**ARF INDIA**
Academic Open Access Publishing
www.arfjournals.com

# Determining State Differentiated Sustainable Fiscal Deficit to GSDP Ratios in India

## D.K. Srivastava, Muralikrishna Bharadwaj, Tarrung Kapur and Ragini Trehan

*Chief Policy Advisor, EY India, Member, Advisory Council to the Sixteenth Finance Commission and formerly Director, Madras School of Economics; E-mail: dkscloud@gmail.com; dk.srivastava@in.ey.com*
*Senior Manager, Tax and Economic Policy unit, EY India; muralikrishna.b@in.ey.com*
*Senior Manager, Tax and Economic Policy unit, EY India; tarrung.kapur@in.ey.com*
*Senior Manager, Tax and Economic Policy unit, EY India and part-time*
*PhD. scholar at MSE, Chennai; ragini.trehan@in.ey.com*

***Abstract:*** In this paper, we have suggested a methodology of estimating state-specific levels of sustainable fiscal deficit relative to GSDP linked to the all-state sustainable levels that are defined in the Centre's Fiscal Responsibility and Budget Management Act (FRBMA) and state specific Fiscal Responsibility Legislations (FRLs). It is shown that the state-specific sustainable fiscal deficit to GSDP ratios depend upon three relativity parameters namely, relative effective interest rate, relative revenue receipts to GSDP ratios, and relative nominal GSDP growth rates. In all the three cases, relativities are estimated by comparing an individual state's parameter with the corresponding all-state average. The fiscally weak states from the viewpoint of sustainability have been identified for the FC14 and FC15 periods. There has been a deterioration in the fiscal sustainability profile of states in the FC15 period as compared to the FC14 period. States that do not satisfy either the FRBM norm of 3% of GSDP or the state-specific sustainability norm include West Bengal, Andhra Pradesh, Jharkhand, Telangana, Uttarakhand, Kerala, Tamil Nadu, Rajasthan, Haryana, and Punjab in the FC14 period. In the FC15 period, there was an addition of three more states to this list namely, Meghalaya, Karnataka, and Madhya Pradesh.

***Keywords:*** *Fiscal sustainability, Fiscal Responsibility Legislation, State-specific fiscal deficit, revenue receipts to GSDP ratio, nominal GSDP growth, Effective interest rate*

## 1. Introduction

The Twelfth Finance Commission (FC12) had proposed that each state should enact its FRL incorporating certain specified norms. It was indicated that with an underlying nominal GDP growth of 12%, state level sustainable fiscal deficit to GDP ratio may be specified at 3% and their debt to GDP ratio at 28%. At that time, there was a discussion as to whether each state should have its own and differentiated level of fiscal deficit and debt, given that its economic and fiscal

parameters may be different. However, in statutory terms, different states agreed to a generally common fiscal deficit norm of 3% of GSDP as their sustainable level.

In 2018, the Centre's FRBMA was amended *(FRBM Review Committee Report 2017)*. With an underlying nominal GDP growth of 11.1%, states as a whole were given a fiscal deficit norm of 3% of GDP. Their debt-GDP ratio was prescribed at 20%. This was shown to be inconsistent with the underlying growth and fiscal deficit numbers. The appropriate debt target should have been specified at 30% of GDP *(see, for details, Srivastava 2021 and 2022)*.

In the sustainability framework proposed by FC12, states were given the option of specifying their policy target either in terms of fiscal deficit to GSDP ratio or in terms of interest payment to revenue receipts ratio. If the interest payment to revenue receipts route was chosen, it could have resulted in specifying differentiated fiscal deficit to GSDP norms. In the event, most states opted for a common fiscal deficit to GSDP ratio of 3%. In actual practice, their fiscal deficit to GSDP ratios often exceed or fall below this 3% norm even though in the aggregate, the 3% of GDP norm may be met. The issue is whether or not some states would be justified in having a higher than 3% fiscal deficit to GSDP ratio as their sustainability target provided that it is consistent with their economic and fiscal circumstances. Further, even if some states have a higher or lower sustainability norm relative to their GSDPs, in the aggregate, it should still be consistent with the overall sustainability norm of 3% of GDP. However, so far, any framework for determining state specific sustainability levels has not been proposed[1]. In this paper, we consider this issue in detail.

The paper is divided into seven sections. Apart from the introductory section, Section 2 describes the FC12 framework for the determination of sustainable levels of fiscal deficit and debt relative to GDP for the central and the aggregate of states. Section 3 suggests a methodology for deriving state specific sustainable levels of fiscal deficit relative to GSDPs linked to the all-state sustainable fiscal deficit to GSDP norm. The methodological framework is used to derive estimates of state specific sustainable fiscal deficit to GSDP ratios as determined by three parameters namely, relative effective interest rate, relative revenue receipts to GSDP ratio, and relative growth performance. Section 4 provides a trend analysis of the state-wise average fiscal deficit to GSDP ratios pertaining to four FCs from FC12 to FC15 (first three years) covering an 18-year period from 2005-06 to 2022-23. It also gives a comparison of the actual fiscal deficit to GSDP ratios with the corresponding state-specific sustainable levels for the two recent FC periods namely, FC14 and FC15 (first three years).

Sections 5 and 6 illustrate the results with respect to the FC14 (2014-15 to 2019-20) and FC15 (2020-21 to 2022-23) periods respectively and identify fiscally vulnerable states. Section 7 provides concluding observations.

## 2.    Determining Aggregate Sustainable Levels of Fiscal Deficit Relative to GDP for the States

The aggregate sustainable level of fiscal deficit relative to GDP for all states was defined by FC12 at 3%. The fiscal deficit target was kept at this level in the Centre's FRBM 2018 amendment. In the FC12 report, the combined fiscal deficit of central and state governments relative to GDP was determined at 6%. This was derived on the basis of sectoral imbalances with respect to investment and savings. It was argued that the investible surplus consists of household sector financial savings and net inflow of capital from abroad. This surplus is accessed by the government sector in the form of combined fiscal deficit of the central and state governments, non-government public sector, and the private corporate sector. If total available investible surplus is, for example, 9% of GDP consisting of 7% of household sector financial savings and 2% of net inflow of capital, a combined fiscal deficit of 6% of GDP would constitute a pre-emptive claim on this surplus, leaving the balance of 3% of GDP to be shared between the non-government public sector and the private corporate sector.

An analytical framework for dividing the combined fiscal deficit of 6% of GDP between the central and the aggregate of state governments has not so far been constructed. Since Centre's FRBMA, which preceded the FC12 analysis, had incorporated a 3% of GDP as the sustainable level of Centre's fiscal deficit, states aggregate fiscal deficit relative to GDP was derived at 3% residually. Once the fiscal deficit levels are derived in this manner both for the central and state governments, the sustainability conditions relate the debt-GDP ratio to either fiscal deficit or primary deficit. Since interest payments is the excess of fiscal deficit over primary deficit, the sustainable combination of debt-GDP ratio can be related to any of the three parameters namely, (1) fiscal deficit to GDP ratio, (2) primary deficit to GDP ratio and (3) interest payment to GDP ratio. These conditions are given below.

