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Consequences of fiscal optimism for fiscal planning and fiscal discipline: Some insights from India

Vikas Dixit

Department of Economics, Jadavpur University, Kolkata, 700032, India.
Email: vikalp7983@gmail.com

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ABSTRACT

This paper attempts to empirically analyse the impact of India's medium term perspective on its fiscal management, and their subsequent implications for subnational Governments' fiscal situation. Using graphical analysis, exploratory statistics and regression techniques, this paper endeavours to investigate the impact of revenue forecast error on Centre's primary balance, and in turn its impact on States' fiscal imbalance. The illustrative empirical exercises of this paper reveal that optimistic medium term macro-fiscal forecasting has been a predominant feature of India's fiscal policy ever since it adopted fiscal discipline. The forecast errors are found to have serious consequences for India's primary balance and debt accumulation pronouncing even stronger over longer horizons. The forecast-error-induced primary balance at the Centre leads to a significant deterioration in the quality of fiscal deficit of State Governments. Financial irregularity emerges as an important determinant of forecast error. This paper, though illustrative in nature, provides useful insights for better fiscal planning and management in the era of fiscal consolidation in India.

Contribution/ Originality: This paper contributes to existing literature by empirically analyzing the impact of India's medium-term perspective on its fiscal management, and their subsequent implications for subnational Governments' fiscal situation.

1. INTRODUCTION

'Economics' and 'Politics' are two sides of the same coin, and they, together, determine the future of the society. To put this in perspective, the modern fiscal policy has two important objectives, namely, fiscal responsibility and flexibility, and expenditure efficiency and inclusive growth. In order to meet these objectives, Governments need to bring medium term perspective in their budgets that allows a more strategic allocation of resources and more efficient planning over time. Fiscal planning and fiscal discipline have thus become integral components of modern fiscal policy. It is well known that the fiscal policy directly and indirectly affects a country's economic performance. Therefore, fiscal policy can be used to provide stimulus to an economy during slowdown and consolidation when it grows too fast. This kind of action by the Government is necessary to reduce short term volatility in the economy and maintain macroeconomic stability – one of the three functions of Government activity, as suggested by Musgrave and Musgrave (1989). It may, however, be kept in mind that the use of fiscal policy is not always guided

by the economic rationale, rather it is established empirically[1] that Governments generally tend to prefer totally unbound fiscal policy. In other words, it is found that even when the economy is growing normally, Governments may be tempted to spend more or cut taxes in the belief that they can afford it. They do so for political gains; and they want to please their present voters rather than future voters. Gayithri (2022) has devoted a separate chapter (Chapter 6) in her book on illustrating the nexus between public expenditure and elections. Thus, totally unbound fiscal policy has serious risks, more especially in terms of unsustainable borrowings in the long run. The modern fiscal policy, therefore, emphasizes on finding an appropriate balance between being flexible using fiscal policy to stabilize the economy and being responsible to ensure sustainability. In fact, a fiscally responsible Government can concentrate on improving the efficiency of its spending and to promote inclusive growth. In other words, it can find time and space to prioritise its spending, i.e., it may focus on the allocation and redistribution of its resources – the other two functions of Government activity, as suggested by Musgrave and Musgrave (1989). In order that a fiscal policy meets the desired objectives, public financial management advocates two key focus areas – management of risks and the use of medium term fiscal and budget frameworks. A fiscally responsible Government may have targets that constraint the deficit or total expenditure; and such fiscal targets should reflect Government's fiscal strategy through multi-year plan.

India followed a conservative approach in implementing its fiscal policy which dominated all economic activities and strategies for almost three decades after Independence. With piece meal liberalisation since 1980 or so, the nature of fiscal policy also changed to adopt expansionary stance. The unsustainable nature of financing of India's growth during 1980s, however, resulted in a severe fiscal and macroeconomic crisis at the end of the decade. The need for fiscal consolidation in India was thus realised for the first time in the wake of economic crisis in 1991. However, given the high volume of committed liabilities as well as due to delayed response from the States, the fiscal reform measures initiated in 1991 and thereafter had hardly any impact. Towards the end of 1990s, when it became difficult for both Central and State Governments to manage their finances, a fresh series of reform measures were started in collaboration with the Central Government, State Governments, Reserve Bank of India and other institutions with a focus on having fiscal discipline. In the early decade of 2000, the Central Government followed by various State Governments adopted fiscal responsibility legislations. However, the so-called self-imposed fiscal rules have often been observed as violated, more generally by the Centre. There have, of course been reasons for this deviation from the fiscal consolidation, some are economically valid, while others politically motivated.

