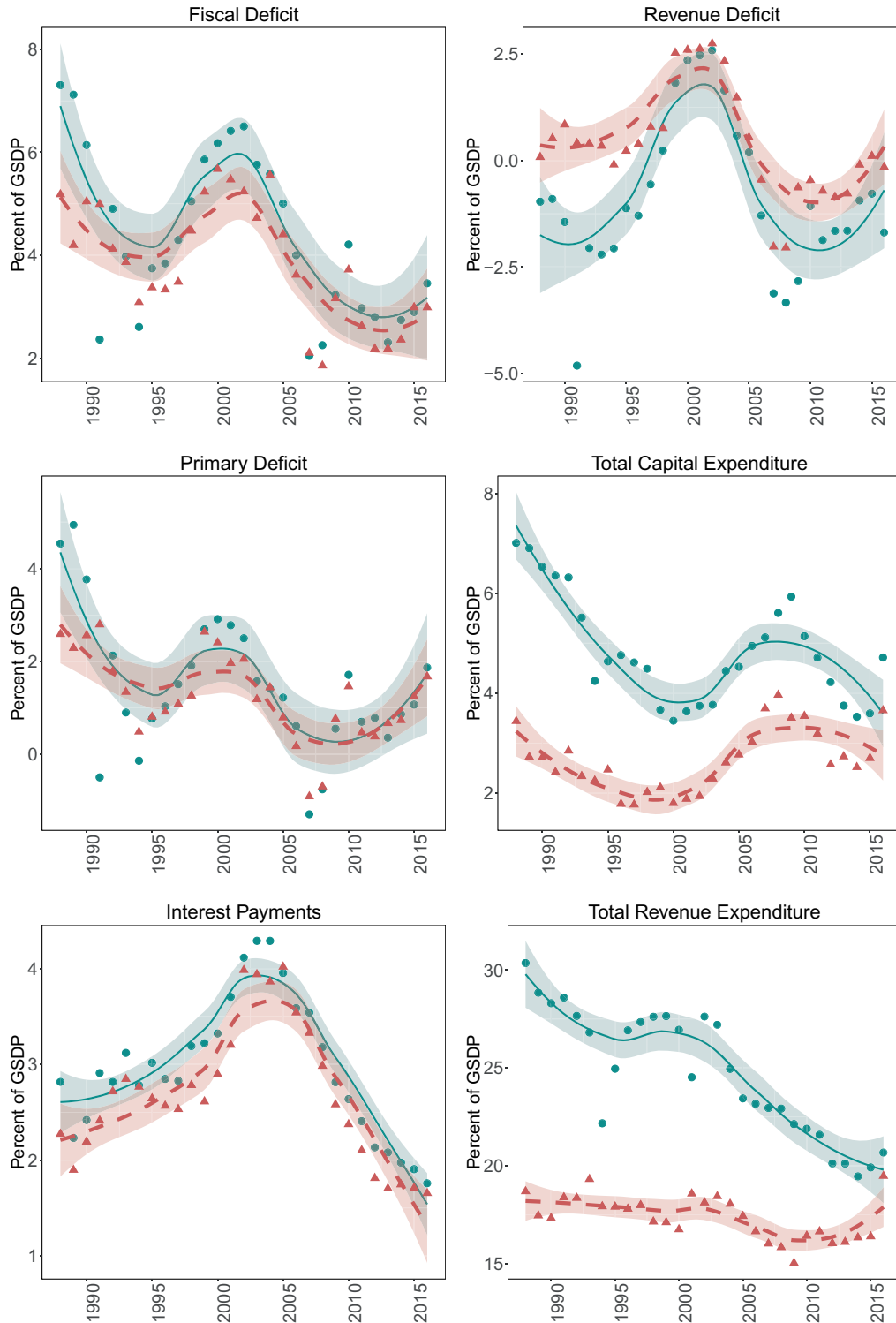


Figure 4: Trends in the Receipts of State Governments
 (● and ▲ denote cross section sample mean and median respectively)