1.    $b^* = f(1 + g)/g$
2.    $b^* = p^*. (1+g)/(g-i)$

Since interest payment is the difference between fiscal deficit and primary deficit, we can derive a corresponding condition which indicates the sustainable combination of $b^*$ and $ip^*$ where $ip^*$ is interest payment to GDP ratio. This condition is derived as follows:

We can write:

$$ip^* = f^* - p^*$$

Accordingly, a sustainable combination of $b^*$ and $ip^*$ can be derived as

3.   $b^* = ip^* \cdot (1+g)/i$

This can also be written as

4.   $b^* = ipr^* . rr . (1+g)/i$

Accordingly, we can also write[2]:

5.   $f^* = (ipr^* . rr^* g)/i$

Where $ipr^*$ is the sustainable level of interest payments relative to revenue

receipts with $rr = revenue\ receipts \big/ GDP$ where

$$ip^* = ipr^* * rr$$

These conditions are valid for any government entity that is for the central government, for the aggregate of state governments, or for individual state governments. However, in the case of individual state governments, the reference is to GSDP rather than GDP. The next question is that if a sustainable level of fiscal deficit for the aggregate of state governments has been derived from the saving-investment balances as explained above, what would be a suitable framework in which sustainable levels of fiscal deficit can be derived for individual state governments. These can be uniform or differentiated across states. In the way the state governments adopted their FRLs after the recommendations of FC12, they had generally gone for a uniform fiscal deficit target of 3% of GSDP. However, FC12 had given an option which would have permitted them even to go for differentiated targets. This option related to uniformity being adopted with respect to an interest payment to revenue receipts target. An individual state was free to define in its FRL, a target for interest payment to revenue receipts which would have given it a fiscal deficit target which may have been different from the uniform 3% of GSDP norm. In this paper, we consider as to how to derive these differentiated state-specific fiscal deficit to GSDP targets. One related question is that if the fiscal deficit targets of individual states are different, whether they would add to a combined target for all states consistent with the 3% target.

## 3.   Disaggregating States' Aggregate Imbalances for Individual States

Considering the aggregate fiscal deficit for all states, F as the sum of the fiscal deficits of individual states F1, F2, …. , Fn, we may write:

$$F = F1 + F2 + ... + Fn \qquad (1)$$

Dividing both sides by $\Sigma_{j=1}^{n} Yj = Y$ that is aggregate nominal GSDP, we can write:

$$\frac{F}{Y} = \frac{F1}{Y1}.\frac{Y1}{Y} + \frac{F2}{Y2}.\frac{Y2}{Y} + ... + \frac{Fn}{Yn}.\frac{Yn}{Y} \qquad (2)$$

F can also be rewritten as $\Sigma_{j=1}^{n} Fj = n.Fa$ (3) where *Fa* is the average fiscal deficit

Similarly, $\Sigma_{j=1}^{n} Yj = n.Ya$ (4) where *Ya* is the average nominal GSDP.

Thus, the fiscal deficit to aggregate GSDP ratio may be written as:

$$\frac{\Sigma_{j=1}^{n} Fj}{\Sigma_{j=1}^{n} Yj} = \frac{n.Fa}{n.Ya} = \frac{Fa}{Ya} \qquad (5)$$

Usually, for all states, this condition is written as the sum of fiscal deficit of all states divided by GDP. However, it may be noted that GDP differs from the sum of GSDPs often by a small factor. If this factor is indicated as γ, we can write:

$$GDP = \gamma.\Sigma_{j=1}^{n} Yj \qquad (6)$$

Thus, when the benchmark is defined as the aggregate fiscal deficit for all states with respect to GDP, we can write the condition (5) as

$$\frac{\Sigma_{j=1}^{n} Fj}{\Sigma_{j=1}^{n} Yj} = \frac{n.Fa}{n.\Sigma_{j=1}^{n} Yj} = \frac{Fa.\gamma}{GDP} \qquad (7)$$

Equivalently, the above condition can also be written in terms of interest payment to revenue receipts ratio. It is useful to compare the position of the *jth* state vis-à-vis. the position of the average state where the average state is supposed to comply with the all-state norm. Indicating the average state by subscript '*a*' and an individual state by subscript '*j*', we can write:

$$\frac{Ia}{Ra} = \frac{I1}{R1} \cdot \frac{R1}{Ra} + \frac{l2}{R2} \cdot \frac{R2}{Ra} + ... + \frac{In}{Rn} \cdot \frac{Rn}{Ra} \tag{8}$$

Where total interest payment $\Sigma_{j=1}^{n} Ij = n.Ia$ (9) and $\Sigma_{j=1}^{n} Rj = n.Ra$

Assuming that each state may achieve the same target in regard to IP/RR, we have,

$$\frac{I1}{R1} = \frac{I2}{R2} = ... = \frac{Ia}{Ra} \tag{11}$$

This implies that all states agree to incorporate a common target for interest payment to revenue receipts instead of a common target for the fiscal deficit to GSDP ratio. This provision in the respective FRLs will result into individual state-specific sustainable levels of fiscal deficit to GSDP that are different from each other although the corresponding interest payment to revenue receipts will be common. To establish this, consider the following.

$$\frac{I}{R} = \frac{i.B_{t-1}}{r.Y} = \frac{i}{r} \cdot \frac{b_{t-1}}{(1+g)} \tag{12}$$

Assuming that the sustainable level of debt-GSDP ratio, which is repeated year after year is $b^*$, equation (12) can be written as:

$$\frac{I}{R} = \frac{i}{r} \cdot \frac{b^*}{(1+g)} \tag{13}$$

This condition holds for the *jth* state as well as for the average state. This implies that

$$\frac{i_j}{r_j} \cdot \frac{b_j^*}{(1+g_j)} = \frac{i_a}{r_a} \cdot \frac{b_a^*}{(1+g_a)} \quad (14) \text{ as } \quad \frac{Ij}{Rj} = \frac{Ia}{Ra}$$

Rearranging the terms, we have

$$b_j^* = b_a^* \left[ \left( \frac{i_a}{i_j} \right) \left( \frac{r_j}{r_a} \right) \right] \left[ \frac{(1+g_j)}{(1+g_a)} \right] \tag{15}$$

$$b_j^* = b_a^* \left[ \frac{i_a.r_j.(1+g_j)}{i_j.r_a.(1+g_a)} \right] \tag{16}$$

For sustainable combinations of $b^*$ and $f$, we can write

$$b^* = f^* \left( \frac{1 + g^n}{g^n} \right)$$     (17)

Using the above relationship, we can thus write

$$f_j^* = f_a^* \left[ \frac{i_a . r_j . g_j}{i_j . r_a . g_a} \right] \quad (18) \ \ or \ \ \frac{f_j^*}{f_a^*} = \left[ \frac{i_a}{i_j} \right] . \left[ \frac{r_j}{r_a} \right] . \left[ \frac{g_j}{g_a} \right]$$

or

$$f_j^* = f^* . \left[ \frac{f_a^*}{f^*} \right] . \left[ \frac{i_a . r_j . g_j}{i_j . r_a . g_a} \right] (18a) \ \ or \ \ \frac{f_j^*}{f^*} = \left[ \frac{f_a^*}{f^*} \right] . \left[ \frac{i_a . r_j . g_j}{i_j . r_a . g_a} \right]$$     (18b)

Where $f$ is the all-state fiscal deficit to GDP norm of 3%.

This discussion identifies the conditions under which a given state $j$ can be given a higher or a lower benchmark relative to the average. These conditions depend on the relative position of the *jth* state vis-à-vis. the average state with respect to average interest rate, revenue receipts to GSDP ratio, and the relative growth rate. In particular, a state which has a lower average interest rate or higher revenue receipts to GSDP ratio or higher growth rate can be given a higher fiscal deficit target as compared to the average state[3].

It is possible that a state may do relatively better in one comparison and worse in another. It is therefore useful to construct a combined index depicting the capacity of a state to justify settling on a higher or lower norm for fiscal deficit. Thus, the factor within square brackets on the RHS of equation (18) can be written as $A_j$. A state that has a value of $A_j$ higher than 1 will be able to sustain a fiscal deficit to GSDP ratio which is higher than the average benchmark. This factor can be used to develop a summary index of the capacity of a state to differ from the corresponding average state (or all-state) benchmark.