With the above introductory background, the endeavour of the present paper is to understand the phenomenon of fiscal forecasting in India with medium term framework in place and its consequence for fiscal planning and debt accumulation, not only for the Central Government itself, but also for its subnational counterparts. State Governments rely on Central fiscal transfers for financing a significant part of their obligations; and it is the uncertainty in Central fiscal transfers that eventually creeps into the revenue projections of the State budgets. There are many studies available for India which have analysed the case of fiscal marksmanship, both for the Central Government as well as for subnational Governments (see Section 2), but hardly any study, so far is conducted to examine the errors in the medium term projections made by the Government and their possible macroeconomic consequences in terms of fiscal mismanagement and debt accumulation. This paper is, therefore, a unique contribution in this direction, more especially for India. It empirically analyses the nature of fiscal forecast of the Central Government budgets for the sample period from 2005-06 (since the medium term projections started to be published from 2004-05 budget). Next, an attempt is made to empirically test if the election cycle and financial irregularity matter at all for forecast error. Then, the impact of the fiscal forecast errors of the Centre on its primary balance and on debt accumulation is assessed. Keeping in mind India's fiscal federal character, the paper

[1]See, for example, Li (2017), Alesina and Passalacqua (2016): Section III), Alesina and Stella (2010): Section IV) and Frankel (2010): Section VII) for a survey of this literature.

finally examines the impact of Centre's forecast-error-induced primary balance on the quality of fiscal deficit of State Governments. The next section presents a brief review of some relevant studies on the subject, while Section 3 gives a description of the variables, data sources and methodology used in this paper. Section 4 discusses the empirical findings. Finally, Section 5 concludes the work with some policy implications.

2. REVIEW OF LITERATURE

The issue of budget forecast error, or what is popularly known as fiscal marksmanship has been analysed quite extensively in the literature from different angles for India as well as for other countries.[2] Apart from a few exceptions, such as Mosley (1985) most of the earlier studies, like Allan (1965); Auld (1970); Paul and Rangarajan (1974); Asher (1978); Davis (1980); Chakrabarty and Varghese (1982); Bhattacharya and Kumari (1988) and Pattnaik (1990) etc., have examined the budgetary forecast error at aggregate level focusing mainly on the magnitude of it. Mosley (1985) examined the size and implications of the errors made by the British Treasury in forecasting the budget over the period 1951-84. The author reported underestimation of fiscal deficit as a serious phenomenon. While half of the forecast error was attributed to the model mis-specification, the other half of the forecast error was due to errors in data estimation and in forecasting exogenous variables. The later works attempted to identify the sources of forecast errors, not only in the aggregate fiscal indicators, but also by components of revenue and spending, for federal and subnational Governments. Chakraborty and Chowdhury (2005) for instance, attempted to estimate the magnitude of errors in the budgetary forecasts of gender-related expenditure in India with special reference to education sector. Using Theil's inequality coefficient, the authors found a relatively less degree of errors in forecasting gender related expenditure in education sector as compared to other sectors; forecast errors were not observed to follow any specific trend. A recent sector-specific study for medical and public health for Indian States over 2002 to 2017 finds that the deviations in capital health spending are high compared to those in revenue health spending (Jani, 2022). A study by Zakaria and Ali (2010) conducted for Pakistan over the period 1987-88 to 2007-08 revealed inefficient budgetary forecasting, attributable to the errors mainly due to exogenous random factors. The authors fail to find any evidence of rational expectation hypothesis in their analysis, nor did they observe any improvement in forecasting efficiency over the sample period.

With increasing recognition of the need for fiscal discipline and with changing dynamics of Centre-State fiscal relations, the study of budget credibility and predictability has assumed an added significance in the recent time. Due to low own revenues of States and their high dependence on Central Government fiscal transfers (to meet expenditure needs) as well as their increasing recourse to market borrowings (for financing fiscal deficits), finances of State Governments are vulnerable to low revenue buoyancy at the Centre and interest rate shocks. Due to defective budgeting and incorrect budget projections at the Centre, the amount transferred annually to States remain highly variable. This causes uncertainty in States' estimates of revenue receipts that creeps into their expenditure projections (see, for example, Shreshtha and Chakraborty (2019) for Kerala). In this connection, the Reserve Bank of India (2019) notes that while the extent of overestimation is growing steadily in case of states' own tax revenue, the overestimation in total revenue is consistently dominated by grants from the Centre. Even by the end of the financial year, states remain uncertain about the amount of grants they are going to receive from the Central Government. State plan schemes and Centrally Sponsored Schemes remain the most volatile components within Central grants (Srinivasan & Misra, 2021). These inconsistencies in budgetary forecasts of revenues thus adversely affect the expenditure forecasts as well as generate negative signals for investors who need certainty. With respect to expenditure forecasts, it has been found that the forecast errors in capital spending are greater than the forecast errors in revenue spending for all States (Chakraborty et al., 2019). Chakraborty and Sinha (2018)