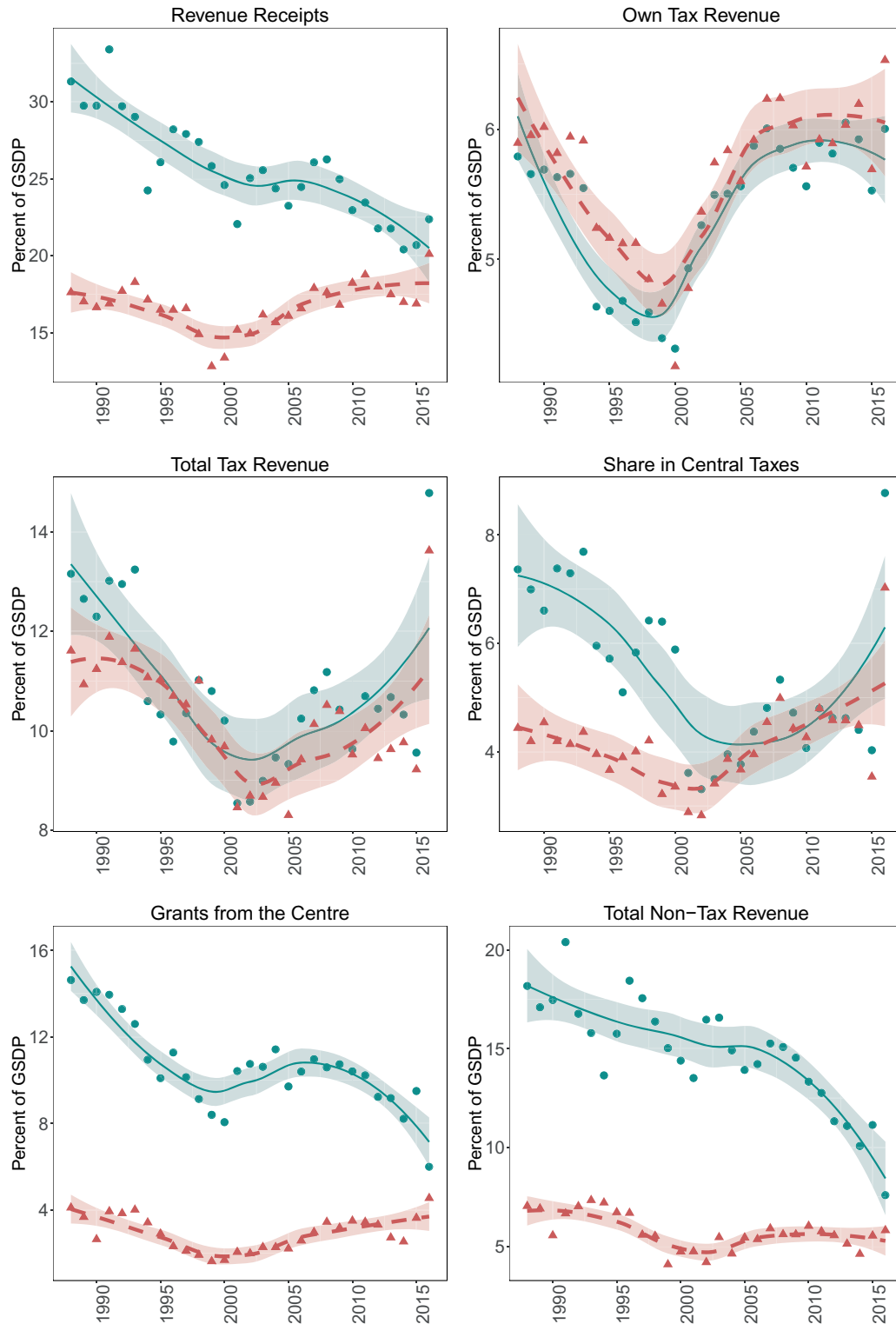


Table 2: Percentage Share of Non-SLR Bonds on account of UDAY in Total Outstanding Liabilities of the State

State	2015-16	2016-17
Rajasthan	26.22	12.50
Uttar Pradesh	8.17	4.52
Haryana	18.46	7.75
Bihar	1.53	0.68
Punjab	9.18	4.16
J&K	4.51	2.79
Chattisgarh	2.72	-
Jharkhand	14.63	-
Average	10.68	5.40

3 Consultations with the States

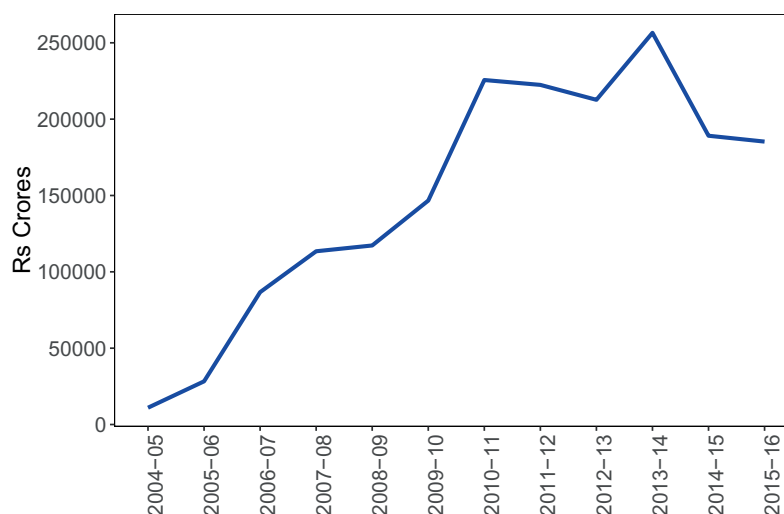
As part of wide-ranging consultation with experts and stakeholders, the FRBM Review Committee held two meetings with state Chief Secretaries and Finance Secretaries respectively. In this section, we discuss some of the issues that came up during this interaction.

3.1 UDAY

The UDAY Scheme may significantly impact the liabilities and revenue expenditure of the states. However, its impact is likely to vary substantially across different states. Table 2 shows the non-SLR bonds issued and consideration of the borrowings made by the states under earlier schemes (Financial Restructuring Package, 2012) with the consent of the Government of India under Article 293 (3) of the Constitution.

The states mentioned that apart from the higher debt burden, UDAY will raise the states' revenue expenditure on account of interest payments on the newly acquired DISCOM debt. In addition to making it harder for the states to adhere to their revenue deficit targets, this is also likely to make it harder for the states to achieve the target of a maximum of 10 percent for the interest payments to revenue receipts ratio.

Figure 5: Cash Balances in Investment Account (Rs. crores)



3.2 Cash Balances

Alongside the improvement in the fiscal position of the states, there has been a build-up of cash balances with them (see Figure 5). Most states held that cash balances are highly cyclical—showing a large surplus at the beginning of the financial year when funds are received from the central government. These surpluses reflect balances in accounts of various implementing agencies and parastatals and are drawn down as these agencies utilise this money during the course of the year.

Some states linked the issue of large cash surpluses to the uncertainties and irregularities in the transfer of central funds to the states. For instance, funds for centrally sponsored schemes (CSS) such as the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), the Sarv Shiksha Abhiyan (SSA), and the National Rural Health Mission (NRHM) are often released late by the Centre, prompting the states to set aside significant sums of money to pay salaries and wages. Some states suggested that the release of central funds, particularly for CSS, should be timely and in regular tranches.

3.3 Fiscal Discipline

A number of states held that limits on borrowing by them should be better calibrated to their fiscal performance and health. Thus, states that have the requisite fiscal room to borrow more should be allowed to do so. Further, in the present scheme of incentives, there is no distinction between the states that operate in the neighbourhood of the 3 percent target and those that have lower fiscal deficits due to prudent fiscal policy. Thus, states emphasized that limits on borrowing should be linked to their fiscal performance to provide the right incentives.

3.4 Off-budget Borrowings

Researchers, as well as official appraisers of the states' compliance with FRLs, have observed that there is some opacity in the manner in which the states report certain categories of public finance and budget data. In this light, the Committee sought the views of the states on the growing trend of off-budget public spending. Such spending is financed from off-budget borrowings where parastatals/state PSUs borrow funds from banks and development agencies but the repayment of the principal and interest for these loans are accommodated in the state budgets. However, these loans are not included in the state's debt or fiscal deficit limits.

Some states rationalised such practices by arguing that FRLs have limited the states' fiscal space which warrants the mobilization of off-budget resources to protect capital expenditure and infrastructure spending. The Finance secretaries candidly admitted that there is significant political pressure on this account. However, in principle, most of the states recognized that such practices lack a sound accounting foundation and should be discouraged.