## 4.  Trends in State-level Fiscal Deficit: Comparing State-specific Actuals with Sustainable Levels

### 4.1. Trends in State-level Fiscal Deficit

Table 1 gives fiscal deficit as measured by the annual increase in state government liabilities relative to GSDP. Figures are averages over FC periods. Looking at the average of the Medium and Large (ML) states, there is a sharp deterioration in the FC14 period when the fiscal deficit to GSDP ratio for this group of states

increased to exceed the FRBM norm. Prior to this, in the FC13 period, it was at its lowest at 2.2% of GSDP. In the FC12 period, it was at 2.7%, below the FRBM norm of 3%. It may be noted that the states were given the flexibility for additional borrowing up to 2% of GSDP for 2020-21, 1% of GSDP in 2021-22, and 0.5% of

**Table 1: Derived fiscal deficit as % of GSDP**

| States | FC12 | FC13 | FC14 | FC15 (3 yrs.) | FC15 minus FC12 |
|---|---|---|---|---|---|
| **ML States** | | | | | |
| OD | 0.016 | 0.004 | 0.042 | -0.007 | -0.023 |
| GJ | 0.031 | 0.023 | 0.019 | 0.016 | -0.015 |
| MH | 0.023 | 0.017 | 0.014 | 0.019 | -0.003 |
| CH | 0.010 | 0.015 | 0.037 | 0.021 | 0.010 |
| UP | 0.036 | 0.025 | 0.037 | 0.025 | -0.011 |
| JH | 0.033 | 0.019 | 0.040 | 0.025 | -0.008 |
| HR | 0.019 | 0.029 | 0.042 | 0.034 | 0.015 |
| KA | 0.022 | 0.020 | 0.027 | 0.035 | 0.013 |
| AP | 0.044 | 0.008 | 0.050 | 0.036 | -0.008 |
| WB | 0.052 | 0.035 | 0.035 | 0.038 | -0.014 |
| TS | 0.000 | 0.000 | 0.039 | 0.039 | 0.039 |
| AS | 0.020 | 0.012 | 0.026 | 0.042 | 0.023 |
| RJ | 0.031 | 0.022 | 0.051 | 0.042 | 0.011 |
| KL | 0.030 | 0.033 | 0.036 | 0.046 | 0.016 |
| TN | 0.022 | 0.020 | 0.038 | 0.046 | 0.024 |
| PB | 0.025 | 0.030 | 0.052 | 0.048 | 0.022 |
| MP | 0.026 | 0.022 | 0.029 | 0.049 | 0.023 |
| BH | 0.029 | 0.028 | 0.041 | 0.051 | 0.023 |
| **ML states avg.** | 0.027 | 0.022 | 0.033 | 0.033 | 0.005 |
| SH States | | | | | |
| UK | 0.035 | 0.022 | 0.031 | 0.017 | -0.018 |
| TR | 0.008 | 0.035 | 0.039 | 0.030 | 0.022 |
| GA | 0.040 | 0.030 | 0.026 | 0.034 | -0.007 |
| NL | 0.073 | 0.038 | 0.047 | 0.034 | -0.039 |
| MZ | 0.051 | 0.073 | 0.017 | 0.045 | -0.005 |
| HP | 0.035 | 0.034 | 0.035 | 0.046 | 0.012 |
| SK | 0.066 | 0.016 | 0.036 | 0.048 | -0.019 |
| ML | 0.027 | 0.028 | 0.037 | 0.058 | 0.031 |
| MN | 0.060 | 0.028 | 0.033 | 0.058 | -0.002 |
| AR | 0.069 | 0.043 | 0.042 | 0.064 | -0.005 |
| JK | 0.063 | 0.042 | 0.057 | —- | —- |
| **SH states avg.** | 0.043 | 0.032 | 0.038 | 0.035 | -0.008 |
| **All state avg.** | 0.028 | 0.022 | 0.033 | 0.033 | 0.005 |
| FRBM norm* | 0.030 | 0.030 | 0.030 | 0.0417 | — |

*Source (basic data):* RBI and MoSPI
*Notes:* (-) values indicate surplus and (+) values indicate deficit
* FRBM norm for FC15 is the extended norm based on the total borrowing permitted to states including additional borrowing permitted on account of COVID
Fiscal deficit is estimated as annual increment in total state government liabilities

GSDP for 2022-23. For the three years covered by FC15 period, the average permitted fiscal deficit for states would be 3% plus 1.17% of GSDP, that is, 4.17% of GSDP.

In the case of Small and Hilly (SH) states, the highest average fiscal deficit was for the FC12 period at 4.3%. It improved to 3.2% for the FC13 period and deteriorated again to reach 3.8% and 3.5% respectively for the FC14 and FC15 periods. Both for ML and SH group of states, there has been a departure from the FRBM norm of 3%. There is a large number of states in the ML group that are well above the FRBM norm. In the case of states that do not meet the FRBM norm, it is worthwhile examining as to the main reason for their not meeting the norm. With respect to FC15 figures, states that are meeting the norm of 4.17% include Odisha, Gujarat, Maharashtra, Chhattisgarh, Jharkhand, Uttar Pradesh, Haryana, Karnataka, Andhra Pradesh, Telangana and West Bengal among ML states and Uttarakhand, Tripura, Goa and Nagaland among SH states.

Considering the extent of deterioration in the FC15 period from FC12 period for individual states, states that show relatively larger deterioration include Tamil Nadu, Punjab, Madhya Pradesh, Bihar, Telangana and Assam among ML states and Meghalaya, Tripura and Himachal Pradesh among SH states.

### 4.2. Comparing Actual with State-specific Sustainable Fiscal Deficit Relative to GSDP: FC14 and FC15

The analytical framework presented in this paper provides a basis for assessing the fiscal vulnerability of a state in which each state's actual fiscal deficit to GSDP ratio can be compared with its state-specific sustainable level rather than comparing it with the uniform 3% level. Table 2 summarizes the findings. Columns (4) and (7) give the state-specific sustainable level of fiscal deficit to GSDP ratio relative to the actual fiscal deficit to GSDP ratio of individual states. If the value of this is less than 1, it implies that the concerned state has not been able to achieve an actual fiscal deficit to GSDP ratio which is equal to or lower than its corresponding sustainable level. In the case of FC14, ten states appear to be in this condition. As we move to the FC15 period, some of these states are able to achieve their individual sustainability condition namely, Jharkhand, Uttarakhand and Andhra Pradesh. However, in the FC15 period, 13 states have not been able to achieve the state-specific sustainability fiscal deficit to GSDP levels. States amongst these that are common between FC14 and FC15 periods are Rajasthan, Telangana, West Bengal, Haryana, Kerala, Tamil Nadu and Punjab.