[2] See, for example, Allan (1965); Auld (1970); Mosley (1985); Chakraborty and Chowdhury (2005); Jena (2006); Zakaria and Ali (2010); Chakraborty and Sinha (2018); Shreshtha and Chakraborty (2019); Chakraborty, Chakraborty, and Shrestha (2019); Reserve Bank of India (2019) and Chakraborty (2022).

observe that the forecast error due to bias of the policy maker in preparing the Union budget has been negligible in the period ex-ante and ex-post to Fiscal Responsibility and Budget Management Act in India. There are only a few contributions which have gone a step further to explain the cause-effect relationship between fiscal marksmanship and other economic and political determinants.[3] Studies, which have looked beyond annual budgets to account for the medium term fiscal challenges and implications of various policies are scarce in the literature.[4] It is in this context that the present study, though illustrative in nature, provides some insights on India's fiscal marksmanship and its impact on fiscal planning from a medium term perspective.

3. VARIABLES, DATA SOURCES AND METHODOLOGY

3.1. Description of Variables

Under the mandate of the Fiscal Responsibility and Budget Management Act of 2003, the Government of India has been providing multiyear rolling targets in the form of 'Medium Term Fiscal Policy Statement' along with every annual budget since 2004-05. This statement sums up the backdrop of the fiscal scenario built in the budget and spells out the macro-fiscal assumptions for the projections, both budget estimates for the period t and two year rolling targets for t+1 and t+2. These rolling targets are provided for main fiscal indicators (as per cent of gross domestic product (GDP)) the performance of which needs be tracked for fiscal consolidation.[5] The interest of this paper is, therefore, to assess the impact of the medium term forecast error in gross tax revenue of the Centre, denoted by FE on its actual annual primary balance, PB.[6] It is hypothesised that the forecast errors in the gross tax revenue leads to a deterioration in the primary balance. As the Medium Term Fiscal Policy Statement, presented along with every Union Budget contains budget estimates for the current year and rolling targets for next two years, four variants of forecast errors will be used in the empirical exercises of this paper. While first three variants correspond to forecast errors pertaining to individual horizons, the fourth variant is the cross-horizon mean forecast error. Thus, if r_t is the actual gross tax revenue receipts (per cent of GDP) in year t and r_{t-i}^{t} denotes the forecast of gross tax revenue receipts (per cent of GDP) for year t made in year t-i, then the error observed in year t corresponding to the forecast made in year t-i is defined as:

$$FE_{t-i}^{t} = r_t - r_{t-i}^{t} \ (i = 0,1,2; t = 1,2,\dots,16) \quad (1)$$

The cross-horizon mean forecast error corresponding to all horizons t-i for year t, which helps in investigating asymmetric effects is expressed as:

$$FE02_{t-i}^{t} = \tfrac{1}{3}\sum_{i=0}^{2} FE_{t-i}^{t} \quad (2)$$

It is clear from the definitions of individual-horizon forecast errors as well as cross-horizon mean forecast errors that an optimistic forecast will be indicated by the negative forecast error. Since the rolling targets are expressed as a percentage of gross domestic product (GDP) at current market prices, all actual indicators are also expressed as a percentage of GDP at current market prices (GDP new 2011 series). The back year GDP from 2004-05 has been obtained using splicing technique on a uniform base. The total public debt of the Central Government

[3] Beetsma, Giuliodori, and Wierts (2009); Beetsma, Giuliodori, Walschot, and Wierts (2013); Buettner and Kauder (2010); Buettner and Kauder (2015); Pina and Venes (2011); Chatagny and Soguel (2012) and Jochimsen and Lehmann (2017) are amongst others to mention a few.

[4] A few notable contributions include, amongst others, Auerbach (2006); Heinemann (2006); Vlaicu, Verhoeven, Grigoli, and Mills (2014); Breuer (2015) and Ademmer and Boysen-Hogrefe (2022).