The disclosure of off-budget borrowings remains unsatisfactory in most states. Off-budget borrowings through public sector undertakings (PSUs) and special purpose vehicles (SPVs) do not form a part of state government liabilities. Moreover, at present, the states do not collect or report information on public-private partnerships and other off-budget vehicles in a comprehensive manner.

The Finance Commission as well as the Comptroller and Auditor General of India (CAG), while appraising the states' compliance with FRLs have commented sharply on the above practices. The Fourteenth Finance Commission recommended that *“Keeping in mind the importance of risks arising from guaran-*

tees, off-budget borrowings and accumulated losses of financially weak public sector enterprises when assessing the debt position of the states, we recommend that both the Union and the state Governments adopt a template for collating, analysing and annually reporting the total extended public debt in their respective budgets as a supplement to the budget document²”.

The CAG, in successive audits of the state budgets, has noted that even though off-budget borrowings are explicitly prohibited under Article 293(3), there is a general lack of transparency in reporting such borrowings practices. State governments have often been able to project that borrowed funds for state plan programs undertaken by public sector corporations would be met out of the resources mobilised by these entities, which are strictly outside the state budget. In reality, however, the borrowings of many of these undertakings turn out to be liabilities that are ultimately borne by the state government.

When government departments directly avail of institutional loans, they are as receipts in their budget accounts. In the case of SPVs and PSUs, such borrowings usually do not enter government accounts, however, the repayment of such borrowings by the state governments are booked as debit under MH-6003-Internal Debt sub-head, giving rise to an accounting anomaly of repayments exceeding loans advanced. In some cases, such repayments should be classified under revenue expenditure which is often not done, resulting in an understatement of revenue and fiscal deficit. Power Corporations, Urban Housing and Development and Agriculture, are some of the PSUs that engage in borrowings on behalf of the state governments.

4 Inter-State Heterogeneity

In the previous sections, we have looked at issues impacting the track record of fiscal responsibility of all states taken as a collective. The intention was to assess the impact of the fiscal management of states in the past decade on general government debt and deficit. It is important to see whether inter-state heterogeneity in any way affects our analytical conclusions that are drawn taking the states collectively as a component of the general government.

Recent Finance Commissions have typically used some measure of the inverse

²See pp. 201 of the Report of the Fourteenth Finance Commission.

of per-capita income, population, fiscal effort³, and geographical area to determine inter-se shares of central transfers. As such, all the above may be seen as factors of heterogeneity among states. We focus on three factors that can cause significant heterogeneity in the fiscal dimension of the states and pose the following questions.

- How is the change in the per-capita income of a particular state correlated with the change in its liabilities to GSDP ratio and the level of fiscal deficit?
- How is the change in the size of a state government (the sum of its total tax revenues and fiscal deficit as a ratio of GSDP) correlated with a change in its liabilities to GSDP ratio?
- How is a state's share of own revenue in total revenue correlated with the change in its liabilities to GSDP ratio and the level of fiscal deficit?

Our aim is to estimate the correlation of state-specific characteristics on their fiscal performance. Instead of simple cross-section scatter plots, we estimate a regression specification over a four-year rolling sample which has the advantage of allowing us to utilise the time variation in our data, in addition to the cross-section variation which a scatter plot encapsulates. We can thus make inferences about the evolution of the relationship between state-specific characteristics and fiscal performance over time. We report our findings in Figures 6 and 7. Box 2 details the methodology employed.

In the case of the share of own-revenue in total revenues, we expect states with lower ratios to have higher fiscal deficits and liabilities, implying a negative correlation. As we can see from Figures 6 (B) and 7 (B), this is indeed largely true for the years in our sample.

With respect to the correlation between fiscal deficit/change in liabilities and the change in per-capita income, we find that it was the case until the commencement of state FRLs that lower income states tended to have higher fiscal deficits as a percent of GSDP. However, this has consistently not been the case since the early 2000s: this result indicates that the two are now barely correlated (see Figure 6 (A) and 7 (A)) and is perhaps an unexpected result of the implementation of state-level FRLs, an extremely laudable one. Poor and rich states are fiscally prudent with equal probability. In the case of the size of government too, we have

³Though not the Fourteenth Finance Commission.

Figure 6: Impact of State-Specific Factors on the Change in the Liabilities to GSDP Ratio