**Table 2: Comparing State Specific Sustainable and Actual Fiscal Deficits for**
**FC14 and FC15 Periods**

| *States* | *FC14* | | | *FC15* | | |
|---|---|---|---|---|---|---|
| | *fj\** | *fj* | *fj\*/fj* | *fj\** | *fj* | *fj\*/fj* |
| *(1)* | *(2)* | *(3)* | *(4)* | *(5)* | *(6)* | *(7)* |
| MZ | 0.192 | 0.017 | 11.314 | 0.116 | 0.045 | 2.559 |
| AR | 0.146 | 0.042 | 3.435 | 0.153 | 0.064 | 2.408 |
| CH | 0.045 | 0.037 | 1.205 | 0.049 | 0.021 | 2.355 |
| TR | 0.074 | 0.039 | 1.914 | 0.062 | 0.030 | 2.059 |
| NL | 0.101 | 0.047 | 2.156 | 0.066 | 0.034 | 1.955 |
| UP | 0.057 | 0.037 | 1.552 | 0.045 | 0.025 | 1.804 |
| JH | 0.033 | 0.040 | 0.825 | 0.044 | 0.025 | 1.740 |
| UK | 0.020 | 0.031 | 0.647 | 0.029 | 0.017 | 1.704 |
| MN | 0.113 | 0.033 | 3.464 | 0.080 | 0.058 | 1.397 |
| GJ | 0.025 | 0.019 | 1.275 | 0.023 | 0.016 | 1.391 |
| AS | 0.054 | 0.026 | 2.089 | 0.056 | 0.042 | 1.318 |
| MH | 0.017 | 0.014 | 1.257 | 0.023 | 0.019 | 1.184 |
| AP | 0.043 | 0.050 | 0.858 | 0.038 | 0.036 | 1.056 |
| BH | 0.069 | 0.041 | 1.709 | 0.053 | 0.051 | 1.027 |
| ML | 0.064 | 0.037 | 1.745 | 0.057 | 0.058 | 0.983 |
| SK | 0.078 | 0.036 | 2.189 | 0.046 | 0.048 | 0.954 |
| KA | 0.035 | 0.027 | 1.314 | 0.033 | 0.035 | 0.925 |
| GA | 0.034 | 0.026 | 1.333 | 0.030 | 0.034 | 0.898 |
| RJ | 0.032 | 0.051 | 0.629 | 0.037 | 0.042 | 0.874 |
| MP | 0.061 | 0.029 | 2.098 | 0.041 | 0.049 | 0.827 |
| TS | 0.029 | 0.039 | 0.741 | 0.030 | 0.039 | 0.768 |
| HP | 0.037 | 0.035 | 1.071 | 0.032 | 0.046 | 0.698 |
| WB | 0.029 | 0.035 | 0.830 | 0.026 | 0.038 | 0.675 |
| HR | 0.021 | 0.042 | 0.507 | 0.020 | 0.034 | 0.586 |
| KL | 0.025 | 0.036 | 0.695 | 0.023 | 0.046 | 0.514 |
| TN | 0.021 | 0.038 | 0.554 | 0.024 | 0.046 | 0.509 |
| PB | 0.019 | 0.052 | 0.368 | 0.022 | 0.048 | 0.455 |
| OD | 0.060 | 0.042 | 1.448 | 0.085 | -0.007 | -12.549 |
| JK | 0.075 | 0.057 | 1.323 | — | — | |
| **Avg.** | **0.056** | **0.036** | **1.531** | **0.048** | **0.037** | **1.289** |

*Source:* RBI, MoSPI

In the next two sections, we analyse the reasons for lack of sustainability in the FC14 and FC15 periods separately for individual states.

## 5. States' Fiscal Deficit Profile for the FC14 Period

In this section, we compare actual and state-specific sustainable fiscal deficit levels relative to GSDP for the FC14 period. With the rule of inter-state equality of interest payment to revenue receipts ratio, the corresponding sustainable fiscal deficit levels for different states have been derived as shown in column (3) of

Table 3. Some of the SH states are shown to have relatively higher levels of state-specific sustainable fiscal deficit as percentage of their respective GSDPs primarily because of the high relativity of revenue receipts to GSDP ratio of the individual states in this group as compared to the average. It may also be noted that a significant portion of the revenue receipts of these SH states is due to the high fiscal transfers that they receive from the central government through FCs or otherwise.

**Table 3: State Specific Sustainable Fiscal Deficit Level and its Determinants for FC14: Ranked in order of Distance from Sustainable Level**

| Group | State | $fj^*$ | $fj^*/fa\ (F_j^*)$ | $ia/ij\ (I_j)$ | $rj/ra\ (R_j)$ | $gj/ga\ (G_j)$ | $fj$ | $fj^*$ minus $fj$ |
|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| A | MZ | 0.192 | 5.814 | 1.550 | 3.054 | 1.228 | 0.017 | 0.175 |
| B | AR | 0.146 | 4.406 | 1.038 | 4.180 | 1.015 | 0.042 | 0.103 |
| B | MN | 0.113 | 3.431 | 1.174 | 2.980 | 0.981 | 0.033 | 0.081 |
| B | NL | 0.101 | 3.058 | 1.056 | 3.070 | 0.944 | 0.047 | 0.054 |
| B | SK | 0.078 | 2.367 | 1.014 | 1.622 | 1.438 | 0.036 | 0.043 |
| B | TR | 0.074 | 2.234 | 0.998 | 1.850 | 1.209 | 0.039 | 0.035 |
| A | MP | 0.061 | 1.858 | 1.049 | 1.340 | 1.322 | 0.029 | 0.032 |
| B | BH | 0.069 | 2.097 | 1.132 | 1.771 | 1.046 | 0.041 | 0.029 |
| A | AS | 0.054 | 1.628 | 1.030 | 1.390 | 1.137 | 0.026 | 0.028 |
| B | ML | 0.064 | 1.933 | 1.144 | 2.145 | 0.788 | 0.037 | 0.027 |
| B | UP | 0.057 | 1.716 | 1.178 | 1.420 | 1.026 | 0.037 | 0.020 |
| B | OD | 0.060 | 1.819 | 1.229 | 1.392 | 1.063 | 0.042 | 0.019 |
| B | JK | 0.075 | 2.280 | 0.983 | 2.294 | 1.011 | 0.057 | 0.018 |
| A | GA | 0.034 | 1.031 | 1.036 | 1.126 | 0.884 | 0.026 | 0.009 |
| A | KA | 0.035 | 1.057 | 1.166 | 0.801 | 1.132 | 0.027 | 0.008 |
| B | CH | 0.045 | 1.350 | 1.095 | 1.416 | 0.871 | 0.037 | 0.008 |
| A | GJ | 0.025 | 0.744 | 0.985 | 0.677 | 1.116 | 0.019 | 0.005 |
| A | MH | 0.017 | 0.526 | 0.951 | 0.707 | 0.784 | 0.014 | 0.004 |
| B | HP | 0.037 | 1.126 | 0.947 | 1.419 | 0.838 | 0.035 | 0.002 |
| C | WB | 0.029 | 0.868 | 0.940 | 0.945 | 0.978 | 0.035 | -0.006 |
| C | JH | 0.033 | 1.003 | 1.120 | 1.314 | 0.681 | 0.040 | -0.007 |
| C | AP | 0.043 | 1.310 | 1.113 | 1.045 | 1.127 | 0.050 | -0.007 |
| C | TS | 0.029 | 0.871 | 0.812 | 0.851 | 1.260 | 0.039 | -0.010 |
| C | KL | 0.025 | 0.753 | 0.982 | 0.846 | 0.906 | 0.036 | -0.011 |
| C | UK | 0.020 | 0.616 | 0.887 | 0.904 | 0.768 | 0.031 | -0.011 |
| C | TN | 0.021 | 0.633 | 0.859 | 0.770 | 0.956 | 0.038 | -0.017 |
| C | RJ | 0.032 | 0.977 | 0.961 | 1.063 | 0.956 | 0.051 | -0.019 |
| C | HR | 0.021 | 0.640 | 0.908 | 0.680 | 1.036 | 0.042 | -0.021 |
| C | PB | 0.019 | 0.583 | 0.895 | 0.805 | 0.809 | 0.052 | -0.033 |
| All states avg. | | 0.033 | | | | | | |
| **FRBM Norm (f*)** | | **0.030** | | | | | | |

*Source* (basic data): RBI and MoSPI

As per Table 3, if we consider actual fiscal deficit to GSDP ratio averaged over the FC14 period (2015-16 to 2019-20) and compare these with both the 3% norm and the derived sustainable state-specific fiscal deficit to GSDP norm, states can be divided into three groups:

**Group A (fj<0.03 and fj<fj*):** states that satisfy both the FRBM norm of 3% and their state specific sustainability norm (fj*). These states are Mizoram, Madhya Pradesh, Assam, Karnataka, Goa, Gujarat, and Maharashtra.