[5] Initially, there were four such indicators, namely, revenue deficit, fiscal deficit, gross tax revenue and total outstanding liabilities at the end of the year. Since Union Budget 2012-13, one more indicator, effective revenue deficit, which is the difference between the conventional revenue deficit and grants for the creation of capital assets was added to the list. This was, however, dropped since Union Budget 2018-19. Since Union Budget 2019-20, non-tax revenue is added to the list; and the total outstanding liabilities are shown as a bifurcation of Central Government debt and liabilities on account of extra budgetary resources.

[6] Primary balance is defined as the difference between fiscal deficit and interest payments, or, total expenditure less of debt repayments less interest payments less revenue receipts less non-debt capital receipts.

(expressed as per cent of GDP), denoted by PDGDP (lagged by one year) as well as output gap (expressed as per cent of potential GDP), denoted by OGPGDP; measured using Hamilton's procedure (Hamilton, 2018) have been used as additional explanatory variables (Appendix A) in line with the debt sustainability literature (see, for instance, Medeiros (2012)). A dummy variable, ELC is used to capture the general election cycle; it takes the value 1 for the election year as well as for the preceding year, 0 otherwise. Financial irregularity, FR has been narrowly defined as the percentage of supplementary provisions in total approved budget that require final authorisation from the Parliament. Both ELC and FR have been explored as potential determinants of forecast error. In a federal country like India, the fiscal behaviour of the Union Government has its implications for the subnational counterparts. Thus, this paper also attempts to analyse the impact of forecast-error-induced primary balance of the Centre, denoted as FIPB on State Governments' quality of fiscal deficit, abbreviated as QFD and its level of development, GR.[7] The quality of fiscal deficit of a State, which indicates how much of the borrowed funds are being utilised for revenue purposes, is defined as percentage of its revenue deficit in gross fiscal deficit, whereas the level of development is represented by growth rate of state gross domestic product (GSDP). It is hypothesised that a deterioration in Centre's primary balance due to forecast error will lead to the worsening of the quality of fiscal deficit of the States. While Medium Term Fiscal Policy Statements of the Union Government of India for various years have been utilised for gathering medium term projections on gross tax revenue, the actual figures of gross tax revenue have been obtained from Annual Financial Statements of various years. The series on primary balance are collected from Budget at a Glance (various Union Budgets). The data on percentage of supplementary provisions to the total approved budget for each year have been compiled from Audit Reports on Union Government Accounts, Comptroller and Auditor General of India. The database on State Government Finances, Reserve Bank of India has been relied upon to get data on revenue and fiscal deficits of individual State Governments. Data on GDP and GSDP have been collected from the website of the Ministry of Statistics and Programme Implementation, Government of India. Finally, Handbook of Statistics on Central Government Debt 2015 and Status Paper on Government Debt 2019-20 have been used for public debt data.

Given the interest of this paper to illustrate the impact of forecast errors in gross tax revenue at different horizons on primary balance of the Centre, and constrained by small sample size, the baseline regression is specified to include, apart from the intercept, only the variable of our direct interest, i.e., the forecast error.[8]

$$PB_t = \alpha_i + \theta_i PB_{t-1} + \beta_i FE^t_{t-i} + u_{it}, (i = 0,1,2; t = 1,2, \dots .,16) \quad \dots\dots (3)$$

In the above regression, variables have the same meaning as defined earlier in this section, α, θ and β are the parameters to be estimated and u_{it} is the error term which is assumed to follow the usual assumptions of the classical normal linear regression model. As i takes any value, 0, 1 or 2, three specifications of (1) have been estimated separately. A fourth specification, accounting for cross-horizon mean forecast error is also estimated by augmenting Equation 3 as under:

$$PB_t = \alpha + \theta PB_{t-1} + \beta FE02^t_{t-i} + u_{it} \ (i = 0,1,2; t = 1,2, \dots ,16) \quad \dots\dots (3a)$$

The following equation is used to estimate the impact of election cycle and financial irregularity on forecast error:

$$FE^t_{t-i} = \varphi_i + \gamma_i ELC + \delta_i FR_t + v_{it} \ (i = 0,1,2; t = 1,2, \dots ,16) \quad \dots\dots (4)$$

In this equation, variables have the same meaning as defined earlier in this section; φ, γ and δ are the parameters to be estimated, while v_{it} is the usual error term of the regression. Four separate versions of this Equation 4 have been estimated, each with a different variant of forecast error as the dependent variable (including

[7] Results are not statistically significant when the level of development of a State, represented by growth rate of its GSDP is replaced by its own tax revenue.