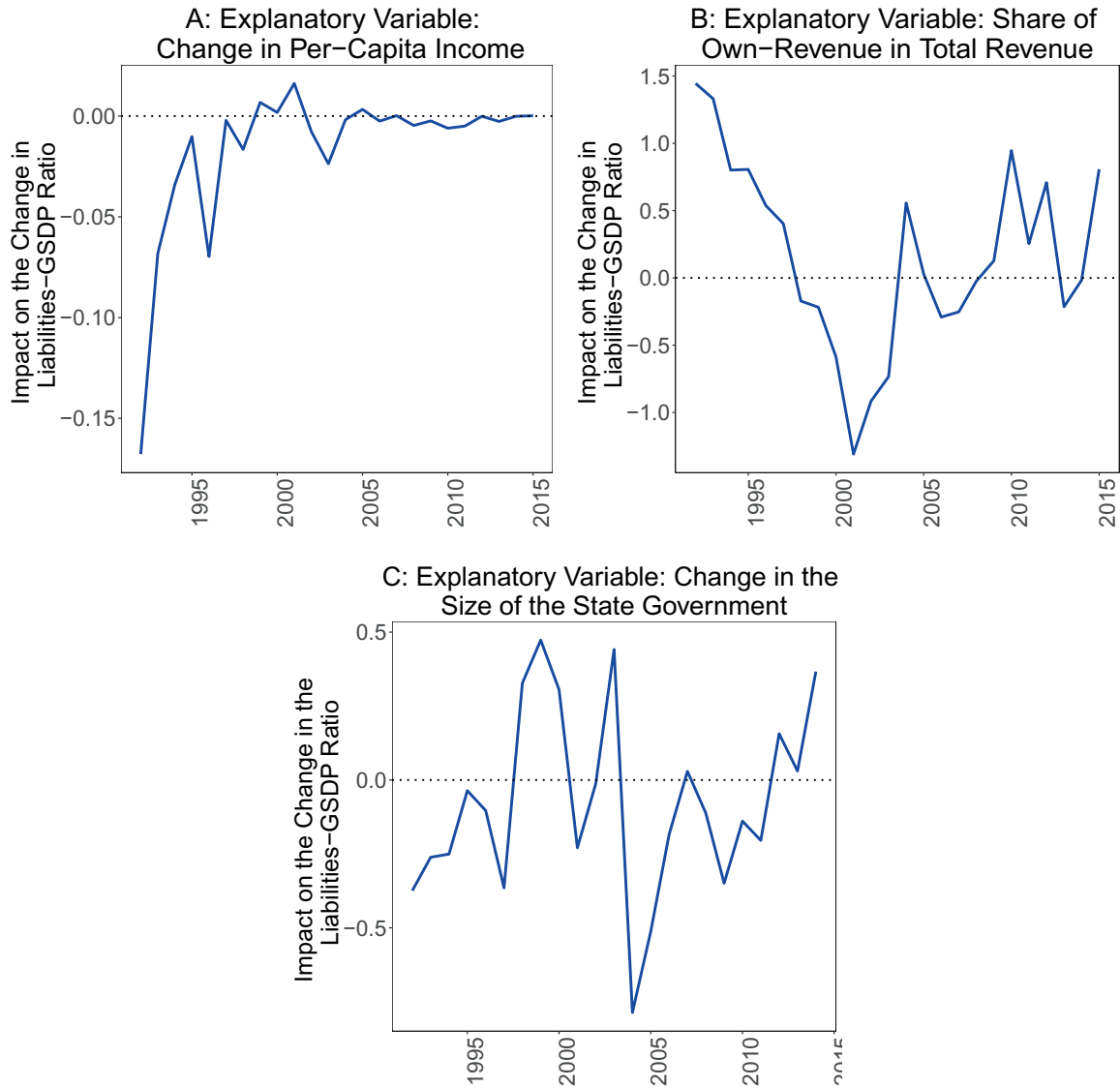
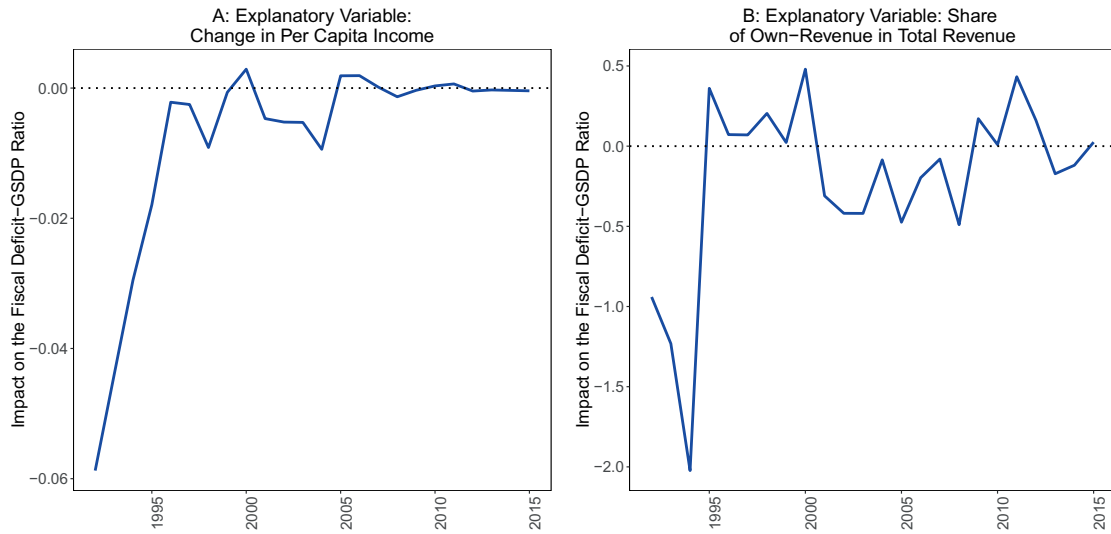


Figure 7: Impact of State-Specific Factors on the Fiscal Deficit to GSDP Ratio



the comforting result that the inverse correlation between the change in the size of a state government and the change in its liabilities during the 1990s has decreased in magnitude (see Figure 6 (C)).

Hence it is possible for us to argue, at least on these three key macro-fiscal variables, that state-level heterogeneity does not detract from the reasoning we have given with respect to the fiscal consolidation proposed for the states as a collective, and its impact on the consolidation of general government finances as a whole.

Box 2. Methodology: Estimating Impact of State-Specific Characteristics on Fiscal Discipline

We estimate the following specification to quantify the impact of state-specific characteristics such as the size of government and per-capita income of the states on their fiscal performance.

$$Y_{it} = \alpha + \beta X_{it} + \eta_i + \rho_t + \varepsilon_{it}, \quad (\text{for } i = 1, \dots, N; \quad t = 1, \dots, T) \quad (1)$$

where Y_{it} is either the ratio of the fiscal deficit to GSDP or the first difference of the liabilities to GSDP ratio; X_{it} denote our independent variables: the first difference of per capita income, the first difference of size of the state government, and the share of own-tax revenue in total state revenue; η_i and ρ_t are state and time fixed effects respectively; ε_{it} is the error term. Equation 1 is estimated on a five-year rolling-window sample:

1988-1992, 1989-1993,..., 2011-2015 using a Two-step System Generalised Methods of Moments estimator with Windmeijer (2005) corrected standard errors. Figures 6 and 7 plot the the slope-coefficients, (β in equation 1) of the three explanatory variables for these rolling-samples. The dynamic nature of our empirical model prevents us from obtaining

consistent estimates of the coefficients in equation (1) using Ordinary Least Squares (OLS) or Fixed Effects (FE) estimators (Nickel, 1981). To address these challenges, we choose to employ a two-step Blundell and Bond (1998) System Generalised Method of Moments (SYS-GMM) estimator. Apart from the Nickel bias, another challenge we face is

that our sample size is modest as compared to the relative to the large micro-data sets to which such estimators are usually applied. The number of instruments in GMM models rise at a quadratic rate with the time dimension of the sample. This can lead to concerns regarding possible over-fitting in samples with a small cross-sectional dimension such as ours. Over-fitting may lead to biased estimates that converge to fixed effects estimates. Over-fitting may also significantly reduce the power of the Hansen test of the validity of instruments. We address this concern in two steps.

1. We use only certain lags of variables as instruments. All the GMM results presented here use lags $t - 2$ and $t - 4$ only.
2. We combine our instruments into smaller sets by collapsing the instrument set which contains one instrument for each lag distance and instrumenting variable, making the instrument count linear in the time dimension of the sample (See Roodman (2009) for details).