**Group B (fj*>fj>0.03):** states that satisfy the state specific sustainability norm but do not satisfy the FRBM norm of 3%. These states are Arunachal Pradesh, Manipur, Nagaland, Sikkim, Tripura, Bihar, Meghalaya, Uttar Pradesh, Odisha, Jammu and Kashmir, Chhattisgarh, and Himachal Pradesh.

**Group C (fj>fj* and fj>0.03):** states that do not satisfy either the state specific sustainability norm or the overall FRBM norm of 3%. These states include West Bengal, Andhra Pradesh, Jharkhand, Telangana, Uttarakhand, Kerala, Tamil Nadu, Rajasthan, Haryana and Punjab.

In terms of sustainability analysis, Group C states are the farthest from sustainability requirements. We can analyse the role of the three relativities in terms of (1) revenue receipts to GSDP ratio, (2) effective interest rate, and (3) nominal GSDP growth rate as compared to the all-state average in explaining their relative fiscal weakness. For the Group C states, the following observations can be made.

**Punjab:** Punjab is the most vulnerable state. In its case, all the three relativity parameters have a value less than 1. Its weakness is most pronounced in terms of relative revenue receipts to GSDP ratio at 0.805, followed by growth rate relativity at 0.809. Even in terms of the effective interest rate, its cost of borrowing is higher than average. The relativity parameter is 0.895.

**Haryana:** For Haryana, relative growth is not a problem with the relativity parameter being higher than 1. Its weakest parameter is the revenue receipts to GSDP ratio which is only 0.68. Its effective interest rate poses only a marginal problem with a value close to, although less than 1.

**Rajasthan:** In this case, revenue receipts to GSDP ratio is not a problem. The weakness arises due to higher than average effective interest rate and lower than average nominal GSDP growth.

**Tamil Nadu:** In the case of Tamil Nadu, all three relativity parameters are less than 1. The most significant weakness emanates from low revenue receipts to GSDP ratio.

**Kerala:** For Kerala, all three relativity parameters are less than 1. The most significant weakness emanates from low revenue receipts to GSDP ratio and the lower nominal GSDP growth.

**Uttarakhand:** In the case of Uttarakhand, all three relativity parameters are less than 1. The most significant weakness emanates from low nominal GSDP growth.

**Telangana:** In the case of Telangana, nominal GSDP growth does not appear to be a problem. The main weaknesses emanate from relatively higher effective interest rate and relatively lower revenue receipts to GSDP ratio.

**Jharkhand:** Jharkhand does not have a problem with respect to relative effective interest rate and relative revenue receipts to GSDP ratio. Its weakness emanates from relatively low nominal GSDP growth.

**Andhra Pradesh:** In the case of Andhra Pradesh, the issue is that their actual fiscal deficit is higher than their state specific sustainability norm, even as all the relativity parameters are higher than 1.

**West Bengal:** For West Bengal, all three relativity parameters are less than 1. Comparatively, amongst the three relativities, the most significant weakness emanates from effective interest rate since its relativity has the lowest value.

In order to consider the relative position of different states with respect to each of the three relativities, we have summarized their situation in Charts 1, 2 and 3. States that are depicted below the benchmark line drawn from the relativity of 1 shows vulnerability from the viewpoint of sustainability. In terms of interest rate relativity, 13 states have a value of less than 1. The overall range is from 0.812 to 1.550. Some of the states below the benchmark line of 1 include Telangana, Tamil Nadu, Uttarakhand, Punjab, Haryana and West Bengal.
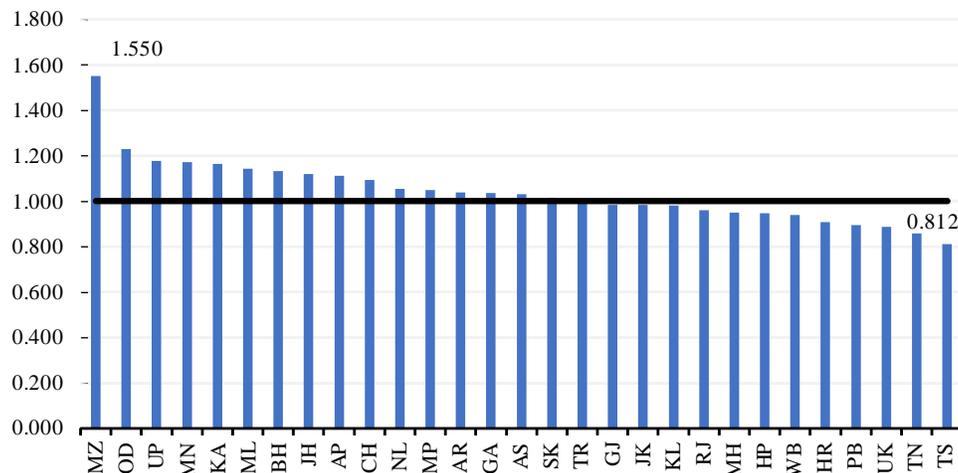


**Chart 1: State-wise interest rate relativities during FC14 period**

*Source:* RBI

In terms of the relativity of revenue receipts to GSDP ratio, 10 states have a value of less than 1. The overall range is from 0.677 to 4.180. Some of the relatively more vulnerable states include Gujarat, Haryana, Maharashtra, Tamil Nadu, Karnataka and Punjab.
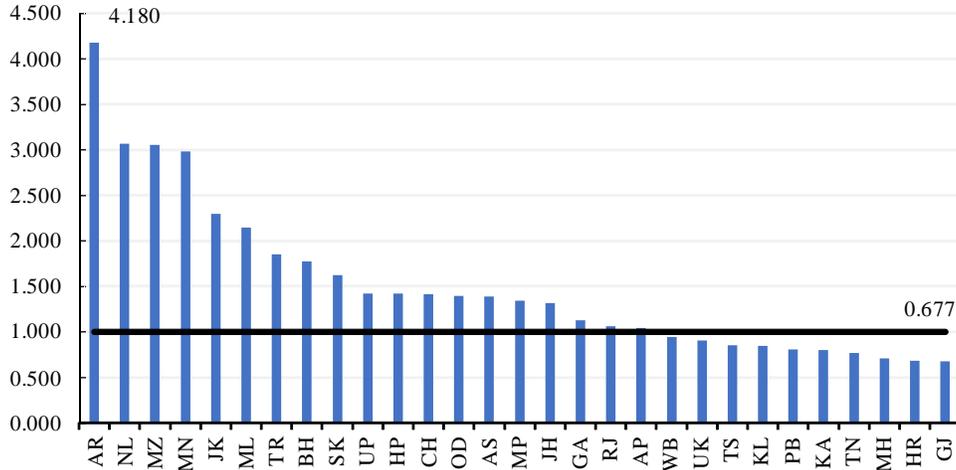


**Chart 2: revenue receipts to GSDP ratio relativities (FC14 period)**

*Source:* RBI

In terms of relativity of nominal GSDP growth, 14 states have a value of less than 1. The overall range is from 0.681 to 1.438. The relatively low growth states include Jharkhand, Uttarakhand, Maharashtra, Meghalaya, Punjab and Himachal Pradesh.
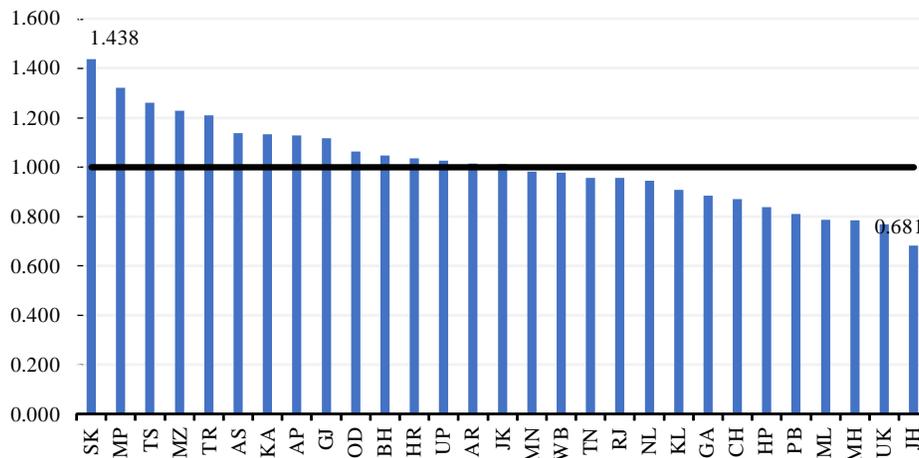


**Chart 3: Nominal GSDP growth relativities (FC14 period)**

*Source:* RBI

Comparing all the three relativities together, the maximum variation amongst states appears to be in the relativity of the revenue receipts to GSDP ratio and the minimum is in the case of effective interest rate.

