Macroeconomic Policy Simulations for the 15th FC Period

Submitted to 15th Finance Commission of India

by

NIPFP Team*

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Abstract:

In this paper, an attempt has been made to look at four empirical issues that may be of interest to the 15th Finance Commission: what has been the impact of higher devolution of Central taxes to the States on overall economic growth, fiscal balance and other indicators? What could be the impact of changes in external conditions on the macroeconomic prospects? What mix of expenditure policies would allow the Indian economy to achieve higher growth and fiscal consolidation? And finally, can India achieve the medium term target of US$ 5 Trillion by 2024-25? To address these issues, this paper uses a modified NIPFP-macroeconomic policy simulation model for the Indian economy.

With regard to lower devolution share to the States, vis-à-vis the baseline scenario, causes economic growth to be marginally higher by 0.4% for the 14th Finance Commission period on an average and 0.3% over the 15th Finance Commission projection period. It is also found that an expenditure switching strategy in favour of capital expenditure (by more than 1% of GDP) with the centre assuming the greater share of the increase, and reduction in revenue deficit to GDP makes it possible to combine high growth (8%) with fiscal consolidation that brings down the liability to GDP ratio 60 per cent. With greater public investments and its complementarity with private investment, the target of $5 trillion economy by 2024-5 is achievable. The analysis also suggests that distribution of debt targets between Centre and States in the new FRBM roadmap may need to be revised.

I. Introduction

The 15th Finance Commission of India is mandated to recommend the vertical and horizontal distribution of central taxes between the centre and the states, as well as across individual states. The Finance Commission is also mandated to recommend a fiscal consolidation roadmap for the Central Government and State Governments so as to adhere to appropriate levels of government debt and deficit levels, while fostering higher inclusive growth in the country. At the present juncture, the Indian growth story is marked by pronounced slowdown. As per the official estimates, the Indian economy grew by 6.8 percent in 2018-19, which is lower than the average of the last five years. The growth numbers for the first quarter of 2019-20 are even more modest. Slowdown in domestic demand, along with low growth in export demand seems to have contributed to lower growth in real incomes. For macro-stability, the other worrying feature is the precarious fiscal situation, more so at the central level.[1]

In this report, an attempt is made to empirically examine a few policy questions that are important to the present macro-context and are closely related to the 15th Finance Commission's Terms of Reference. We ask: what has been the impact of higher devolution of Central taxes to the States on overall economic growth, fiscal balance and other indicators? How would changes in external conditions impact the macroeconomic prospects of the economy? What mix of expenditure policies would allow the Indian economy to achieve higher growth and fiscal consolidation? And, can India achieve the medium term target of US$ 5 Trillion by 2024-25? We attempt to answer these questions by estimating a policy simulation model.

The paper begins with a brief review of the Indian experience of fiscal consolidation over the years, the gains that have been made and the present fiscal framework for the Centre and the States. The major changes brought in by the 14th Finance Commission recommendations on centre-state finances are also flagged (section 2). For policy simulations, the core NIPFP macro-simulation model (Mundle et al, 2012) is extended to capture the centre-state fiscal relations (Section 3). The next section discusses the infirmities in data on centre-state finances that emerged during estimation of the macro-model. Last section presents the simulation results and the policy choices that emerge.

II. Fiscal Rules and Centre-State Finances

Fiscal rules were formally introduced in India with Fiscal Responsibility and Budget Management Act, 2003 (FRBM). Elimination of revenue deficit was among the foremost targets, along with reduction in fiscal deficit and a check on Central Government borrowing from the RBI. Aimed at inter-generational equity in fiscal management and debt management consistent with fiscal sustainability, limits were placed on revenue deficit and fiscal deficit targets. Similarly for the states, 12th Finance Commission recommended that each state enact fiscal responsibility legislation which should, at the minimum, provide for elimination of revenue deficit by 2008-09 and reduction of fiscal deficit to 3 per cent of GSDP.

The post-FRBM period saw the sharpest ever sub-national fiscal consolidation in India (Roy and Kotia, 2018). Both the fiscal and the revenue deficit of the states fell dramatically in the

[1] See N R Bhanumurthy: "Fiscal arithmetic remains a major concern", Interview in The Hindu Business line, 25th December, 2018 and Rathin Roy: "A Silent Fiscal Crisis?", July 6th, 2019, Business Standard

2000s, and by 2007–08 almost all states had achieved their respective FRBM limits. The median fiscal deficit decreased from 5.7% in 2000-01 to a low of 1.9 per cent in 2007-08, considerably overshooting the 3% fiscal deficit targets laid out in their FRBM. This improvement in state finances was aided by macro-fiscal factors that were concurrent to the implementation of FRBM.[2]

The performance of the centre and states *vis-à-vis* the fiscal rules are summarized in Appendix Table A1 and Table A2.

The process of fiscal consolidation, was, however, reversed after the global financial crisis. The central government deficit was at a historical high due to slowdown in activity and the resulting low tax revenue. The global financial crisis, slowdown in domestic growth and need for countercyclical fiscal stimulus caused a temporary pause in fiscal consolidation. Subsequently, 13th Finance Commission proposed revised targets. The 13th Finance Commission took elimination of the revenue deficit as the long term and permanent target for the government. The fiscal consolidation path for the Central Government entailed a decline in the revenue deficit from 4.8 per cent of GDP as projected for the fiscal year 2009-10, to a revenue surplus of 0.5 per cent of GDP by 2014-15. This allowed for acceleration in capital expenditure of the centre to 3.5 per cent of GDP (even more if there are disinvestment receipts). For the states, the target for fiscal deficit was 2.4 per cent of GDP by 2014-15, with surplus on the revenue account.

Kelkar Committee (2012) in its fiscal consolidation roadmap of the Central Government recommended that fiscal deficit be reduced to 4 per cent of GDP, effective revenue deficit to be eliminated and revenue deficit to be reduced to 2 per cent of GDP by 2014-15. The committee endorsed elimination of effective revenue deficit rather than revenue deficit as the target. The effective revenue deficit reflects the structural component of imbalance in the revenue account. Overall there was a shift in emphasis towards capital expenditure within the fiscal consolidation framework. This had empirical support in research studies. Bose and Bhanumurthy (2013) based on the previous NIPFP macroeconomic model had estimated the value of the capital expenditure multiplier to be greater than 2. Thus any increase in capital expenditure would cause the nominal incomes to more than double. Revenue expenditure multiplier on the other hand was close to 1.

The 14th Finance Commission clearly suggested a larger correction for the centre than the states as a whole. As per the Commission, the asymmetric correction path is primarily to ensure fiscal discipline for the union government, given its large deficit and debt above the FRBM target. In terms of the roadmap, the debt stock was to decline from 43.6 per cent for 2015-16 to 36.3 per cent of GDP in 2019-20 and revenue deficit from 2.56 per cent to 0.93 per cent of GDP for the Union government. For the States, under the fiscal roadmap drawn, the aggregate fiscal deficit of the states was to change from 2.76 per cent of GDP in 2015-16 to 2.74 per cent of GDP in 2019-20. State's debt-GDP ratio would increase marginally from 21.9 per cent in 2015-16 to 22.4 per cent in 2019-20. The consolidated fiscal deficit would decline from 6.4 per cent in 2015-16 to 5.7 per cent in 2019-20 and the total consolidated outstanding debt would decline from 64.5 per cent to 58.2 per cent in 2019-20 (see appendix Table A3).[3]

[2]See Roy and Kotia (2016)

[3]The deficit path in the cases of states, as recommended by the FFC, provided flexibility of up to 0.5% of gross state domestic product (GSDP) under the following conditions: (i) zero revenue deficit, (ii) fiscal deficit not exceeding 3% of GSDP, (iii) interest payment to revenue receipt ratio not exceeding 10%, and (iv) debt-to GSDP ratio not exceeding 25%.