The above specification computes two-step SYS-GMM estimates with standard errors corrected with the Windmeijer (2005) procedure. We use the two-step standard error correction because the original variance formula has been shown to produce two-step standard errors that are implausibly small.

5 Debt Dynamics

In this section, we present projections for the debt to GDP ratios of the states, union and general governments for a range of primary and fiscal deficit trajectories⁴.

Consider the standard equation of debt dynamics.

$$d_t = d_{t-1} + d_{t-1} \left(\frac{r-g}{1+g} \right) - p_t \quad (2)$$

where p_t is the primary balance to GDP ratio (thus, $p_t < 0$ denotes a deficit and $p_t > 0$ denotes a surplus), d_t denotes the debt to GDP ratio, r and g are the nominal interest rate and nominal GDP growth rate respectively and are assumed to be constant over time.

For convenience, we can define $\alpha = \left(\frac{r-g}{1+g} \right)$ and re-write Equation 2 as follows.

$$d_t = (1 + \alpha)d_{t-1} - p_t \quad \text{or} \quad \Delta d_t = \alpha d_{t-1} - p_t \quad (3)$$

We can generalise Equation 3 to several periods as follows.

$$d_N - d_0 = \alpha \sum_{t=0}^{N-1} d_t - \sum_{t=1}^N p_t \quad (4)$$

Note that Equation 3 is a difference equation with the following solution. This is a convenient result to which we will return later.

$$d_N = d_0(1 + \alpha)^N - \sum_{t=1}^N (1 + \alpha)^{N-1} p_t \quad (5)$$

It is instructive to illustrate the path of the debt to GDP ratio of the union, state, and general governments for a range of assumptions for primary balance, interest rate, and GDP growth.

⁴See Escolano (2010) for a detailed discussion and extensions.

5.1 Scenario I: Primary balance required to maintain the debt to GDP ratio constant at its current level

How much primary deficit can each tier of the government afford if it was constrained to keep its debt to GDP ratio constant?

In Equation 3, let $d_t = d_{t-1} = d^*$ to get

$$p^* = \alpha d^* \quad (6)$$

where p^* is the primary surplus which will ensure that the debt ratio neither falls nor rises over time, i.e. it stays constant at d^* .

Table 3 shows such levels of primary balances for the general, union, and state governments and for different combinations of nominal interest rate (r) and nominal growth rate (g). These levels of primary balances, denoted p^* , will ensure that the debt to GDP ratios of the general, union and state governments stay constant at their present, 2016-17 levels⁵ of 49.4, 19, and 68 percent of GDP respectively. For the states, we also consider the scenario of a higher debt stock of 21 percent due to the UDAY scheme.

Note that $p_{state(U)}^ > p_{state}^* > p_{union}^* > p_{GG}^*$ for all values of r and g .* In fact, $p_{state(U)}^*$ is less than half in magnitude as compared to p_{union}^* . This implies that to maintain their present levels of combined debt to GDP ratio, the states must be appreciably more prudent in their fiscal conduct and run lower primary deficits as compared to the Union government.

This is the case because the Union government, which has a large debt stock of 49.4 percent of GDP, enjoys a greater downward pressure on its debt due to a favourable ($r - g$). However, since the debt stock of the states is much smaller, (19-21 percent), the advantage that accrues to them on account of a favourable ($r - g$) is lower than it is for the Union government. This implies that to bring

⁵The data for liabilities of the Union Government has been taken from Annex 5 (i) of the Receipts Budget 2016-17. Data for liabilities of the state and general governments has been taken from the Indian Public Finance Statistics, Ministry of Finance. The figure for state liabilities includes the debt of state power utilities taken over by the state governments under the UDAY scheme, but excludes the states' share of NSSF liabilities to avoid double counting as they are already included in the Centre's debt figure.

Table 3: Primary balances (as percent of GDP) which will keep debt-ratios constant over time

r	g	$r - g$	Implied α	p_{GG}^*	p_{union}^*	p_{state}^*	$p_{state(U)}^*$
7.3	10.5	-3.2	-0.029	-1.97	-1.43	-0.55	-0.61
7.3	11.0	-3.7	-0.033	-2.27	-1.65	-0.63	-0.70
7.3	11.5	-4.2	-0.038	-2.56	-1.86	-0.72	-0.79
7.3	12.0	-4.7	-0.042	-2.85	-2.07	-0.80	-0.88
8.0	10.5	-2.5	-0.023	-1.54	-1.12	-0.43	-0.48
8.0	11.0	-3.0	-0.027	-1.84	-1.34	-0.51	-0.57
8.0	11.5	-3.5	-0.031	-2.13	-1.55	-0.60	-0.66
8.0	12.0	-4.0	-0.036	-2.43	-1.76	-0.68	-0.75
8.5	10.5	-2.0	-0.018	-1.23	-0.89	-0.34	-0.38
8.5	11.0	-2.5	-0.023	-1.53	-1.11	-0.43	-0.47
8.5	11.5	-3.0	-0.027	-1.83	-1.33	-0.51	-0.57

Note: p_{GG}^* , p_{union}^* , p_{state}^* , and $p_{state(U)}^*$ denote the required primary balances for the general government, union government, and the states (with and without incorporating the impact of UDAY) respectively. $\alpha = (r - g)/(1 + g)$ captures the net impact of the interest rate-growth differential ($r - g$).

the level of their debt down by one percent, the states will have to run smaller (larger) primary deficits (surpluses) than the Union Government.

The states' combined primary deficit of around 1.3 percent of GDP is much higher than the Centre's primary deficit of 0.3 percent of GDP in 2016-17 (BE). This implies that the combined debt of the states is projected to rise even if they adhere to their FRBM targets. However, the analysis above raises another cause of concern for the states. The fact that their debt is already at fairly low levels implies that any further consolidation in their combined debt to GDP ratio would require them to run disproportionately low fiscal deficits. Indeed, a reduction in the fiscal deficit is required even to maintain their existing levels of debt.

5.2 Primary balances to meet a given debt ratio in finite time

How much primary deficit can each tier of the government afford if it was constrained to reduce its debt to GDP ratio to a fixed debt to GDP ceiling in a given period?