## 6.   States' Fiscal Deficit Profile for the FC15 Period

A similar analysis has also been carried out for the FC15 period. With respect to the FC15 period, we have data for the relevant variables only for three years namely, 2020-21, 2021-22 and 2022-23. Of these, 2020-21 was the COVID year where growth rates in most states became negative. This introduces many negative numbers and distorts relativity for the growth term in the analysis. Instead of the year-wise nominal growth numbers, we are using the compound annual growth rate (CAGR) over the period 2019-20 to 2022-23. Also, numbers for all fiscal variables for 2022-23 are based on revised estimates. It may be noted that the central government had allowed the state governments to increase their fiscal deficits in order to stimulate the economy particularly with a view to increasing capital expenditures. As such, instead of the FRBM norm of 3% of fiscal deficit to GSDP ratio, we can consider an extended norm of 4.17% as explained in Section 4.1.

As before we estimate state specific sustainable levels of fiscal deficit to GSDP ratios using the three relativity parameters and compare these with the FRBM norm.

**Table 4: State Specific Sustainable Fiscal Deficit Level and its Determinants for FC15 period**

| Group | State | $fj^*$ | $fj^*/fa\,(F_j^*)$ | $ia/ij\,(I_j)$ | $rj/ra\,(R_j)$ | $gj/ga\,(G_j)$ | $fj$ | $fj^*$ minus $fj$ |
|-------|-------|--------|--------|--------|--------|--------|------|------------|
| A | OD | 0.085 | 2.590 | 1.475 | 1.531 | 1.148 | -0.007 | 0.091 |
| B | AR | 0.153 | 4.688 | 1.204 | 4.166 | 0.935 | 0.064 | 0.090 |
| B | MZ | 0.116 | 3.548 | 1.487 | 2.598 | 0.918 | 0.045 | 0.071 |
| B | NL | 0.066 | 2.020 | 1.117 | 2.999 | 0.603 | 0.034 | 0.032 |
| A | TR | 0.062 | 1.884 | 1.038 | 1.831 | 0.992 | 0.030 | 0.032 |
| A | CH | 0.049 | 1.498 | 1.065 | 1.396 | 1.008 | 0.021 | 0.028 |
| B | MN | 0.080 | 2.463 | 1.152 | 2.953 | 0.724 | 0.058 | 0.023 |
| A | UP | 0.045 | 1.381 | 0.990 | 1.458 | 0.957 | 0.025 | 0.020 |
| A | JH | 0.044 | 1.334 | 1.172 | 1.430 | 0.796 | 0.025 | 0.019 |
| B | AS | 0.056 | 1.705 | 0.983 | 1.445 | 1.200 | 0.042 | 0.013 |
| A | UK | 0.029 | 0.901 | 0.982 | 1.148 | 0.799 | 0.017 | 0.012 |
| A | GJ | 0.023 | 0.691 | 0.997 | 0.635 | 1.091 | 0.016 | 0.006 |
| A | MH | 0.023 | 0.695 | 0.921 | 0.791 | 0.954 | 0.019 | 0.004 |
| B | AP | 0.038 | 1.155 | 1.071 | 0.926 | 1.165 | 0.036 | 0.002 |
| B | BH | 0.053 | 1.617 | 1.103 | 1.708 | 0.858 | 0.051 | 0.001 |
| C | ML | 0.057 | 1.732 | 1.063 | 2.385 | 0.683 | 0.058 | -0.001 |
| C | SK | 0.046 | 1.395 | 1.048 | 1.280 | 1.040 | 0.048 | -0.002 |
| C | KA | 0.033 | 1.000 | 1.142 | 0.757 | 1.157 | 0.035 | -0.003 |

| Group | State | fj* | fj*/fa ($F_j^*$) | ia/ij ($I_j$) | rj/ra ($R_j$) | gj/ga ($G_j$) | fj | fj* minus fj |
|---|---|---|---|---|---|---|---|---|
| C | GA | 0.030 | 0.922 | 1.050 | 1.186 | 0.740 | 0.034 | -0.003 |
| C | RJ | 0.037 | 1.135 | 1.010 | 1.064 | 1.056 | 0.042 | -0.005 |
| C | MP | 0.041 | 1.245 | 1.033 | 1.209 | 0.997 | 0.049 | -0.009 |
| C | TS | 0.030 | 0.907 | 1.019 | 0.821 | 1.084 | 0.039 | -0.009 |
| C | WB | 0.026 | 0.792 | 0.936 | 0.963 | 0.879 | 0.038 | -0.012 |
| C | HP | 0.032 | 0.991 | 1.019 | 1.577 | 0.617 | 0.046 | -0.014 |
| C | HR | 0.020 | 0.608 | 0.913 | 0.687 | 0.970 | 0.034 | -0.014 |
| C | KL | 0.023 | 0.717 | 0.935 | 0.906 | 0.846 | 0.046 | -0.022 |
| C | TN | 0.024 | 0.719 | 0.937 | 0.744 | 1.031 | 0.046 | -0.023 |
| C | PB | 0.022 | 0.663 | 0.933 | 0.923 | 0.770 | 0.048 | -0.026 |
| All states avg. | | 0.033 | | | | | | |
| FRBM Norm (f*) | | 0.0417 | | | | | | |

*Source:* RBI, MoSPI

The all-state average for sustainable level of fiscal deficit relative to the aggregate of GSDPs is effectively the same for the two Commission periods at 3.3%. However, there are noticeable changes in the profile of state specific sustainable fiscal deficit to GSDP levels. The number of states where actual fiscal deficit-GSDP ratio is higher than their respective sustainable fiscal deficit-GSDP ratio as also the original FRBM target of 3% has increased.

We now analyse the case of fiscally weak states from the viewpoint of fiscal sustainability. As before, we first place states into three groups for the FC15 period.

**Group A (fj<0.03 and fj<fj*):** These include Odisha, Tripura, Chhattisgarh, Uttar Pradesh, Jharkhand, Uttarakhand, Gujarat and Maharashtra.

**Group B (fj*>fj>0.03):** These include Arunachal Pradesh, Mizoram, Nagaland, Manipur, Assam, Andhra Pradesh and Bihar.

**Group C (fj>fj* and fj>0.03):** These include Meghalaya, Sikkim, Karnataka, Goa, Rajasthan, Madhya Pradesh, Telangana, West Bengal, Himachal Pradesh, Haryana, Kerala, Tamil Nadu and Punjab.

We now consider the case of Group C states from the viewpoint of fiscal sustainability, one by one, highlighting the role of the three relativities.

**Punjab:** The state has a low state specific fiscal sustainability level of only 2.2% of GSDP. Its actual fiscal deficit is much higher at 4.8% of GSDP. All the three relativity parameters for Punjab are lower than 1. The lowest relativity pertains to its relatively low GSDP growth rate.