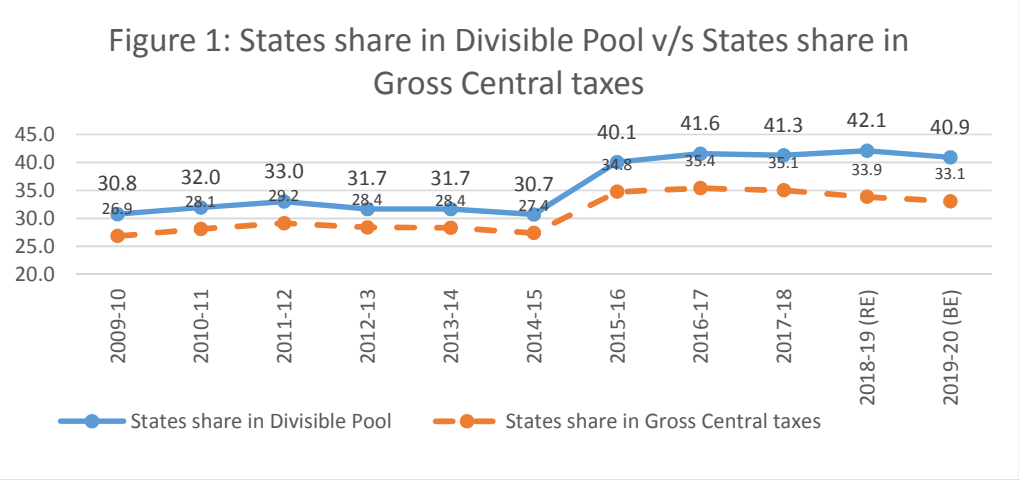
From Deficit to Debt as a Target

A new targeting framework was adopted in 2018-19 which rests on the twin pillars of reducing debt and fiscal deficit. FRBM review committee (Chairman: Mr N.K. Singh) set up in 2016 proposed a draft Debt Management and Fiscal Responsibility[4] bill, 2017 to replace the Fiscal Responsibility and budget management act, 2003. The Committee recommended a move to public debt to GDP ratio as a medium-term anchor for fiscal policy in India as against the current framework where fiscal policy path is specified, and fiscal deficit itself is used as a medium-term target of fiscal policy. Unlike the debt targets set by the 14th Finance Commission, a debt to GDP ratio of 60 per cent should be targeted with a 40 per cent limit for the centre and 20 per cent for the states to be achieved by 2022-23.

To achieve the targeted debt to GDP ratio of 40 per cent for the centre, the committee recommended an accelerated consolidation path where the fiscal deficit should be reduced to 2.5 per cent of GDP by 2022-23. The committee also recommended that the central government reduces its revenue deficit to GDP ratio steadily by roughly 0.25 percentage points each year, to reach 0.8 per cent by 2022-23. For the states, the recommended reduction in FD-GDP is from 3 to 2 percent of GDP by the year 2022-23 and further down to 1.7 percent by 2024-5 (see appendix Table A4).

Higher Share of states in vertical devolution of central taxes

A significant change in the fiscal matrix has been the change in the vertical distribution of resources between the Centre and the States. The 14th FC took the view that the tax devolution should be the primary channel of resource transfers to States since it is formula based and conducive to sound fiscal federalism (Reddy and Reddy, 2019). It recommended an increase in tax devolution to 42 percent of divisible pool of Central taxes. Unlike the previous Commissions, the tax devolution that the 14th FC recommended subsumes normal plan assistance, special plan assistance, and special Central assistance as also sector-specific grants.



Source: Union Budget, various issues.

[4] This was also part of the recommendations of the 14th Finance Commission, although that was not accepted by the Centre.

Figure 1 plots the states' share in divisible pool of gross central taxes (bold line). Beyond 2014-15, there is a steep jump in this variable. On average, the states' share in divisible pool is 41 - 42 percent with some variations over the 5 year period 2015-16 to 2019-20. The divisible pool, however, is a subset of overall gross central taxes. It is observed that over the years there has been a proliferation of cesses and surcharges in union tax revenues. As these levies are not shareable with the states, this must have resulted in effective reduction in the divisible pool of resources available for transfers to states. Thus, when we plot the states' share in gross central taxes (dashed line) alongside states share in divisible pool (bold line), one observes a widening gap between the two lines. As more and more of revenues come from cesses and surcharges, these bypass the divisible pool. In other words, cesses and surcharges add to the gross central taxes but not to the divisible pool. Thus despite the sharp increase in devolution as witnessed in state share in divisible pool, the rise in state share in gross central taxes is much more modest (28-29% to 33-34%).

Despite the higher transfers and share in revenues, the overall fiscal balances of the states have deteriorated on an average. RBI (2018) notes that the consolidated fiscal position of states deteriorated during 2015-16 and 2016-17 to cross the FRBM threshold. The FD-GDP for the states stood at 3.1% (2015-16) and 3.5% (2016-17). The breach is attributable mainly to the Ujwal Discom Assurance Yojana (UDAY) scheme. On the receipts side, states continue to gain from the higher central transfers, particularly shareable taxes, while own tax revenues and transfers through grants moderated. On the expenditure side, there's been a consistent pick up on capital outlays from 2.2% of GDP (2014-15) to 2.6% (2016-17) and 2.8% (RE) (2017-18), indicating better mix of revenue and capital expenditure.

The greater autonomy in states' spending has also been challenged. In a recent study, Amar Nath and Singh (2019) have compared the additional gains from higher tax devolution in the post 14th FC period, with the additional burden due to the withdrawal of certain central schemes and the change in the sharing pattern of major Centrally sponsored schemes calling for greater contribution from the States. Average burden of the general category States due to CSS is 0.69 percent of combined GSDP of these States, whereas gains in tax devolution is 0.71 percent of combined GSDP of these States for the year 2015-16. In the following year, the difference is even less. The authors question the rhetoric of greater autonomy for the States, which claims that the States have got additional money in the form of tax devolution and are therefore free to decide the priorities. The study also finds that there is declining priority for social sector (and child budgeting) in the post 14th FC years, 2015-16 and 2016-17. Thus, the impact of the 14th FC award on the actual transfer has been mixed at best.

III. The Model

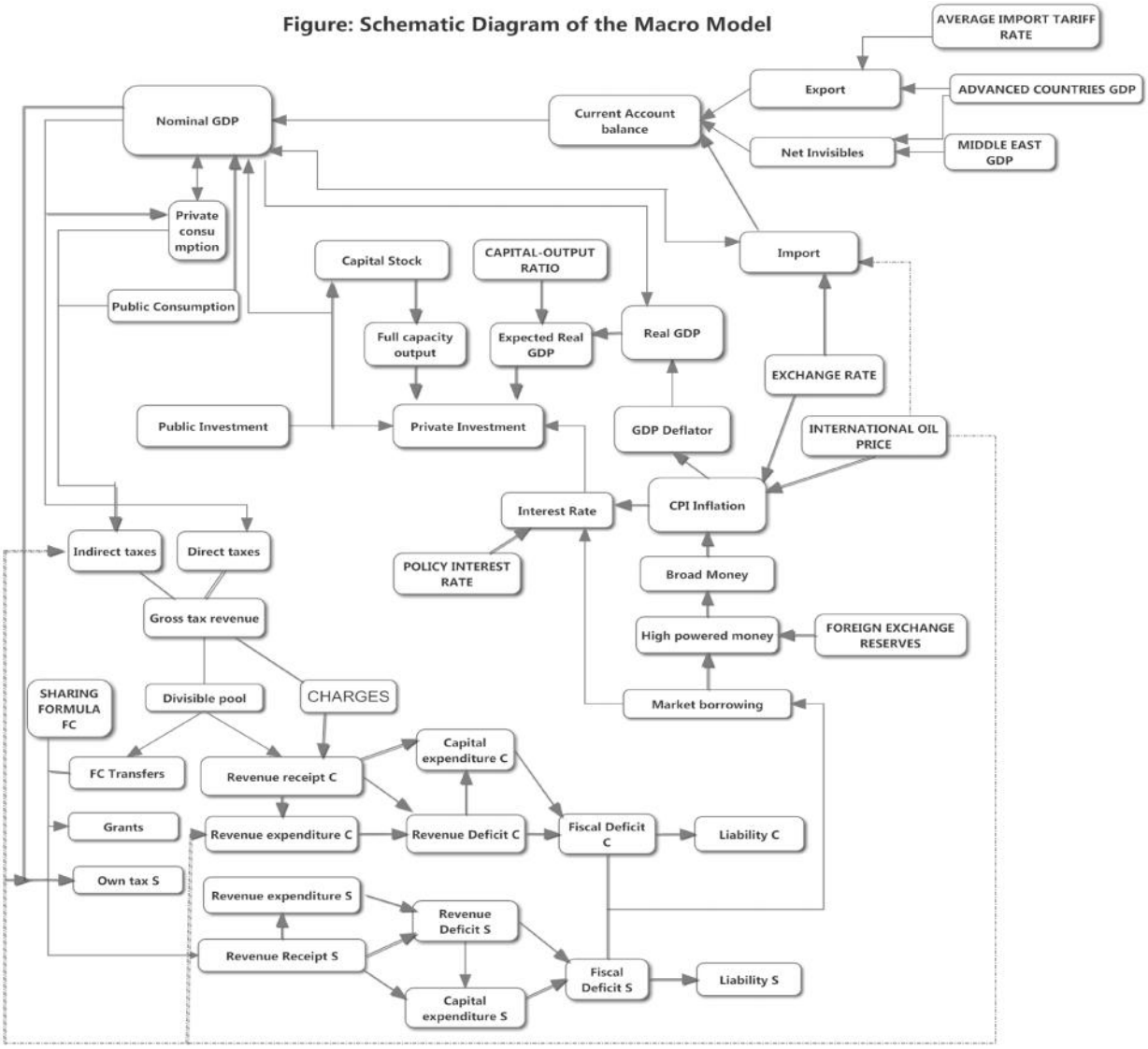
The NIPFP core model has been extended to address the centre-state fiscal relations. The model is a simultaneous equations system model developed for policy simulation. Developed in the Tinbergen-Klein-Goldberger tradition of structural macroeconomic models, it has been applied as a tool for policymakers to assess the likely consequences of alternative policy choices. The model has been applied to track the macro-economic outcomes of a fiscal consolidation path for the Thirteenth Finance Commission (Mundle et.al. 2011) and for the Fourteenth Finance Commissions (Bhanumurthy et al. 2018). It has also been used to measure the immediate and medium term impact of an oil price policy shock and a global oil price shock on