Let the target debt ratios be 60, 40, and 21 percent of GDP for the general,

union and state governments respectively. Table 4 presents the required primary balances (p^T) that will enable the general, union, and state governments to meet their target debt to GDP ratios by FY2025.

Let the required constant primary balance be p^T . From Equation 5 we can derive the following expression for p^T .

$$p^T = \left[\frac{\alpha}{(1 + \alpha)^{-N} - 1} \right] \left[(1 + \alpha)^{-N} d^T - d^0 \right] \quad (7)$$

That is, given an initial debt ratio (d^0), and a target debt ratio (d^T) to be achieved in N years, the constant primary balance (p^T) that reaches the target debt ratio, if maintained constant during periods $t = 1, \dots, N$, is given by the expression above.

Table 4: Required primary balances (as a percent of GDP) to meet the target debt ratio by 2025

r	g	$r - g$	Implied α	p_{GG}^T	p_{union}^T	p_{states}^T	$p_{states(U)}^T$
7.3	10.5	-3.2	-0.029	-0.86	-0.13	-0.83	-0.61
7.3	11.0	-3.7	-0.033	-1.14	-0.33	-0.91	-0.70
7.3	11.5	-4.2	-0.038	-1.42	-0.52	-1.00	-0.79
7.3	12.0	-4.7	-0.042	-1.70	-0.71	-1.09	-0.88
8.0	10.5	-2.5	-0.023	-0.46	0.15	-0.70	-0.48
8.0	11.0	-3.0	-0.027	-0.74	-0.04	-0.79	-0.57
8.0	11.5	-3.5	-0.031	-1.02	-0.24	-0.88	-0.66
8.0	12.0	-4.0	-0.036	-1.30	-0.43	-0.96	-0.75
8.5	10.5	-2.0	-0.018	-0.17	0.36	-0.61	-0.38
8.5	11.0	-2.5	-0.023	-0.45	0.16	-0.70	-0.47
8.5	11.5	-3.0	-0.027	-0.73	-0.04	-0.79	-0.57
8.5	12.0	-3.5	-0.031	-1.01	-0.23	-0.87	-0.66

Note: p_{GG}^T , p_{union}^T , p_{state}^T , and $p_{state(U)}^T$ denote the required primary balances for the general government, union government, and the states (with and without incorporating the impact of UDAY) respectively. $\alpha = (r - g)/(1 + g)$ captures the net impact of the interest rate-growth differential ($r - g$).

In this scenario, the Centre has to consolidate its debt by over 9 percent of GDP (almost one-fifth of their existing stock of debt). Despite this significant

consolidation, Table 4 shows⁶ that the Centre can afford a primary deficit of over 0.5 percent of GDP, which is larger than its present primary deficit. The states, on the other hand, are not required to reduce their debt to GDP ratio at all⁷. However, even to maintain their debt at existing levels, the states would be required to reduce their primary deficits below their present levels.

To see why this is the case, and also why $p_{state(U)}^* > p_{state}^* > p_{union}^* > p_{GG}^*$ in the previous section (see Table 3), note that there are two opposite forces that act on debt. Recall Equation 3.

$$\Delta d_t = \alpha d_{t-1} - p_t$$

Note that if $r < g$, we have that $\alpha < 0$ ⁸, and as long as there is a primary deficit, we have that $p_t < 0$. Thus, *ceteris paribus*, a favourable α (i.e. when $r < g$) exerts a downward pressure on debt. *However, the negative impact of α depends on the level of debt itself.*

The Union government, which has a large debt stock of over 49 percent, enjoys a greater benefit from a favourable $r - g$, whereas the states, with much smaller debt levels (around 19-21 percent of GDP) are not as lucky. This implies that to bring the level of their debt to GDP ratios down by the same proportion within a fixed time period, the states will have to run smaller (larger) primary deficits (surpluses) than the Union Government.

Figure 8 illustrates this fact. Suppose we want the debt to GDP ratio of a government to come down by 20 percent of its initial value by FY 2030. Then Equation 7 provides an expression for the primary balance which would be required for $d_{2030}^T = 0.8d_0$, and $N = 13$. We assume $r = 8$ percent and $g = 11.5$ percent

⁶See the column that pertains to our baseline assumptions of a nominal GDP growth of 11.5 percent and an interest rate of 7.3 percent.

⁷In fact, if we don't incorporate the impact of UDAY, and take the debt to GDP ratio of the states at 19 percent in FY17, then the states can afford to raise their debt to GDP ratio by 2 percent of GDP.

⁸Recall from page 1 that $\alpha = \frac{r-g}{1+g}$. It captures the effect of two things. The first reflects the interest cost of financing the debt $\left[\left(\frac{r}{1+g}\right) d_{t-1}\right]$, and the second term relates to the erosion of the debt ratio that stems from the growth of output (the denominator in the debt ratio) $\left[-\left(\frac{g}{1+g}\right) d_{t-1}\right]$. Thus, $\alpha = \frac{r-g}{1+g} = \frac{r}{1+g} - \frac{g}{1+g}$. It is apparent that the difference between the interest rate and the rate of economic growth is a key determinant of changes in the debt-to-GDP ratio.

(i.e. $\alpha = -0.02691$).

Figure 8 presents a plot of Equation 7 in a three-dimensional space of d_0 , N , and p_t as well as its contours in two dimensions. Each of the contour lines represents a fixed level of primary deficit. The negative slope of the contour lines implies that for a given level of primary deficit, there is an inverse relation between the initial level of debt to GDP ratio (d_0) and the time it takes to reach the target debt to GDP ratio (N)⁹.

Thus, if two governments with the same primary deficit want to achieve the same proportional reduction in the debt to GDP ratio (say a 20 percent reduction from the initial level of debt), the government with a higher initial level of debt ratio will achieve the target faster. A corollary of this result is that if two governments want to achieve the same proportional reduction in the debt to GDP ratio in a given period, the government with the larger initial debt ratio can afford higher primary deficits (or smaller primary surpluses).

Thus, the Union government, which has a large debt stock of almost 50 percent enjoys a greater downward pressure on its debt due to a favourable $r - g$. However, since the debt stock of the states is much smaller, (21-23 percent), the advantage that accrues to them on account of a favourable $r - g$ is lower than it is for the Union government. This implies that to bring the level of their debt down by one percent, the states will have to run smaller (larger) primary deficits (surpluses) than the Union Government.