[8] The results of four specifications of Equation 3 after having included the additional variables, PDGDP(-1) and OGPGDP are given in Appendix A. These results are also quite interesting and signal sample size limitation to yield meaningful interpretation.

cross-horizon mean forecast error). In order to examine the impact of the Centre's fiscal behaviour on States' fiscal health, four specifications of the following Equation 5 have been estimated.

$$QFD_t = a_i + b_i FIPB^t_{t-i} + c_i GR_t + w_{it} \ (i = 0,1,2; t = 1,2,\dots,16) \quad \dots\dots\dots (5)$$

In this regression, QFD is the quality of fiscal deficit of States as defined earlier in subsection 3.1, FIPB is the forecast error induced primary balance of the Centre; this is obtained by multiplying the actual primary balance of the Centre (per cent of GDP) with the estimated coefficient of the forecast error using specifications of Equation 3 and 3a.

4. RESULTS AND DISCUSSION

Table 1 reports errors in the medium term forecasts of gross tax revenue of the Central Government over individual horizons as well as cross-horizon mean forecast errors from 2005-06 to 2020-21. It may be seen from this table that the mean absolute error (MAE) increases with longer horizon from around 0.64 in the current year to nearly 1.11 in t+1 year ahead and further to 1.41 in t+2 years ahead. Similar pattern is observed for cross-horizon mean forecast errors. It is also important to note from Table 1 that Indian medium term fiscal forecast is mainly characterised by optimistic assessment of the fiscal situation in the near future. This is revealed from high percentages of optimistic forecasts in all forecasts made over the sample period. This is true, both for forecasts over individual horizons as well as for cross-horizon mean forecast. Here it is pertinent to note that the maximum possible extent of fiscal optimism is witnessed during the period of economic crisis – 2008-09 and 2009-10. This is true for forecasts made over individual horizons and also for cross-horizon mean forecasts. The trend of optimistic fiscal forecast is also depicted in Figure 1. Clearly, fiscal optimism is high with longer horizon.

Table 1. Medium term forecast errors in gross tax revenue of the centre – 2005-06 to 2020-21.

Year	FE^t_{t-0}	FE^t_{t-1}	FE^t_{t-2}	$\bar{FE}_{01}$	$\bar{FE}_{02}$	$\bar{FE}_{12}$
2005-06	-0.521	-1.023	NA	-0.770	NA	NA
2006-07	-0.070	0.031	-0.972	-0.022	-0.521	-0.470
2007-08	0.312	0.611	-0.491	0.462	-0.091	0.063
2008-09	-2.020	-1.320	-0.821	-1.671	-1.421	-1.072
2009-10	-1.091	-3.692	-2.890	-2.391	-1.992	-3.292
2010-11	-0.411	-1.513	-3.612	-0.961	-2.012	-2.562
2011-12	-0.221	-1.320	-2.220	-0.771	-1.221	-1.774
2012-13	-0.181	-0.382	-1.382	-0.283	-0.784	-0.881
2013-14	-0.761	-0.962	-1.161	-0.863	-0.963	-1.062
2014-15	-0.610	-1.211	-1.710	-0.910	-1.163	-1.462
2015-16	0.272	-0.331	-0.931	-0.030	-0.331	-0.633
2016-17	0.353	0.652	-0.050	0.500	0.151	0.300
2017-18	-0.071	0.331	0.533	0.132	0.230	0.430
2018-19	-1.091	-0.592	-0.090	-0.841	-0.593	-0.343
2019-20	-1.693	-2.393	-1.892	-2.041	-1.793	-2.142
2020-21	-0.562	-1.361	-2.461	-0.962	-1.513	-1.912
Descriptive statistics						
Minimum	-2.020	-3.692	-3.612	-2.391	-2.012	-3.292
Maximum	0.353	0.652	0.533	0.500	0.230	0.430
Standard deviation	0.683	1.122	1.141	0.832	0.741	1.071
Average	-0.522	-0.900	-1.341	-0.711	-0.931	-1.122
MAE	0.643	1.112	1.411	0.852	0.981	1.221
RMSE	0.573	0.911	1.042	0.680	0.661	0.942
Percentage of optimistic forecast in total forecast	81.250	75	93.341	81.252	86.672	80
Number of observations	16	16	15	16	15	15

Note: The forecast error, FE in gross tax revenue, made in year t-i for the year t is denoted as FE^t_{t-i}. FE_{01} represents the cross-horizon mean forecast error corresponding to the current and next horizons; similarly for other cases. MAE: mean absolute error, RMSE: root mean squared error, NA: Not applicable.