macroeconomic outcomes such as growth, inflation and the fiscal deficit. (Bhanumurthy et. al. 2012). The model is theoretically eclectic rather than purist, picking up elements from different theoretical approaches as supported by the empirical realities of the Indian economy. The sub-components of the model can easily be expanded if the policy question requires such detail on one or other aspect of the model.

The core model has four blocks: macroeconomic block, fiscal block, external block and monetary block each consisting of behavioural equations and identities. To introduce the centre-state relations, a satellite model was built where the fiscal block was disaggregated into the centre, the combined states and the relations across these two entities.

The structure of the model is schematically presented in a flow chart. The model specification is presented below.

Figure: Schematic Diagram of the Macro Model



Note: States and the Centre are represented by S and C, respectively. The exogenous and policy variables are denoted in upper case.

Macroeconomic Block[5]

The aggregate (nominal) demand in the economy in period t (Y_t) is given by

$$Y_t \equiv C_t + I_t^p + I_t^g + G_t + B_t^T + L_t \qquad (1)$$

Where C_t is aggregate private consumption expenditure, which is assumed to be a positive function of aggregate disposable income, I_t^p is aggregate private investment demand, I_t^g is aggregate government investment, G_t is aggregate government consumption expenditure, B_t^T is the aggregate balance of trade in goods and services, and L_t is net inflow of invisibles (remittances etc.). Therefore, $B_t^T + L_t$ is the net current account balance.

The rate of change in the aggregate price level (inflation) is assumed to depend on liquidity, measured by the rate of change of money supply, cost push factors such as international price of oil and petroleum products in the Indian basket, and exchange rate. Thus, inflation in period t, $\dot{p}_t$ is given by

$$\dot{p}_t = \text{¤}(d(M3_t)/M3_t, d(\overline{e_t}), \overline{p_t^o}) \qquad (2)$$

Where $M3_t$ is the growth rate of broad money, $\overline{e_t}$ is the exchange rate, $\overline{p_t^o}$ is the weighted average international price of oil and petroleum products in the Indian basket.

There is an accelerator type private investment function, where private investment is assumed to depend on the cost of capital as well as the crowding in effect of public investment, and the expected rate of capacity utilization. Hence, the rate of private investment ($\frac{I_t^p}{Y_t}$) is given by:

$$\frac{I_t^p}{Y_t} = \text{¨}\left(r_t, \frac{I_t^g}{Y_t}, \frac{Z_t^e}{Z_t^c}\right) \qquad (3)$$

where r_t is the average cost of borrowing from the domestic credit market (i.e. average nominal interest rate of scheduled commercial banks and some of the major term lending institutions *viz.* ICICI, IDBI) etc. I_t^g is government investment in period t, Z_t^e is the expected real output in year t and Z_t^c is the real full capacity output in period t. The latter (Z_t^c) is based on the capital stock existing at the beginning of the year t.

$$Z_t^c \equiv \frac{1}{k} \times K_t \qquad (4)$$

Where k is the capital-output ratio and K_t is the real capital stock at the beginning of period t.

[5]In the following system of equations the notation convention adopted is to denote all exogenous variables with a bar [$\bar{x}$] all policy variables with a hat [$\hat{x}$], and growth rates with a dot [$\dot{x}$].

$$K_t \equiv K_{t-1} + \frac{1}{p_t}\left(I_t^p + I_t^g\right) \quad (5)$$

Following an adaptive expectations approach (Enders 2004), expected real output in period t (Z_t^e) is given by:

$$Z_t^e \equiv Z_{t-1} + \Delta\tilde{Z}_t \quad (6)$$

Where Z_{t-1} is actual GDP of the previous period and $\Delta\tilde{Z}_t$ is the predicted first difference of GDP in period t. This is derived from equation 7.

$$\Delta\tilde{Z}_t = f(\Delta Z_{t-1}, \Delta^2 Z_{t-1}) \quad (7)$$

Where ΔZ_{t-1} is the first difference of real output in the previous period and $\Delta^2 Z_{t-1}$ is the second difference of real output in the previous period.

Fiscal Block

The Centre and the combined state governments constitute the general government. Government expenditure is divided into revenue and capital. Revenue expenditure of the central government ($ECURR_t^C$) is a function the current revenue receipts of the central government (REV_t^C) and its own past values. Subsidies on oil to the oil marketing companies provided by the Central Government and part of the revenue expenditure, are influenced by international oil prices. Similarly, revenue expenditure by the state governments($ECURR_t^S$)is assumed to be governed by their revenue receipts (REV_t^S).

$$ECURR_t^C = f(ECURR_{t-1}^C, REV_t^C, \bar{p}_t^o) \quad (8)$$

$$ECURR_t^S = f(ECURR_{t-1}^S, REV_t^S) \quad (9)$$

Similarly, capital expenditure of the central and state government is given by

$$ECAP_t^C = f(ECAP_{t-1}^C, REV_t^C) \quad (10)$$

$$ECAP_t^S = f(Y_t, REV_t^S) \quad (11)$$

The sum of the expenditure of centre and state after suitable adjustments for inter-governmental transactions, provides revenue expenditure *($ECURR_t$)* and capital expenditure *($ECAP_t$)* of the combined government.[6]

On the receipt side, gross tax revenue of the central government is divided into direct ($DTAX_t^C$) and indirect taxes ($INDTAX_t^C$). Direct tax collection depends upon the tax base captured by overall GDP and direct tax buoyancy, which is assumed to be a policy variable under the control of the government. Indirect tax is represented as a function of the tax base, buoyancy and international oil prices. The tax base in this case is approximated by the private and public consumption demand, C_t and G_t, respectively. Indirect tax buoyancy is again assumed to be policy determined. International oil prices affect the indirect tax collection of the centre differently from the states. Whereas the states definitely gain in terms of higher revenue due to higher prices (ad valorem tax), the revenues from oil for the centre, a specific duty, may go down as there is pressure on the centre to reduce taxes with oil price increase (and vice versa).

$$\Delta DTAX_t^C = \hat{}_1 \times \Delta Y_t \qquad (12)$$

$$INDTAX_t^C = f(C_t + G_t, \hat{}_2, \overline{p_t^o}) \qquad (13)$$

Where direct and indirect tax buoyancy, $\hat{}_1$ and $\hat{}_2$ respectively, are policy variables.
The total pool of central taxes barring cesses, surcharges and collection charges are shared with the states in a fixed proportion determined by the Finance Commission. Thus, the divisible pool of central taxes, $DIVPOOL_t^C$, is defined as

$$DIVPOOL_t^C \equiv (1 - \hat{}_t) \times GROSSTAX_t^C \qquad (14)$$

Where $\hat{}_t$ is proportion of cesses, surcharges and collection charges in period t, a policy variable.