**Tamil Nadu:** Tamil Nadu's state specific fiscal sustainability level is 2.4% of GSDP. Its actual fiscal deficit is 4.6% of GSDP. In this case, the weakest parameter is the relative revenue receipts to GSDP ratio.

**Kerala:** Kerala has a state specific fiscal sustainability level of 2.3% of GSDP and an actual fiscal deficit to GSDP of 4.6%. Its weakest parameter is relative nominal GSDP growth.

**Haryana:** Haryana has a state specific fiscal sustainability level of only 2.0% of GSDP, the lowest amongst all states. Its actual fiscal deficit to GSDP ratio is 3.4%. Its weakest relativity pertains to revenue receipts to GSDP ratio.

**Himachal Pradesh:** Himachal Pradesh has a state specific fiscal sustainability level of 3.2% of GSDP. Its actual fiscal deficit to GSDP is 4.6%. Its only weakness emanates from the growth relativity which is lower than 1.

**West Bengal:** West Bengal has a state specific fiscal sustainability level of 2.6% of GSDP. Its actual fiscal deficit to GSDP ratio is 3.8%. All three relativity parameters for West Bengal are lower than 1, with the most significant weakness emanating from its growth relativity.

**Telangana:** Telangana has a state specific fiscal sustainability level of 3.0% of GSDP. Its actual fiscal deficit to GSDP ratio is 3.9%. Its only weak relativity pertains to revenue receipts to GSDP ratio.

**Madhya Pradesh:** Madhya Pradesh has a state specific fiscal sustainability level of 4.1% of GSDP. Its actual fiscal deficit to GSDP ratio is 4.9%. In the case of Madhya Pradesh, the issue is that their actual fiscal deficit is higher than their state specific sustainability norm, even as all the relativity parameters are nearly equal to or higher than 1.

**Rajasthan:** Rajasthan has a state specific fiscal sustainability level of 3.7% of GSDP. Its actual fiscal deficit to GSDP ratio is 4.2%. All three relativities for Rajasthan are higher than 1.

**Goa:** Goa has a state specific fiscal sustainability level of 3.0% of GSDP. Its actual fiscal deficit to GSDP ratio is 3.4%. Its only weak parameter pertains to relatively lower nominal GSDP growth.

**Karnataka:** Karnataka has a state specific fiscal sustainability level of 3.3% of GSDP. Its actual fiscal deficit to GSDP ratio is 3.5%. Its only weak relativity parameter pertains to lower than average revenue receipts to GSDP ratio.

**Sikkim:** Sikkim has a state specific fiscal sustainability level of 4.6% of GSDP. Its actual fiscal deficit to GSDP ratio is 4.8%. All three relativities for Sikkim are higher than 1.

**Meghalaya:** Meghalaya has a state specific fiscal sustainability level of 5.7% of GSDP. Its actual fiscal deficit to GSDP ratio is 5.8%. Its only weak parameter pertains to relatively lower nominal GSDP growth.

Charts 4, 5 and 6 depict the state-wise relativities relating to interest rate, revenue receipts to GSDP, and nominal GSDP growth. In terms of interest rate

relativity, 10 states have a value of less than 1. The overall range is from 0.913 to 1.487. The vulnerable states include Haryana, Maharashtra, Punjab, Kerala, West Bengal and Tamil Nadu.
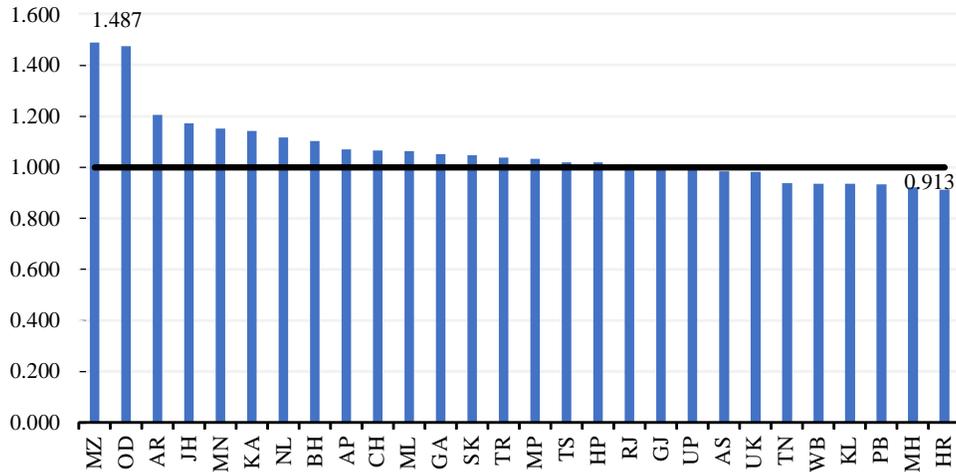


**Chart 4: Interest Rate Relativities (FC15 period)**

*Source:*   RBI, MoSPI

In terms of the relativity of revenue receipts to GSDP, 10 states have a value of less than 1 and the overall range is from 0.635 to 4.166. In this case, the relatively weaker states include Gujarat, Haryana, Tamil Nadu, Karnataka, Maharashtra and Telangana.
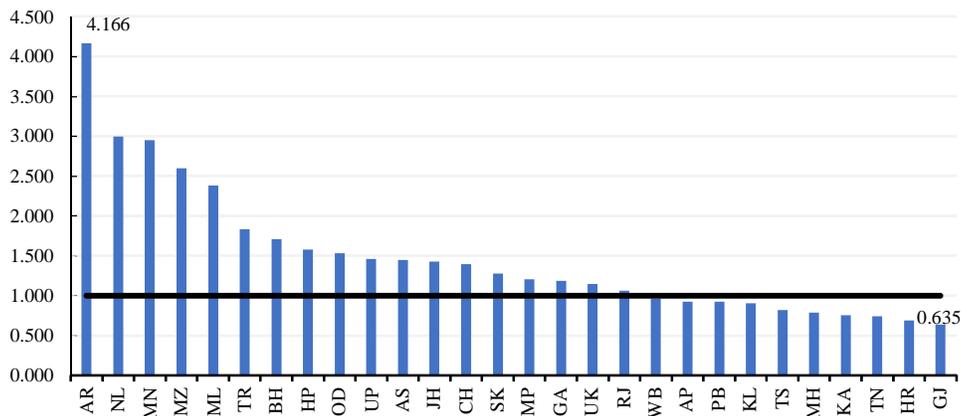


**Chart 5: Revenue Receipts to GSDP Ratio Relativities (FC15 period)**

*Source:*   RBI, MoSPI
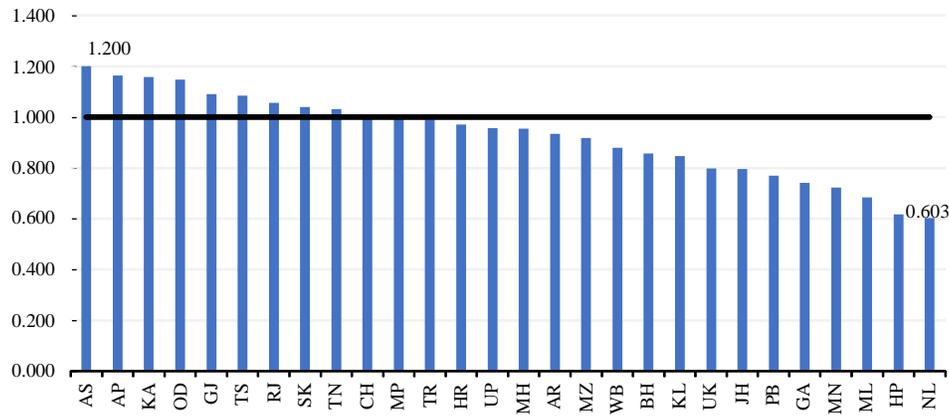
**Chart 6: Nominal GSDP Growth Relativities (FC15 period)**

*Source:*   MoSPI

In terms of relativity of nominal GSDP growth, 18 states have a value of less than 1. The overall range is from 0.603 to 1.200. States with relatively low nominal GSDP growth include Nagaland, Himachal Pradesh, Meghalaya, Manipur, Goa and Punjab.