Source: Please see previous section for data sources on relevant variables.

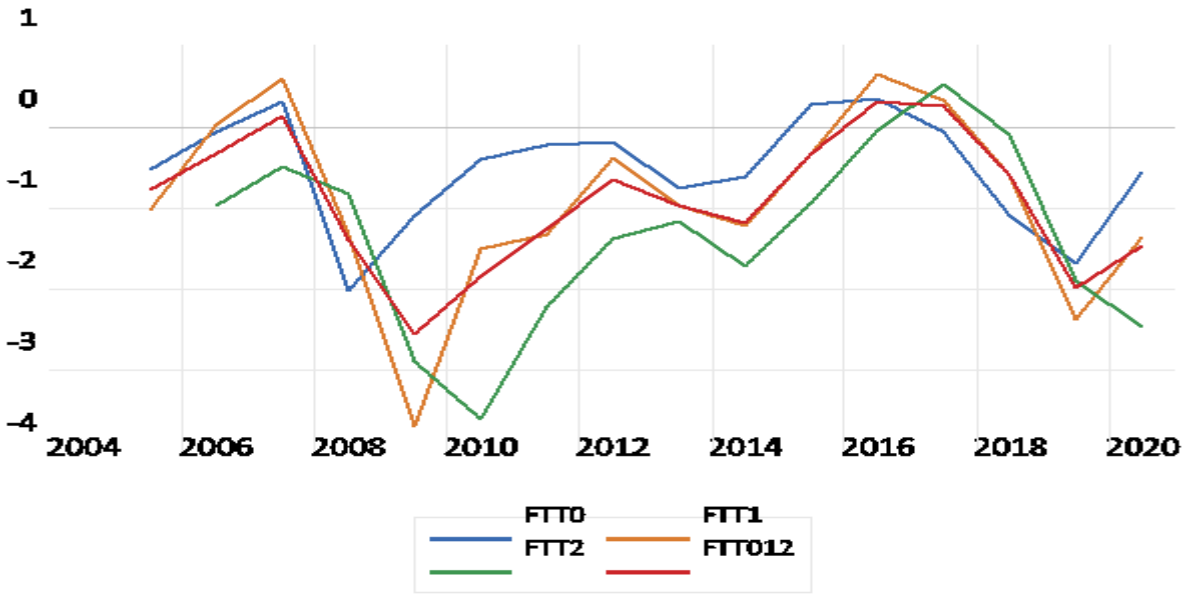

Figure 1. Plots of forecast errors in gross tax receipts of the centre – 2004 to 2020.

Note: Same as for Table 1.

Now I turn to the estimation results of various specifications of baseline regression (3), which are given in Table 2. It is seen from Table 2 that the variable of interest, i.e., the forecast error, at different horizons as well as cross-horizon mean forecast error occurs with negative coefficients which are statistically significant throughout all four specifications. The impact of the forecast error on primary balance is, however, stronger corresponding to the current year, two years ahead and that of the cross-horizon mean forecast error. Interestingly, the specification with cross-horizon mean forecast error as the variable of interest provides better fit to the sample data as compared to other specifications in terms of Adjusted R-square, standard error of the regression, Durbin-Watson statistic and F-statistic.

Table 2. Impact of forecast error on fiscal planning: Estimation results.

Estimates	Specifications of (3)			Specification of (3a)
	(At i=0)	(At i=1)	(At i=2)	(At cross mean)
Intercept	0.071	0.402	0.262	0.112
PBGDP(-1)	0.711 **	0.312	-0.140	0.220
FE^{t}_{t-0}	-1.141 **	NA	NA	NA
FE^{t}_{t-1}	NA	-0.770 **	NA	NA
FE^{t}_{t-2}	NA	NA	-1.033 **	NA
FE^{-}_{012}	NA	NA	NA	-1.172 **
R-squared	0.4133	0.4278	0.4108	0.4768
Adjusted R-squared	0.323	0.3398	0.3126	0.3964
Std. error of the regression	1.330	1.311	1.362	1.252
DW-stat	1.533	1.611	1.631	1.653
F-stat	4.580 **	4.864 **	4.183 **	5.921 *
Number of observations	16	16	15	16

Note: 1. For description of variables and their abbreviations, please see Section 3.1 of this paper. 2. NA: Not applicable. 3. * and ** refer to the level of statistical significance of the estimated parameters at $0 \leq p \leq 0.01$ and $0.01 < p \leq 0.05$ respectively.