Tax devolution (states share in central taxes) is given by

$$FCTRANSFER_t \equiv \hat{k}_t \times DIVPOOL_t^C \qquad (15)$$

Where $\hat{k}_t$ is policy determined states share in the divisible pool of central taxes.

States own tax collection is assumed to be a function of nominal GDP and weighted average international price of oil and petroleum products in the Indian basket.

$$OWNTAX_t^S = f(Y_t, \overline{p_t^o}) \qquad (16)$$

[6]The adjustments are discussed in a following section on data issues.

Total revenue receipts of the state government comprise of states share in central taxes, states own tax revenue, non-tax revenue along with a variety of grants given by the central government.[7]

$$REV_t^S \equiv OWNTAX_t^S + FCTRANSFER_t + \hat{GRANTS}_t + NONTAX_t^S \quad (17)$$

$\hat{GRANTS}_t$ is a policy variable of the government, whereas non-tax revenue of the states, $NONTAX_t^S$ is a function of the state of the economy.

The next two equations, (18) and (19), are linking equations relating the public finance statistics to national account statistics. Nominal aggregate government current (consumption) expenditure (G_t) is given by

$$G_t = f(G_{t-1}, ECURR_t^C, ECURR_t^S) \quad (18)$$

All government capital expenditure does not flow into investment and all public investment does not come from the government budget alone, since it is supplemented by investment of internal surpluses of public sector undertakings. However, the two are closely correlated. Public investment is represented as a function of central and state government capital expenditure:

$$I_t^g = f(ECAP_t^C, ECAP_t^S) \quad (19)$$

The fiscal deficit in period t for central and state government is given by

$$F_t^C \equiv ECURR_t^C + ECAP_t^C - REV_t^C - \hat{N}_t^C \quad (20)$$

$$F_t^S \equiv ECURR_t^S + ECAP_t^S - REV_t^S - \hat{N}_t^S \quad (21)$$

Where $\hat{N}_t^C$ and $\hat{N}_t^S$ are respectively non-debt capital receipts of the central and state government (disinvestment etc.)

To the extent, fiscal deficit is almost wholly financed through market borrowing, it adds to the existing liabilities of the government, L_{t-1}.

$$L_t^C = L_{t-1}^C + F_t^C + O_t^C \quad (22)$$

$$L_t^S = L_{t-1}^S + F_t^S + O_t^S \quad (23)$$

[7]Grants include assistance to states from NDRF, FC grants for RD, Grants for local bodies etc.

Where O_t^C and O_t^S are other borrowings of central and state government, respectively.

External Block

The trade balance in terms of domestic currency in period t (B_t^T) is given by

$$B_t^T \equiv X_t - M_t \qquad (24)$$

Where X_t is the value of exports (including services) and M_t is the value of imports (including services) in period t.

Export demand was initially assumed to depend on the competitiveness of Indian products, measured by average tariffs as a proxy, the exchange rate, and the income of advanced countries, which account for the bulk of Indian exports. However, in the empirical estimation, the exchange rate turned out to be insignificant. Hence, we have

$$d(X_t) = f(\hat{U}_t, d(\overline{Y_t^a})) \qquad (25)$$

Where $\hat{U}_t$ is the policy determined average tariff rate and $\overline{Y_t^a}$ is the *GDP* of advanced countries, an exogenous variable.

The import bill is assumed to depend on the exchange rate, the weighted average international price of oil and petroleum products in the Indian basket ($\overline{p_t^o}$), and on domestic income. Hence,

$$M_t = f\left(\overline{e_t}, \overline{p_t^o}, Y_t\right) \qquad (26)$$

Where $\overline{e_t}$ is the nominal exchange rate (INR /US$), an exogenous variable, and Y_t is nominal GDP in period t.

The net inflow of invisibles (L_t) is assumed to be a function of nominal incomes of advanced economies, generally the OECD, ($\overline{Y}_t^a$) and the Middle Eastern region ($\overline{Y}_t^{me}$). These two regions are the major sources of remittances for India.

$$L_t = f(\overline{Y}_t^a + \overline{Y}_t^{me}) \qquad (27)$$

Monetary block

Broad money supply in period t, given the value of the money multiplier, is given by

$$M3_t = \bar{¥}_t \times H_t \quad (28)$$

Where H_t is the high powered money supply in period t and $\bar{¥}_t$ is the exogenously given money multiplier. The high powered money is assumed to be a function of market borrowing by central (MB_t^c) and state government (MB_t^s) and foreign exchange reserves of the Central Bank $(\overline{FOREX_t})$, i.e.,

$$H_t = f(\overline{FOREX_t}, MB_t^C, MB_t^S) \quad (29)$$

Repo rate is a policy parameter for the Central bank. With inflation control being the principal objective of the RBI, repo rate is supposed to respond to the gap between actual and desired inflation rate. 4 per cent is the present desired benchmark inflation rate. Hence,

$$REPO_t = f(\dot{p}_t - \hat{p}_t, REPO_{t-1}) \quad (30)$$

Where $REPO_t$ is the repo rate, $\dot{p}_t$ is the overall inflation and $\hat{p}_t$ is the targeting inflation, a policy variable.

Finally, the nominal rate of interest, r_t, in the economy is represented as a function of the repo rate, and the volume of central and state government borrowing from the market, the potential crowding out element.

$$r_t = ¶(REPO_t, MB_t^C, MB_t^S) \quad (31)$$

IV. Data for Estimation and Assumptions

The macro model has been estimated using annual data for the period 1993-94 to 2018-19. Data sources include National Account Statistics (NAS), Indian Public Finance Statistics (IPFS), Handbook of Statistics on Indian Economy, Reserve Bank of India (RBI), Handbook of Statistics on Indian State, RBI, State Finance: the Study of Budgets, RBI, Debt Status Paper, Ministry of Finance, Union Budget, and Agricultural Statistics at a Glance etc.

The new GDP series, 2011-12 base is used for output, consumption and investment of both private and public sector, export, import and capital formation. The back series GDP estimates are based on the methodology recommended in the National Statistical Commission's Committee on Real Sector Statistics report of 2018 (chaired by Dr Sudipto Mundle). Although there are Official estimates on back series upto 2004-05, for macro model estimation there is a need for fairly long time series data, which is available only in the Sudipto Mundle Committee report[8].

[8] Very recently, the National Statistical Office has released a long time series data. However, this is based on simple splicing method in which the past growth rates are retained and could potentially generate structural breaks around 2004-05. The simulations of the model is done for the very recent period for which only the official data is used.

IV.1 Data Issues relating to Centre State Finances

Adjustment in expenditure, revenue receipt and deficits for Centre and States

Certain adjustments were necessary in the centre-state public finance data for maintaining consistency across centre, state and general government variables. Because of intergovernmental transactions, the Centre and states data on various public finance indicators do not sum upto the general government figures. All such variables have been suitably adjusted, paying attention to the nature of the intergovernmental transaction. It is important to spell out these adjustments, which hardly find mention in official publications.

(a) To arrive at the general government revenue expenditure from that of the centre and states, **grants from the centre to states** is deducted from centre's revenue expenditure and **interest receipts from states to centre** is deducted from state's revenue expenditure. Similar to revenue expenditure adjustment, to derive general government revenue receipts from centre and states, **grants from the centre to states** is deducted from centre's revenue receipt and **interest receipts from states to centre** is deducted from state's revenue receipt. Thus on the revenue account, adjustments are necessary both in the Centre and States' numbers. Note that as the adjustment is symmetric for revenue receipt and revenue expenditure, there is no adjustment in revenue deficit.