Comparing all the three relativities together, the maximum variation amongst states appears to be in the relativity of the revenue receipts to GSDP ratio and the minimum is in the case of effective interest rate. This is similar to the trend seen for the FC14 period.

## 7.   Conclusions

Sustainability discussions in the context of central and state fiscal imbalances have so far been limited to determining fiscal deficit and government debt relative to GDP at the aggregate level. The FC12 had specified these levels for an underlying nominal GDP growth of 12%. In their assessment, the sustainable and target fiscal deficit to GDP ratio was estimated at 3% both for the central and the aggregate of states. The corresponding debt-GDP target was fixed at 28% each. In the 2018 amendment of Centre's FRBMA, the underlying nominal GDP growth was 11.1%, the fiscal deficit to GDP target was kept at 3% each for Centre and the aggregate of states, and the debt-GDP target was determined at 40% for the Centre and 20% for the aggregate of states by implication. After the release of the FC12 report, there was a debate as to why individual states should not be given state specific fiscal deficit to GSDP norms since their relevant parameters regarding interest rates, revenue receipts and nominal growth are different. However, no analytical framework has so far been developed to address

this question. We have attempted, in this paper, to provide such a framework in which state specific sustainable levels of fiscal deficit relative to GSDP are determined. Given the all-state fiscal deficit to GDP level, individual state sustainable fiscal deficit to GSDP level has been derived in this paper as a function of three relativities namely, effective interest rate, relative revenue receipts to GSDP ratio and nominal GSDP growth. It is argued that (1) the lower is the effective interest rate for a state relative to the all state average, (2) the higher is the revenue receipts to GSDP ratio of a state relative to the all-state average and (3) the higher is the nominal GSDP growth of a state over a period relative to the all-state average, the higher is the capacity of that state to sustain a higher fiscal deficit to GSDP ratio as compared to the all-state average. Using these three parameters, we have derived state specific sustainable fiscal deficit to GSDP levels for the FC14 and FC15 periods. We observe that states can be divided into three distinct groups from a viewpoint of fiscal sustainability. In Group A, we include states that satisfy both the FRBM norm of 3% and their state specific sustainability norm. These are fiscally strong states. In Group B, we include states that satisfy the state specific sustainability norm but do not satisfy the FRBM norm of 3%. In Group C, we include states that do not satisfy either the state specific sustainability norm or the FRBM norm of 3%. Accordingly, we identify the fiscally weak states from the viewpoint of sustainability, that is, the Group C states for the FC14 period as West Bengal, Andhra Pradesh, Jharkhand, Telangana, Uttarakhand, Kerala, Tamil Nadu, Rajasthan, Haryana and Punjab. Similarly, Group C states for the FC15 period are Meghalaya, Sikkim, Karnataka, Goa, Rajasthan, Madhya Pradesh, Telangana, West Bengal, Himachal Pradesh, Haryana, Kerala, Tamil Nadu and Punjab. As compared to the FC14 list, by the FC15 period, states such as Meghalaya, Karnataka, and Madhya Pradesh have also joined the list of fiscally vulnerable states from the viewpoint of fiscal sustainability.

## *Notes*

1.  The FC12 had indicated a rule by which state specific sustainable levels of fiscal deficit and debt relative to GSDP may be derived in relation to the all-state corresponding norms. However, this theme was not developed further.

2.  The interest payment to revenue ratio $\left( IP_t \middle/ RR_t \right)$ can be dervied as below.

$IP_t = i.\ B_{t-1} = i.\ b_{t-1}.\ Y_{t-1}$
As debt is stabilized $b_t = b_{t-1} = b^*$
$IP_t = i.b^*.\ Y_{t-1}$

$$IP_t = i.\left[p.^{(1+g)}\!\!\Big/\!_{(g-i)}\right].Y_{t-1} \ or \ \left[i.p\big/_{(g-i)}\right].Y_t \quad (A)$$

[since $Y_{t-1} = \left[Y_t\big/_{(1+g)}\right]$]

The revenue receipts can be written as

$RR_t = r.Y_t$

Thus $ipr^* = IP_t\big/_{RR_t}$  (B)

Using (A) and (B), we can write:

$$ipr^* = IP_t\big/_{RR_t} = i.p\big/_{rr.(g-i)} \ or \ p\big/_{(g-i)} = ipr^*.rr\big/_i$$

We can write $B_t = B_{t-1}.(1+g)$

Then fiscal deficit can be written as

$F_t = B_t - B_{t-1} = B_{t-1}.(1+g) - B_{t-1}$

Thus,

$F_t = B_{t-1}.g$

Or $f_t = {}^{b_{t-1}.g}\!\big/_{(1+g)}$

Further, since with stabilization, $b_t = b_{t-1} = b^*$

$$f^* = {}^{b_t.g}\!\big/_{(1+g)} = {}^{b^*.g}\!\big/_{(1+g)} \qquad (C)$$

Using the relationship $b^* = {}^{p^*.(1+g)}\!\big/_{(g-i)}$, we can then write:

$$f^* = {}^{p^*.g}\!\big/_{(g-i)}$$

Replacing $p^* = f^* - ip^* = (f^* - ipr^*.rr)$, we can then write:

$$f^* = {}^{(f^*-ipr^*.rr).g}\!\big/_{(g-i)}$$

Thus, $f^* = {}^{ipr^*.rr.g}\!\big/_i$

Using equation (C), we can write:

$b^* = ipr^*.rr.(1+g)/i$

3. See Chapter 4 of FC12 report (2004)

## *References*

Government of India, Report of the Fifteenth Finance Commission (2021). Available from *URL: https://fincomindia.nic.in/ShowContent.aspx?uid1=3&uid2=0&uid3=0&uid4 =0&uid5=0&uid6=0&uid7=0*

Government of India, Report of the Fourteenth Finance Commission (2021). Available from *URL: https://fincomindia.nic.in/commission-reports-fourteenth*

Government of India, Report of the Twelfth Finance Commission. Available from URL: *https:// fincomindia.nic.in/commission-reports-twelfth*

Ministry of Finance, Government of India. Fiscal Responsibility and Budget Management Act, 2003 (Act No. 39 of 003). *https://dea.gov.in/sites/default/files/FRBM%20Act%202003% 20and%20FRBM%20Rules%202004.pdf.*

Rangarajan, C. and D. K. Srivastava (2005). Fiscal Deficits and Government Debt. *Economic and Political Weekly,* Vol. 40, Issue No. 27, 02 July, 2005.

FRBM Review Committee Report (2017). Responsible Growth–A Debt and Fiscal Framework for 21st Century India. In: FRBM Review Committee.

Srivastava, D. K. (2021). Fiscal consolidation and FRBM in the COVID-19 context: Fifteenth finance commission and beyond. *Economic and Political Weekly,* 48-55.

Srivastava, D.K. (2022). The Future of fiscal consolidation in India. *Economic and Political Weekly,* Issue No. 13, Volume 57.

Srivastava D.K. and Rangarajan C. (2004). Dynamics of Debt Accumulation in India: Impact of Primary Deficit, Growth and Interest Rate, Economic and Political Weekly, Vol.38, No.46, November 15, 2003; reproduced in Raj Kapila and Uma Kapila (eds.) *Economic Developments in India,* Vol. 73.

Srivastava, D.K., Bharadwaj, M., Kapur, T., & Trehan, R. (2021). Covid's Economic Impact: Should India Recast its Fiscal and Monetary Policy Frameworks?: *Journal of International Economics and Finance.* 1(1), 63-81.