5.3 Trajectories of debt and deficits for the States

Having discussed the properties of debt dynamics for the different levels of the government, we now focus only on the states. The following analysis provides a better understanding of the consolidation required by the states if they were to maintain their debt-GDP ratios at the FY 2017 levels.

⁹The slope is naturally reversed in case of primary surplus.

Figure 8: Graph of $p^* = \left[\frac{\alpha}{(1+\alpha)^{-13}-1} \right] [(1+\alpha)^{-13}(0.8d_0) - d_0]$ for $\alpha = -0.02691$
 [Note: Primary balance is in percent of GDP, initial debt is as a ratio of GDP]

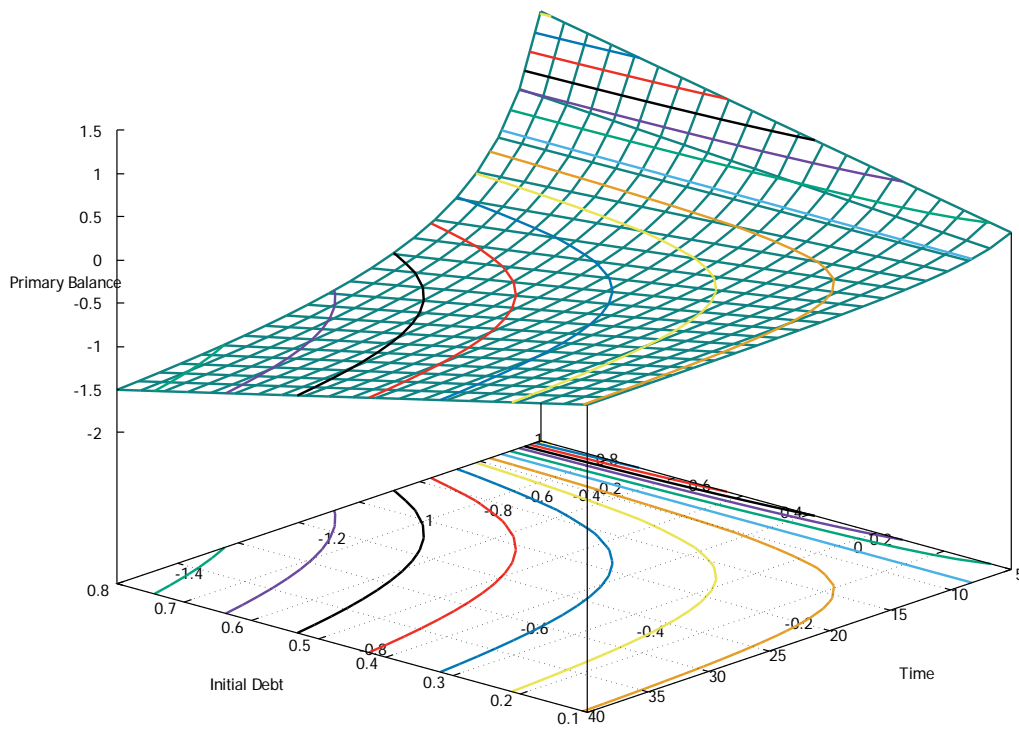


Table 5: FD path required to ensure that the debt to GDP ratio of the states in FY25 is the same as its present level of 21 percent of GDP

Year	Debt	Fiscal deficit	Annual Reduction in FD
FY17	21.00	2.98	0.16
FY18	21.65	2.82	0.16
FY19	22.08	2.66	0.16
FY20	22.30	2.50	0.16
FY21	22.34	2.34	0.16
FY22	22.22	2.18	0.16
FY23	21.95	2.02	0.16
FY24	21.54	1.86	0.16
FY25	21.02	1.70	0.16

As explained above, some fiscal correction (i.e. a reduction in the fiscal deficit to GDP ratio) will be required at the level of the states even if they were to maintain their debt to GDP ratios at their FY17 levels (21 percent of GDP). Rather than force this correction in one or two years, we allow for the fiscal deficit of the states taken as a collective to fall gradually by 0.16 percent of GDP in each year. As shown in Table 5, this would imply that the debt to GDP ratio of the states rises marginally in the short run but returns to its present level of 21 percent of GDP by FY25 (including the estimated impact of UDAY). Thus, in FY25, the general government debt anchor would be achieved with the Centre's debt down to 40 percent of GDP and the states collectively accounting for debt of around 21 percent of GDP.

As in the case of the Centre, this path is dependent on (a) the assumption that the nominal GDP grows at 11.5 percent (a lower growth rate would require more stringent consolidation or a postponement of the year by which the debt target is achieved) and (b) that the liabilities arising from the states' participation in UDAY will not be more than 2 percent of GDP, both in the present moment and in the future. If the incremental impact UDAY is less than 2 percent, then the fiscal consolidation will be easier and the required reduction in the fiscal deficit lower. The opposite is also true. Since the states can choose the extent to which they wish to avail of the fiscal relaxation under UDAY, they have, therefore, an inter-temporal policy choice to make.

Table 6: FD path required to ensure that the debt to GDP ratio of the states in FY25 decreases to 20 percent

Year	Debt	Fiscal deficit	Annual Reduction in FD
FY17	21.0	2.98	0.195
FY18	21.6	2.79	0.195
FY19	22.0	2.59	0.195
FY20	22.1	2.40	0.195
FY21	22.0	2.20	0.195
FY22	21.8	2.01	0.195
FY23	21.3	1.81	0.195
FY24	20.7	1.62	0.195
FY25	20.0	1.42	0.195

We also explored the possibility of the states reducing their debt to GDP ratios from the current estimated level of 21 percent to 20 percent by FY25 (see Table 6). This would entail a steeper reduction in fiscal deficits by 0.195 percent of GDP each year, implying that the fiscal deficit in FY25 reduces to less than half its present value.

6 Conclusion

We find that the states of India, taken collectively, have executed a remarkably successful fiscal consolidation since enacting their FRLs ten to fourteen years ago. Our examination of the sources of fiscal consolidation indicates that compliance with the three percent fiscal deficit ceiling and the target of zero revenue deficit were on account of buoyant revenues as well as active expenditure control. While the introduction of VAT and high growth indubitably helped keep revenues buoyant, the fact that we observe revenue buoyancy across rich and poor states indicates that there was collective effort to achieve revenue targets so as to facilitate FRL compliance. State governments did not fully utilise their higher revenues to increase expenditures in good times, a course of action that is politically very attractive. Rather, they exercised political will and executive restraint. Understandably, in crisis years, when revenues fell, expenditure was not curtailed, but this was consistent with the 0.5 percent relaxation in state-FRL limits by the centre. Collectively, the states managed to successfully consolidate their fiscal position after the crisis,

unlike the centre. While transfers helped the states in securing their FRL targets, it is clear from our analysis that they played a limited role; improvement in own revenues was not trivial across the period of analysis.