(b) On the capital account, adjustments are necessary only for the centre. **Loans and advances to states and UTs** has been deducted from the capital expenditure of the centre.

For other variables such as Non-Debt Capital Receipts (NDCR), Interest Payment etc., the discrepancy between the sum of centre and states data & combined data is adjusted in centre's figure. Fiscal deficit and primary deficit of the centre reflect the adjustment in individual components.

Total Liabilities: Need for Consistency and Greater Clarity

Different definitions can be used to describe the extent of indebtedness of governments. Whereas public debt is closely related to the fiscal operations of the government, generally a broader definition of total liabilities is preferred. This includes liabilities on public account but excludes borrowing by public sector undertakings.

In a previous work, we expressed our concern on the various definitions of total liabilities being used in official statistics. We had recommended that a consistent definition be used to compute and report government liabilities periodically by both Centre and States (Bhanumurthy et al, 2016).

Total Liabilities figures of Indian Public Finance Statistics (IPFS) are higher than the other two sources – Government Debt Status Paper and RBI - as IPFS does not fully make allowance for the inter-governmental transactions between the Centre and the state governments. IPFS also considers external debt at historical exchange rate whereas the other sources compute external debt at current exchange rate. The presence of different liability numbers based on different definitions is confusing for researchers and policymakers. (p. 54)

Unfortunately, these differences in reporting, across various official publications, have persisted in the recent years.

For the present exercise we have used the RBI data on total liability of the general government. It comprises of public debt and other liabilities of the government. Public debt of the Centre comprises of internal debt and external debt at the current exchange rate. Other liabilities of the centre is on account of small savings/ NSSF, provident fund, other accounts, reserve funds and deposits. Public debt of the states comprises of total internal debt and loans and advances from the centre. Other liabilities of the states comprise of provident fund, reserve fund, contingency fund and deposits and advances.

For consistent estimates of centre, state and general government liability, appropriate adjustments in centre and state's liability are needed. However, except public debt, the adjustments for consistency were not possible for the entire time series. To arrive at the public debt of the general government, **loans from centre to states is deducted** from state's public debt number and **states investment in centre's treasury bills is deducted** from centre's public debt. The problem lies with the other liabilities series. Government Debt Status paper provides data on consolidated other liabilities for a limited number of years. But it does not clarify how the series is obtained, what are the adjustments made in Centre's other liability, or what are its subcomponents. There is need for greater transparency and clarity of definitions in this regard.

Problems in Estimating the Divisible Pool

There is no published information on the divisible pool of Central taxes over the years. Neither of the official sources including the Finance Accounts gives data on the divisible pool, though it is one of the most important public finance variables and with respect to which states share is defined by the statutory body, Finance Commission, every five years.

For the past decade, we have tried to estimate the divisible pool of Central taxes using the data available in the Union Budget. As noted in the model specification, gross Central taxes minus cess, surcharges and collection charges defines the divisible pool of Central taxes. From gross central taxes, we have deducted the following items to arrive at the divisible pool: (i) Cesses and Surcharge (including additional duty of custom and excise on motor spirit & high speed diesel oil and Special additional duty of custom and excise on motor spirit); (ii) Collection Charges; (iii) National calamity contingency duty; (iv) Taxes of Union Territories. This has been done for the years since 2009-10. Extending this series backwards, however, has not been possible as earlier Receipts budget of the Union government have reported only the revised and budget estimates but not the actual numbers. Neither does the Finance Accounts of the union government cover this in detail.

In view of the problems in constructing the divisible pool series, we have used states share in gross central taxes as a policy variable in our estimation. Though both the variables follow more or less the same trend, the difference has grown in the recent years (Refer to Fig. 1).

IV. 2 Assumptions for Base Case

The estimated model is used for policy simulations. The important assumptions for the exogenous variables, including the policy determined variables, for the base case are as follows:

- In the external sector the base case assumes that the advanced countries and the Middle Eastern region will grow as per the IMF forecast.
- The import weighted average tariff is assumed to remain at the same level as at present, i.e., 7.5 per cent.
- Following the Economic Survey 2018-19, the exchange rate is assumed to depreciate from INR 69.5 per USD in the current year 2019-12 to INR 75 per USD by 2024-25, the last year of the projection period.
- International oil prices is assumed to be at USD 67.25 per barrel. This is used to compute the cost of the Indian basket of oil imports.
- In the fiscal block, direct and indirect tax buoyancy has been fixed at 1. State's share in central taxes as a proportion of gross central taxes is assumed to be constant at current level of 33 per cent. Other exogenous variable like non debt capital receipts of centre and state, are assumed to remain constant at the last year's number.

V. Policy Simulations

This section begins with the results of the baseline which is then compared with different policy scenarios including one scenario of external shock.

In the baseline scenario or business as usual scenario, the real GDP growth rises from 6.6% in 2020 to 6.9% in 2024 with an average growth of 6.8% over the 5-year period (Table 1). Inflation averages 4.6%. The external balance reflected in current account deficit (CAD-GDP) averages 2.5%. On the fiscal front, RD-GDP improves marginally to 2.4% from 2.5%, whereas FD-GDP deteriorates to 6.4% from 6.2%. The combined liability registers an improvement by 1% of GDP which can be attributed to higher growth in nominal incomes compared to the increase in liability. Centre's RD-GDP remains above 2% (2.2% on average) and states RD-GDP averages 0.3%.

Table 1: Baseline or Business as usual Case (%)

	GDP Growth	Inflation (CPI)	Invest-ment Rate	CAD-GDP	FD-GDP	RD-GDP	PD-GDP	LIABILITY-GDP
2020	6.6	4.8	33.7	2.6	6.2	2.5	1.5	68.1
2024	6.9	4.3	35.0	2.7	6.4	2.4	1.8	67.0
Average	6.8	4.6	34.4	2.5	6.3	2.4	1.6	67.5
	RDCEN-GDP	RDST-GDP	FDCEN-GDP	FDST-GDP	PDCEN-GDP	PDST-GDP	LIABCEN-GDP	LIABST-GDP
2020	2.1	0.3	3.2	3.0	0.3	1.1	46.7	25.2
2024	2.2	0.2	3.6	2.8	0.9	0.9	43.5	26.0
Average	2.2	0.3	3.5	2.9	0.6	1.0	44.9	25.7

In an integrated world economy, it is expected that adverse external conditions could affect the domestic economy significantly. Given the current slowdown in the world economy,

uncertainty on the trade front, this seems to be a real possibility.[9] In addition, higher prices of international oil – though not imminent in the horizon - could be another source of instability for the domestic economy. Scenario-1 corresponds to the impact of adverse external shock both on the demand as well as on the world oil prices. Table 2 presents the impact of adverse external shock on the macro-fiscal variables. The shock is a one-time shock where the growth rate in advanced country GDP halves vis-à-vis the baseline and there is a sudden spurt in international oil prices by about 20 per cent. For the baseline scenario, OIL is assumed to be at $67.25 per barrel. After the oil shock, it is assumed to increase to $80.78 per barrel. Both the shocks are administered in the first year of the projection period.

Table 2: Impact of a One-time External Shock (Scenario 1) (%)

	GDP Growth	Inflation (CPI)	Investment Rate	CAD-GDP	FD-GDP	RD-GDP	PD-GDP	LIABILITY-GDP
2020	5.5	5.3	33.7	2.9	6.4	2.6	1.5	68.6
2024	6.5	4.5	35.0	3.1	6.6	2.6	1.8	68.5
Average	6.2	4.8	34.4	2.9	6.5	2.6	1.7	68.6
	RDCEN-GDP	RDST-GDP	FDCEN-GDP	FDST-GDP	PDCEN-GDP	PDST-GDP	LIABCEN-GDP	LIABST-GDP
2020	2.2	0.3	3.3	3.0	0.4	1.2	47.0	25.4
2024	2.3	0.2	3.7	2.8	0.9	0.9	44.5	26.5
Average	2.3	0.3	3.6	2.9	0.7	1.0	45.7	26.0

The impact of the adverse external shock is felt through lower demand for Indian exports from the rest of the world, particularly advanced countries impacting aggregate demand and growth. The international oil prices impact the Indian economy through multiple channels. These are (i) the fiscal channel where shocks to international oil prices affects the Central and State governments revenues and revenue expenditure of the Central government; (ii) the price channel where the impact is on domestic prices (overall domestic price index); and (iii) external channel through merchandise trade balance and hence current account deficit. In Scenario 1, GDP growth dips by more than 1% (5.5% in scenario 1 versus 6.6% in the baseline) in the year of the shock, 2020-21, and recovers gradually. Besides GDP growth, the impact is prominent on inflation rate. The fiscal imbalances and government liability will be higher in this case compared to the baseline.