Table 3 displays the estimation results of the impact of the election cycle and financial irregularity on the medium term forecast error in the gross tax revenue of the Central Government using Equation 4. It is interesting to note that the election cycle dummy variable as well as financial irregularity are having negative coefficients in all specifications of Equation 4. While ELC is statistically significant in all four specifications, FR is found to be insignificant in the third and fourth specifications. In fact, the third and fourth specifications are not as good as the first two specifications in terms of key statistics.

Table 3. What determines forecast error: Some preliminary estimation results.

Estimates	Dep.Var.: FE^{t}_{t-0}	Dep.Var.: FE^{t}_{t-1}	Dep.Var.: FE^{t}_{t-2}	Dep.Var.: FE^{-}_{012}
Intercept	-0.112	-0.443	-1.321 *	-0.620 **
ELC	-1.100 *	-1.263 **	-0.180	-0.971 **
FR	-0.223 **	-0.141 ***	-0.070	-0.121 ***
R-squared	0.6938	0.389	0.3239	0.3385
Adjusted R-squared	0.6467	0.295	0.2112	0.2367
Std. error of the regression	0.490	1.051	1.211	0.843
DW-stat	1.544	1.220	0.970	0.912
F-stat	25.612 *	6.563 **	1.760	5.111 **
Number of observations	16	16	15	16

Note: *, ** and *** indicate the level of statistical significance of the estimated regression coefficients with $0 \leq p \leq 0.01$, $0.01 < p \leq 0.05$ and $0.05 < p \leq 0.10$ respectively.

In the final exercise, an attempt is made to assess the impact of Centre's forecast error induced primary balance on States' quality of fiscal deficit using Equation 5. The results of this exercise are reported in Table 4. It may be noted from this table that in all four specifications, forecast error induced primary balance of the Centre has a positive and statistically significant coefficient, while growth rate has occurred with negative and significant coefficients in the second and fourth specifications, whereas it has positive and statistically insignificant coefficients in the first and third specifications. These results should be looked in light of the fact that the quality of fiscal deficit (QFD), which is the dependent variable in all specifications in Table 4 is defined as the ratio of revenue deficit to gross fiscal deficit, this is expressed in percentage terms. Thus, higher is the ratio, poor is the quality of fiscal deficit, and vice versa. The estimation results, therefore, seem to suggest that Centre's primary balance due to forecast error in gross tax receipts has adverse effect on States' quality of fiscal deficit. On the other hand, the level of economic development of a State improves its quality of fiscal deficit as per second and fourth specifications.

Table 4. Estimation results of Equation 3.

Estimates	Specifications of Equation 5			
	(At i=0)	(At i=1)	(At i=2)	(At cross-horizon mean)
Intercept	-2.072 *	-1.752 **	-1.331	-2.500 **
FIPB0	2.771 ***	NA	NA	NA
FIPB1	NA	5.232 **	NA	NA
FIPB2	NA	NA	1.061 ***	NA
FIPB012	NA	NA	NA	3.643 **
GR	0.840	-0.661 **	0.211	-0.443 ***
R-squared	0.4594	0.5612	0.3863	0.5223
Adjusted R-squared	0.3762	0.4937	0.284	0.4488
Std. error of the regression	1.351	1.281	1.550	0.983
DW-stat	1.152	1.283	1.071	1.371
F-stat	4.330 *	4.761 *	3.852 **	4.070 **
Number of observations	16	16	15	16

Note: NA: not applicable; *, ** and *** indicate level of significance of the estimated coefficients (please refer to notes of Table 3).
Source: Handbook of Statistics on Indian States 2021-22, Reserve Bank of India; Union Budgets (various years), Government of India.

5. CONCLUSION AND SOME POLICY IMPLICATIONS

This paper revisits a much investigated issue of fiscal marksmanship in the literature, but from a different angle. While existing studies have generally focused on annual budgets to explore the magnitude and sources of forecast errors in revenues and expenditures, the present paper attempts to look at this issue from a medium term perspective which has grabbed the attention of the scholars in recent time. With limited number of observations, the empirical exercise of this paper establishes the fact that optimistic forecast of gross tax receipts has been a key feature of India's fiscal marksmanship, even in the medium term. The medium term forecast error in gross tax receipts of the Centre are found to have adverse impact on its annual primary balance, thereby indicating poor fiscal planning and fiscal management. One year lagged public debt as well as contemporaneous output gap have