We have also found that state-specific characteristics such as the level of per-capita income, the size of the state government, and the level of the states' own revenue, do not have a significant impact on debt and deficit control by individual states. In fact, we find that following the execution of state FRLs, the correlation between fiscal performance (fiscal deficit and the change in liabilities) and state-specific characteristics such as per-capita income and the size of the state governments has reduced sharply; poor and rich states are equally fiscally prudent. Further, states that spend more can find the resources to do so within their FRL constraints and without jeopardising macro-fiscal parameters.

The recent fiscal consolidation by the states assumes structural significance when one looks at the combined size of the state governments relative to that of the general government. Figure 9 (A) shows that since the late 1980s, this share has grown continuously, peaking at 53.6 percent in 2003-04. However, in subsequent years, with the implementation of state FRLs, the share of the state governments in the size of the general government fell sharply to about 43.8 percent in 2008-09. Since then, the share has again begun to increase and stands at 52.3 percent as of 2014-15.

Figure 10 illustrates that the reduction of the states' share in the size of the general government was a direct consequence of the better implementation of fiscal responsibility laws by the states relative to the central government. The share of the states' combined borrowing in general government borrowing halved from 2004-05 to 2008-09. On the other hand, the share of sub-national tax receipts in general government tax receipts decreased only marginally in this period.

The success of fiscal consolidation and the consequent reduction of the states' share in size means that they have given up fiscal space to the centre. This would have inevitably limited their ability to increase public spending in critical areas where they have principal public policy responsibility, such as health education, sanitation, and rural roads. In addition, even with the recent increase in the size of the sub-national government, the share of the total liabilities of the states in total general government liabilities continues to decline (see Figure 9 (B)). Therefore, it would be unreasonable to expect more heavy-lifting for the reduction of the general government debt to be done by the states.

Figure 9: The Size and Liabilities of the State Governments as a Share of the Liabilities and Size of the General Government

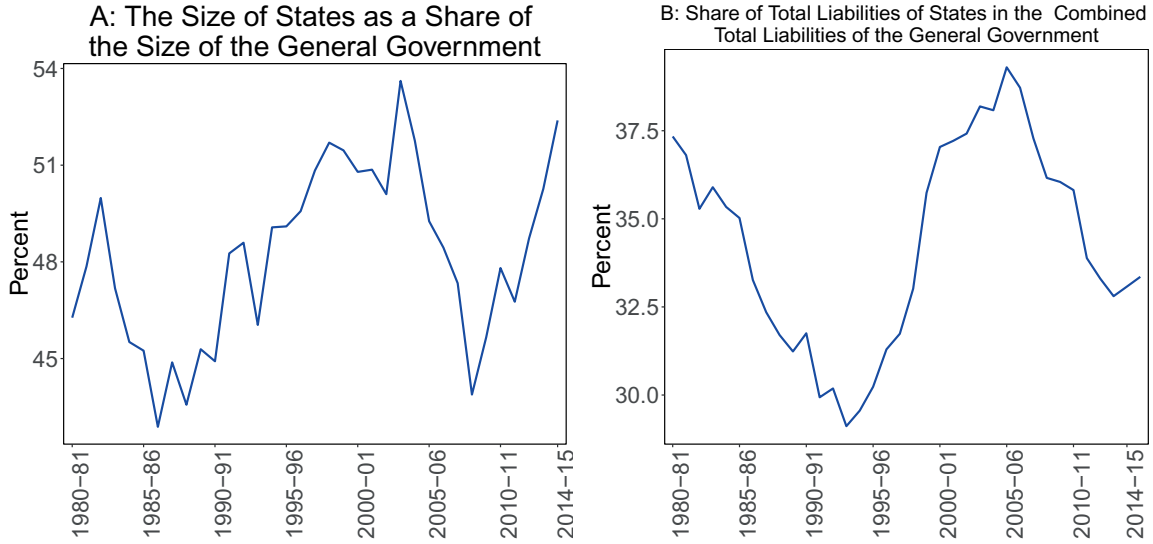
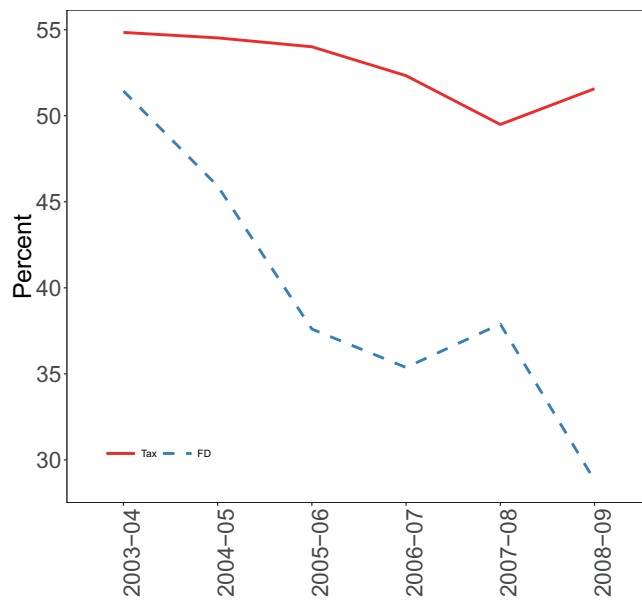


Figure 10: Components of the Size of the Government: The share of States' Borrowings and Tax Revenues in the General Government



An examination of the primary deficit to GDP ratios of the states and centre respectively indicate that the states have run relatively higher primary deficits in recent times as compared to the centre. However, this is because the states have a far lower initial level of debt than the centre due to a historically greater fiscal consolidation. As a consequence, the bulk of the fiscal space available to the states is used to undertake fresh capital expenditure since the interest payments of the states are very small. Thus, it would be unreasonable to expect the states collectively to reduce their debt-GDP ratio purely by the fact that their primary deficit to GDP ratio is higher than that of the centre.

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