The next scenario looks at the impact of changes in vertical devolution share on the macroeconomic outlook for the centre, states and the combined government. As discussed in Section 2, the 14th Finance Commission had recommended a substantial upward jump in devolution of central taxes to the states[10]. Given the behavioural equations representing the economy and its institutions, it would be interesting to see what would be the predicted impact

[9] See World Economic Outlook, IMF, April 2019
https://www.imf.org/en/Publications/WEO/Issues/2019/03/28/world-economic-outlook-april-2019

[10] However, Reddy & Reddy (2019) reports that the actual increase, especially after adjusting for the Plan and Non-Plan grants that was provided before and discontinued since 2014, is only about 3 per cent (p.249).

of changes in devolution formula. As the 14th FC award period had witnessed a higher tax devolution, the simulation tries to capture "what if" the tax devolution had not gone up[11].

In Table 3, the results are reported for Scenario 2 are the deviations from baseline for all the variables of interest. The simulations are performed for the 14th FC and 15th FC award periods. We find that compared to the baseline, the growth of GDP could have been marginally higher in this case by 0.4% for the 14th FC period on an average and 0.3% for the 15th FC period on an average. Inflation and current account deficit also could have been marginally higher in Scenario 2 vis-à-vis the baseline. Among the fiscal variables, an improvement is observed in liability-GDP ratio both for the centre and the states and the combined. RD-GDP and FD-GDP improve for the states. Whereas for the centre, RD-GDP and FD-GDP are higher in scenario 2.

Table 3: Lower Devolution to States (Scenario 2) (%)

	Deviation between base line and the Scenario-2							
	GDP Growth	Inflation (CPI)	Investment Rate	CAD-GDP	FD-GDP	RD-GDP	PD-GDP	Liability-GDP
Average of 14th FC Period	0.42	0.28	0.74	0.30	0.08	0.03	0.15	-1.11
Average of 15th FC Period	0.27	0.02	0.78	0.58	0.18	0.11	0.28	-1.37
	RDCEN-GDP	RDST-GDP	FDCEN-GDP	FDST-GDP	PDCEN-GDP	PDST-GDP	LIABCEN-GDP	LIABST-GDP
Average of 14th FC Period	0.01	0.01	0.18	-0.10	0.22	-0.07	-0.68	-0.52
Average of 15th FC Period	0.14	-0.03	0.31	-0.12	0.32	-0.04	-0.33	-1.15

What are the underlying relations driving the result? Notice that the overall investment rate has risen in Scenario 2, behind which lies a push to public investment. And this push largely comes from higher capital expenditure of the centre, and the resulting gross capital formation. In other words, the higher revenues of the centre rather than the states might result in an improvement in the nature of public spending towards greater investment than consumption and, therefore, lead to higher growth. Though we have not calculated the state and centre's expenditure multipliers, there could be a difference between the two. One may however add some caution here that the increases in revenues for the central government may not automatically translate to higher capital expenditure; it may well be that the centre is prone to devote higher revenues to higher consumption expenditure. Also, the underlying relation of strong complementarity between private and public investments could be time varying.

Scenario 2 witnesses an improvement of the state's fiscal balance and a deterioration in centre's fiscal balance despite higher revenues, which may seem counter-intuitive. Essentially, what the simulation results are saying on the basis of behavioral equations is that higher revenues encourage higher expenditure and increases the deficit-GDP of the centre, with the opposite holding at the state level. Again, the above behavior may not always hold, especially in the context of fiscal rules (see next scenario).

[11] As the data on public and private investments at the state level are not available, the results here are only indicative in nature.

Finally, in Scenario 2, despite the higher overall budgetary deficit to GDP, liability-GDP improves. Higher growth makes possible a reduction of the ratio, despite higher addition to borrowing in the present period.

Scenario 3 depicts the scenario of debt targeting through changes in expenditure pattern of the centre and states. As per the new FRBM framework, the general government try to reach a target of 60%. We assume that this would be achieved by the final years of the 15th FC period. The four expenditure variables revenue expenditure of centre and states and capital expenditure of centre and states are no longer endogenously determined but are policy handles in this scenario. For the centre and the states, more so for the centre, there is containment of revenue expenditure alongside an increase in capital expenditure. A constraint is imposed on the revenue expenditure of the centre (defined with respect to revenue receipts) such that revenue deficit-GDP falls in successive years. For the states, the constraint on revenue expenditure is such that the revenue balance goes from a deficit to a marginal surplus. On the other hand, the general government capital expenditure is allowed to rise from 4.4% of GDP to 5.4% of GDP over the 5-year period, with the centre assuming the greater share of the increase.

The combined RD-GDP improves from an average of 2.4% during the 5 years in the baseline scenario to 1.1% under the debt targeting scenario (Table 4). FD-GDP improves to 5.9%. Total liability-GDP falls below 60% in the terminal year. There is greater fall in liability-GDP ratio of the centre which falls rapidly from 43% in the initial year to 38% by the terminal year, whereas for the states liability-GDP almost remains at the same level of 23 to 24% of GDP.

Table 4: Debt Targeting (Scenario 3) (%)

	GDP Growth	Inflation (CPI)	Investment Rate	CAD-GDP	FD-GDP	RD-GDP	PD-GDP	LIABILITY-GDP
2020	7.3	4.8	36.7	2.1	6.0	1.6	1.6	63.5
2024	8.4	5.1	40.6	3.1	5.9	0.8	1.8	59.1
Average	8.0	4.9	38.8	2.5	5.9	1.1	1.6	61.6
	RDCEN-GDP	RDST-GDP	FDCEN-GDP	FDST-GDP	PDCEN-GDP	PDST-GDP	LIABCEN-GDP	LIABST-GDP
2020	1.5	0.1	3.0	3.0	0.3	1.3	43.2	23.7
2024	1.2	-0.4	3.4	2.5	1.0	0.8	37.8	23.4
Average	1.2	-0.1	3.1	2.8	0.5	1.1	40.5	23.8

Note that these debt targets for the Centre and States are more in consonance with the distribution suggested by the 14th Finance Commission. The FRBM Review Committee (2017) had suggested steeper reductions particularly in the liabilities of the state. However, this may not be possible. As argued by Roy and Kotia (2018) the divergent debt levels of the centre and states would mean that the erosion of the centre's debt would be faster, for similar levels of deficit targets. In other words – for similar deficit targets of 3 % ceiling on fiscal deficit – it would be easier for the centre to reduce its outstanding liability ratio than for the state to bring down it down from a much smaller outstanding stock. This is exactly what is observed in Scenario 3. Though RD-GDP and FD-GDP ratios for the states are much smaller than the centre, the liability-GDP for the states, does not decline. This might call for a review of the new FRBM roadmap.

In scenario 3, because of expenditure switching towards higher capital expenditure, GDP growth is higher than the base case, an average of 8% in scenario 3 versus 6.8% in the base case. Along with an average inflation of 4.9%, the nominal growth in GDP is between 12-13% every year, across the 5-year period. This scenario, thus, also corresponds to the USD 5 trillion economy target. As outlined in the economic survey 2018-19, "India aims to grow into a USD 5 trillion economy by 2024-25, which will make India the third-largest economy in the world". Assuming an exchange rate of INR 75 per USD in March 2025, this requires the Indian economy to have a nominal GDP of 375 lakh crores in March 2025. Given 4 per cent inflation, as the Monetary Policy Framework specified by the Government for the Reserve Bank of India, India needs to sustain a real GDP growth rate of 8 per cent to achieve this nominal GDP. In Scenario 3 – the debt targeting scenario -the high nominal growth raises the GDP to the targeted level. The growth is largely investment driven with investment rate rising from 34% in the baseline scenario to 39% in Scenario 3. The policy handle of expenditures – particularly capital expenditure and fiscal correction – let's lose a virtuous cycle of higher private investment and growth, which in turn has a positive feedback on the fiscal block variables.