negative effects on Centre's primary balance in line with debt sustainability literature. Not only this, Centre's primary balance induced by medium term forecast error in Centre's gross tax receipts has adverse effects on quality of fiscal deficit of subnational Governments; and the impact is quite stronger with one-year horizon forecast error and cross-horizon mean forecast error. In this sense, the present paper empirically establishes the nexus between fiscal marksmanship at the Centre and its implications for the subnational counterparts as claimed by some of the earlier studies without any empirical justification. Finally, exploring the determinants of medium term forecast error has also been a major contribution of the present paper. With limited set of observations, this paper finds that election cycle and financial irregularity have negative impact on medium term forecast error in Centre's gross tax receipts. In fact, using financial irregularity as a variable in any empirical exercise for India has been a rare contribution of this paper. In light of the above findings, it may be a priority agenda for the policymakers at the Centre to improve the forecasting skills and develop more effective machinery towards this end. Fiscal discipline should be at the top of all policies formulated for India with carefully chosen priorities in the medium term. The instances of financial irregularity and poor budgetary control are often indicated in various CAG reports, however, the repetition of such instances every year shows the lack of seriousness on the part of the concerned Ministries/Departments. The instances of financial irregularity should thus be avoided to the possible extent so as to ensure better fiscal management. Finally, as India is a federal country (a union of States), and State Governments depend heavily on the fiscal transfers from the Centre, thus any policy action taken at the Union Government level, including fiscal mismanagement, fiscal marksmanship etc. is bound to have its implications on subnational counterparts. In line with some recent studies in this area, and keeping in view the empirical findings of this paper, it may, therefore, be suggested that the component of discretionary fiscal transfers from the Centre should gradually be reduced in relative proportion compared to transfers recommended by Finance Commission. The present paper is completely illustrative, and this work has ample scope of improvement in future, more especially in terms of empirical specifications. The findings of this paper may be of importance and further exploration for other emerging countries which have adopted a path of fiscal consolidation with medium term perspective.

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Appendix A

Estimation results of Equation 3 and 3a with additional explanatory variables

After including the additional explanatory variables, namely, public debt of the Centre (per cent of GDP) lagged by one year and contemporaneous output gap (per cent of potential GDP), Equation 3 and 3a are rewritten respectively as:

$$PB_t = \alpha_i + \theta_i PB_{t-1} + \beta_i FE^t_{t-i} + \mu_i PD_{t-1} + \rho_i OUTGAP_t + \varepsilon_{it} \ (i = 0,1,2; t = 1,2,\dots,16) \quad \dots\dots \text{(A1)}$$

$$PB_t = \alpha + \theta PB_{t-1} + \beta FE02^t_{t-i} + \mu PD_{t-1} + \rho OUTGAP_t + \varepsilon_t \ (i = 0,1,2; t = 1,2,\dots,16) \quad \dots\dots \text{(A2)}$$

In the above regressions Equation A1 and A2 PD_{t-1} is public debt (per cent of GDP) lagged by one year, $OUTGAP_t$ represents the output gap (expressed as per cent of potential GDP) in year t, μ and ρ are the parameters of the additional variables to be estimated, and ε_{it} is the usual disturbance term. Rest of the variables and their coefficients have the same meaning as before.

Appendix Table 1 contains the estimation results of Equation A1 and A2.

Appendix Table 1. Estimation results of (A1) and (A2).

Estimates	Specifications of Equation A1			Specification of Equation A2
	(At i=0)	(At i=1)	(At i=2)	(At cross mean)
Intercept	12.27	14.92	19.44	13.72
PBGDP(-1)	0.76 **	0.48 ***	0.19	0.41
FE^t_{t-0}	-0.71 ***	NA	NA	NA
FE^t_{t-1}	NA	-0.51 ***	NA	NA
FE^t_{t-2}	NA	NA	-0.7	NA
$\bar{FE}_{012}$	NA	NA	NA	-0.8 ***
PDGDP(-1)	-0.29	-0.35	-0.46	-0.33
OUTGAP	-0.19 **	-0.19 **	-0.21 **	-0.18 **
R-squared	0.6111	0.6311	0.6305	0.6513
Adjusted R-squared	0.4696	0.497	0.4827	0.5246
Std. error of the regression	1.17	1.14	1.18	1.11
DW-stat	1.61	1.76	1.57	1.68
F-stat	4.32 **	4.71 **	4.27 **	5.14 **
Number of observations	16	16	15	16

Note: ** and *** indicate the level of statistical significance of the estimated regression coefficients with $p < 0.01$, $p < 0.05$, respectively.