Conclusion

One of the key Terms of Reference before the 15th Finance Commission is to propose a roadmap of revenue and public expenditure for the Centre and the State governments that puts the economy on a sustainable fiscal path along with high and inclusive growth. The objective of high growth with sustainable fiscal path is all the more crucial, given the pronounced current slowdown in overall economic growth in India. Another central mandate of the FC is to decide the share of the Centre and the States in the divisible pool of Central taxes. Both the devolution formula and design of the fiscal consolidation roadmap for the centre and the states have a bearing on the macroeconomic performance of the economy, and thus needs to be carefully analysed. This paper attempted to empirically explore these and other policy issues using policy simulations based on a structural macroeconometric model of the Indian economy. The existing NIPFP macro-policy simulation model is extended such that (i) the fiscal block is disaggregated into centre and the states, and (ii) fiscal flows at each level, and across the federal structure are explicitly modeled.

The macroeconomic policy simulations present important insights. The baseline scenario, a business as usual scenario, sees the Indian economy grow at an average rate of 6.8% over the 5-year period with an inflation averaging 4.6%. These projections are based on a range of assumptions on external factors as well as domestic policy variables. Growth is lower and inflation higher when the external economic conditions turn adverse (Scenario 1).

The impact of changes in devolution formula is studied on the economic and fiscal performances, for the Centre and the States. The impact of higher devolution share of the states appear to result in marginally lower overall growth. Conversely, lower devolution share to the States vis-à-vis the baseline causes economic growth to be higher by 0.4% for the 14th FC period on an average and 0.3% over the 15th FC projection period (Scenario 2, Table 3). This higher growth in turn leads to an improvement in overall liability to GDP. On the other hand, inflation, fiscal deficit and current account deficit are higher compared to the base case. It is necessary to underline here that while this assessment is necessary – based on macroeconomic logic and estimated behavioral parameters – it does not in any way undermine the importance of higher devolution of central taxes to the states, grounded on principles of fiscal federalism.

The new FRBM roadmap sets a 60 percent of GDP target for government liabilities. What kind of expenditure adjustments would it require, knowing that compression of government expenditures could be contractionary is the question that is explored. In other words, we ask, what the mix of revenue and capital expenditures is across states and centre that would make higher growth along with fiscal consolidation a reality (Scenario 3). It is found that an expenditure switching strategy in favour of capital expenditure (by more than 1% of GDP) with the centre assuming the greater share of the increase, and reduction in revenue deficit to GDP makes it possible to combine high growth averaging 8% with debt reducing to 60 per cent. With greater public investments and its complementarity with private investment, the target of $5 trillion economy by 2024-25 is also found to be achievable. The analysis also suggests that distribution of debt targets for Centre and the States in the new FRBM roadmap would need to be reviewed.

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Appendix

Table A1: Fiscal Rules and performance of Centre (per cent of GDP)

Fiscal Rules and Year	**Revenue Deficit [+ sign denotes deficit]**		**Fiscal Deficit [+ sign denotes deficit]**	**Primary Deficit [(-) surplus and (+) deficit]**	**Liability-GDP Ratio**
FRBM Rules (Effective from 2004)	Eliminating revenue deficit by 2009-10 (FRBM)		Reduce to 3 per cent of GDP by 31st March, 2010 (FRBM)	--	
Performance					
2004-05	2.4		3.9	-0.0	65.5
2005-06	2.5		4.0	0.4	63.9
2006-07	1.9		3.3	-0.2	61.4
2007-08	1.1		2.5	-0.9	58.9
2008-09	4.5		6.0	2.6	58.6
2009-10	5.2		6.5	3.2	56.3
13th Finance Commission's revision of targets (Effective from 2010)	Elimination of revenue deficit by 2013-14 and make revenue surplus of 0.5 per cent of GDP by 2014-15		Reduce fiscal deficit to 3 per cent of GDP by 2014-15	--	Reduce liability-GDP ratio to 45 per cent by 2014-15
Performance					
2010-11	3.2		4.8	1.8	52.1
2011-12	4.4		5.7	2.7	53.46
2012-13	3.6		4.8	1.8	52.55
2013-14	3.2		4.5	1.3	52.16
2014-15	2.9		4.1	0.8	51.42
Kelkar Committees fiscal roadmap(Effective from 2012-13)	Reduce to 2 per cent of GDP by 2014-15	*Eliminate effective revenue deficit by 2014-15	Reduce to 4 per cent of GDP by 2014-15	Reduce to 1 per cent of GDP by 2014-15	Reduce to 43 per cent of GDP by 2014-15
14th Finance Commission's revision of targets (Effective from 2015)	Reduce revenue deficit to 0.93 per cent of GDP by 2019-20		Reduce Fiscal deficit to 3 per cent of GDP	--	Reduce Liability-GDP ratio to 36.3 per cent by 2019-20
Performance					
2015-16	2.5		3.9	0.67	51.57
2016-17	2.1		3.5	0.36	49.93
2017-18	2.6		3.5	0.4	50.07
2018-19 (RE)	2.2		3.4	0.2	48.65
2019-20 (BE)	2.2		3.4	0.2	

Source: 12th FC, 13th FC, 14th FC reports and RBI Handbook of Statistics, 2017-18
Note: surplus (-) and deficit (+)
* Effective revenue deficit is 1.8 per cent of GDP as per 2012-13(BE).

TableA2: Performance of States as per FC-XII, FC-XIII and FC-IV Targets (Per cent of GDP)

Year	Revenue Deficit	Fiscal Deficit	Primary Deficit	Debt Stock	Interest Payments as percentage to Revenue Receipts
FC-XII Targets	elimination by 2008-09	3 per cent of GSDP by 2008-09	--	28 per cent of GDP by 2008-09	15 per cent by 2008-09
Performance					
2004-05	1.2	3.3	0.7	31.3	23.8
2005-06	0.2	2.4	0.2	31.1	19.5
2006-07	-0.6	1.8	-0.4	28.9	17.6
2007-08	-0.9	1.5	-0.5	26.6	16.0
2008-09	-0.2	2.4	0.6	26.1	14.8
FC-XIII Targets	Maintain a Zero revenue deficit	2.4 per cent of GDP by 2014-15	--	25 per cent of GDP by 2014-15	--
Performance					
2009-10	0.5	2.9	1.2	25.5	14.7
2010-11	-0.0	2.1	0.5	23.5	13.3
2011-12	-0.3	1.9	0.4	22.8	12.5
2012-13	-0.2	2.0	0.5	22.2	12.3
2013-14	0.1	2.2	0.7	22.0	12.6
2014-15	0.4	2.6	1.1	21.7	12.3
FC-XIV Targets	Revenue surplus of 1.88 per cent by 2019-20	2.74 per cent of GDP by 2019-20	--	22.4 per cent of GDP by 2019-20	
Performance					
2015-16	0.0	3.1	1.5	23.4	11.7
2016-17	0.3	3.5	1.9	23.8	12.3
2017-18 (RE)	0.4	3.1	1.3	23.9	11.9
2018-19 (BE)	-0.2	2.6	0.9	24.2	11.2

Source: RBI Handbook of Statistics 2017-18 and Reports of FC-XII, FC-XIII and FC-XIV
Note: Minus (-) sign indicates surplus

Table A3: Consolidated Fiscal Roadmap recommended by the 14th FC

(Surplus (-) and deficit (+))(Per cent of GDP)

	2015-16	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Revenue Deficit - Union	2.56	2.25	1.79	1.36	0.93
Revenue Deficit -States	-1.07	-1.32	-1.60	-1.84	-1.88
Consolidated Revenue Deficit	1.49	0.92	0.19	-0.48	-0.95
Fiscal Deficit- Union	3.60	3.00	3.00	3.00	3.00
Fiscal Deficit -States	2.76	2.77	2.77	2.73	2.74
Consolidated Fiscal Deficit	6.36	5.77	5.77	5.73	5.74
Debt Stock -Union	43.60	41.41	39.49	37.79	36.30
Debt Stock - States	21.90	22.06	22.21	22.30	22.38
Outstanding Union Loan to States	0.97	0.81	0.66	0.54	0.44
Consolidated Outstanding Debt	64.53	62.67	61.03	59.55	58.24
Non-debt Capital Receipts - Union	0.61	0.65	0.70	0.76	0.82
Implicit Capital Outlay - Union	1.64	1.40	1.90	2.40	2.90
Implicit Capital Outlay – States	3.83	4.09	4.37	4.57	4.61
Consolidated Implicit Capital Outlay	5.47	5.50	6.27	6.97	7.51

Table A4: Fiscal Consolidation Roadmap as per FRBM Review Committee Report

(Surplus (-) and deficit (+))(Per cent of GDP)

	Centre				**State**	
FRBM Committee Roadmap	Revenue Deficit	Fiscal Deficit	Primary Deficit	Liability-GDP Ratio	Fiscal Deficit	Liability-GDP Ratio
2016-17	2.30	3.5	0.3	49.4	2.98	21
2017-18	2.05	3.0	-0.3	47.3	2.82	21.65
2018-19	1.80	3.0	-0.1	45.5	2.66	22.08
2019-20	1.55	3.0	0.0	43.7	2.50	22.30
2020-21	1.30	2.8	-0.1	42.0	2.34	22.34
2021-22	1.05	2.6	-0.1	40.3	2.18	22.22
2022-23	0.80	2.5	-0.1	38.7	2.02	21.95
2023-24					1.86	21.54
2024-25					1.70	21.02

Source: FRBM Review Committee Report, January 2017

Estimated Equations

Macroeconomic Block:

1) CPR = 3174.880 + 0.272196*(YMP-DTAXCEN) + 0.630756*CPR(-1) + 67035.04*DUMCPR
(0.32) (13.68) (17.57) (3.13)

Adj R^2 = 0.99 DW Stat = 1.73

2) CPU = 8873.6 + 0.34*ECURRCEN + 0.37*ECURRST + 0.25*CPU(-1) + 42322.4*DUMCPU
(1.63) (7.93) (10.09) (2.84) (4.42)

Adj R^2 = 0.99 DW Stat = 1.48

3) DZYF = 46844.43 + 0.96*DZYF(-1) – 0.07*D(DZYF(-1))
(1.15) (10.78) (-0.33)

Adj R^2 = 0.85 DW Stat = 2.03

4) IPU = 17515.53 + 2.78*ECAPCEN + 0.93*ECAPST + 136339.5*DUMIPU
(4.54) (15.19) (8.39) (21.14)

Adj R^2 = 0.99 DW Stat = 1.93

5) IPV/YF = -0.15 + 1.43*IPU/YF – 0.001*PLR + 0.33*RATIO + 0.05*DUMIPV
(-1.41) (2.48) (-0.49) (2.66) (8.87)

Adj R^2 = 0.94 DW Stat = 1.32

6) GCPI = -0.006 + 0.44*GM3 + 0.000016*OIL + 0.52*AR(1)
(-0.16) (2.01) (0.42) (2.59)

Adj R^2 = 0.35 DW Stat = 2.11

7) GGDPDEFLATOR = 0.007 + 0.81*D(CPI)/CPI + 0.03*DUMGDPDEF
(1.81) (14.19) (8.04)

Adj R^2 = 0.91 DW Stat = 1.52

8) D(CAPSTOCK) = 757605.9 + 0.47*(IPV(-1)+IPU(-1)) + 317838*DUMCAPSTOCK
(50.72) (65.96) (14.46)

Adj R^2 = 0.99 DW Stat = 1.98

Fiscal Block:

9) ECURRCEN = -9578.37 + 0.67*REVRECCEN + 101.8*OIL + 0.53*ECURRCEN(-1)
(-0.76) (7.25) (2.44) (6.70)

Adj R^2 = 0.99 DW Stat = 1.35

10) ECURRST = 15746.88 + 0.71*REVRECST + 0.33*ECURRST(-1) + 90285.93*DUMECURRST
(2.71) (9.88) (3.98) (5.42)

Adj R^2 = 0.99 DW Stat = 1.79

11) ECAPCEN = -6657 + 0.14*REVRECCEN + 0.55*ECAPCEN(-1) + 33363.09*DUMECAPCEN
(-2.31) (6.71) (6.73) (6.04)

Adj R^2 = 0.99 DW Stat = 1.72

12) ECAPST = 2201.86 + 0.15*REVRECST + 0.004*YMP + 70078.70*DUMECAPST
(0.57) (7.23) (1.45) (11.69)

Adj R^2 = 0.99 DW Stat = 0.96

13) DTAXCEN = -17400.51 + 8941.66*B1 + 0.05*D(YMP) + 1.02*DTAXCEN(-1) +
(-3.25) (3.52) (4.11) (40.76)
51076.23*DUMDTAXCEN
(9.05)

Adj R^2 = 0.99 DW Stat = 2.19

14) INDTAXCEN = 5791.83 + 0.07*(CPR+CPU) + 11913.72*B2 - 84.78*OIL +
(0.76) (73.78) (2.60) (-5.07)
58191.89*DUMITAXCEN
(8.27)

Adj R^2 = 0.99 DW Stat = 1.57

15) OWNTAXST = -20106.12 + 0.06*YMP + 64.17*OIL + 36061.01*DUMOTST
(-16.40) (436.84) (18.94) (24.86)

Adj R^2 = 0.99 DW Stat = 1.33

16) NONTAXCEN = 4533.156 + 0.01*YMP + 70753.89*DUMNONTAXCN
(1.44) (20.04) (24.01)

Adj R^2 = 0.99 DW Stat = 1.10

17) NONTAXST = 795.73 + 0.01*YMP + 29442.76*DUMNONTAXST
(0.83) (89.74) (19.15)

Adj R^2 = 0.99 DW Stat = 1.35

18) LIABCEN = 47861.99 + 0.65*FDCEN + 1.03*LIABCEN(-1) + 104200*DUMLIABCEN
(6.13) (8.06) (150.76) (8.48)

Adj R^2 = 0.99 DW Stat = 1.36

19) LIABST = 4070.88 + 0.84*FDST + 1.02*LIABST(-1) + 97853.09*DUMLIABST
(1.44) (19.81) (169.75) (19.90)

Adj R^2 = 0.99 DW Stat = 2.35

External Block:

20) IMPORT = -236640.8 – 12021.73*ER + 572.78*OIL + 0.23*ZYF + 0.50*IMPORT(-1) +
(-1.26) (-2.39) (4.25) (5.87) (5.68)
195092.6*DUMIMPORT
(2.84)

Adj R^2 = 0.99 DW Stat = 1.52

21) D(EXPORT) = 204897.1 + 0.30*D(ADVGDPLEV) - 6535*DUTY + 178904*DUMEXPORT
(12.47) (5.78) (-9.07) (11.77)

Adj R^2 = 0.93 DW Stat = 1.47

22) INVISIBLE = -107088.9 + 0.05*(MEGDPLEV+ADVGDPLEV) + 0.21*INVISIBLE(-1) +
(-7.08) (8.44) (2.63)

61425.76*DUMINVISIBLE

(7.29)

Adj R^2 = 0.98 DW Stat = 1.64

Monetary Block:

23) M0 = 91463.92 + 0.47*FOREX + 0.91*MB + 116977.1*DUMM0
(21.72) (39.16) (24.51) (16.22)

Adj R^2 = 0.99 DW Stat = 1.33

24) M3 = -437090.2 + 5.96*M0 + 771717.6*DUMM3
(-23.15) (324.93) (32.46)

Adj R^2 = 0.99 DW Stat = 1.65

25) PLR = 11.14 + 0.0000055*D(MBCEN) + 0.000013*D(MBST) + 26.33*GCPI + 5.49*DUMPLR
(13.78) (0.99) (0.92) (2.53) (5.69)

Adj R^2 = 0.64 DW Stat = 0.93