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Practising Subnational Public Finance in an Emerging Economy: Fiscal Marksmanship in Kerala

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Practising Subnational Public Finance in an Emerging Economy: Fiscal Marksmanship in Kerala

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Abstract

Our paper analyses the subnational public finance practices in one of the States in India –Kerala- and estimate the fiscal marksmanship. Fiscal marksmanship is the analysis of fiscal forecasting errors. Kerala, though well known for its achievements in human development outcomes, is facing fiscal stress within the rule-based fiscal framework and innovating policy tools to achieve a revenue-led fiscal consolidation. We have examined the Budget Estimates, Revised Estimates and Actuals for the macro-fiscal variables from Kerala State Budgets, for the period from 2011-12 to 2016-17 to analyse deviations between the projections and actual realizations. We found that the magnitude of forecasting errors was significant in case of tax revenue. While partitioning the sources of errors in the budgetary forecasting in Kerala, we observed that the random components of the error were larger than the systematic components for all the macro-fiscal variables, except for grants, own revenue and capital expenditure. This has three macro policy implications. One, the volatility in intergovernmental fiscal transfers can affect the stability of finances at subnational level. Two, the State needs to identify innovative policy tools for Additional Resource Mobilisation (ARM) to maintain the human development achievements. Three, within the rule-based fiscal framework, State has to innovate financing strategies for strengthening growth-inducing capital infrastructure formation.

Key Words: Fiscal marksmanship, fiscal forecasting errors, fiscal rules.

JEL Classification Codes: C32 C53, E62, H50, H60

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I Introduction

Kerala is well known for their pro-active State role in human development financing and the remarkable outcome in education, health and nutrition (RBI 2018, Niti Aayog, 2017, Chakraborty et al 2010). However, the fiscal stress of the State to maintain the human development achievements and the capital infrastructure formation, given the compressed fiscal space due to the rule-based fiscal framework, is getting attention in Indian public finances at subnational level. The recent reports of Kerala State Public Expenditure Committee highlighted that revenue-led fiscal consolidation is what State attempts to do (Government of Kerala 2017 and 2018). However, the volatility in revenue – both own revenue including the challenges from GST and the devolution in Central tax share and grants – is a matter of serious concern.

There is lack of clarity in the apportionment of ISGT, the portion given to the States. There are concerns about the phasing out of revenue deficit grants by the Finance Commission. The intergovernmental fiscal transfer mechanism has also undergone change after the phasing out of Plan and Non-plan distinction of grants. The cyclicality of returns, and ease of filing returns regarding GST are also affecting the revenue mobilization. All these affect the State's projections and aspirations about Additional Revenue Mobilization (ARM).

The fiscal space for meeting revenue expenditure, especially the salary and pensions and interest payments out of own revenue receipts (the "golden rule" of meeting revenue expenditure from own revenue receipts and not through borrowing) is shrinking. The extra borrowing powers of the State is limited by Central Government, though the fourteenth Finance Commission has carved out a strategy for the States based on certain criteria, if met, to make them eligible for extra borrowing powers. Also, the State has recently initiated trading of rupee-denominated "masala bonds" to finance capital investment. The impact of masala bonds is beyond the scope of our paper as it is off-budget borrowing.

Against this backdrop, we examine the fiscal behaviour of Kerala State in terms of "fiscal marksmanship" – the fiscal forecasting errors – of the macro-fiscal variables in the State Budgets. It is often argued that forecasting of government revenue and expenditure is essential for government budgeting. Empirical evidence suggests that underestimating the forecasts can lead to undesirable deficit/ debt levels, whereas overestimating forecasts would mean unnecessary surplus which could have otherwise spent for productive purposes (Chakraborty, Lekha, Pinaki Chakraborty and Ruzel Shrestha, 2019). Furthermore, in cases where the predicted values are underestimated and the economy is running a deficit, one might not have an alternative source of financing these deficits which can cause problems for budget execution. Hence, accurate forecasting becomes essential.

Fiscal marksmanship is an exercise to assess the forecasting errors. While assessing the forecasting errors, there are primarily two aspects that need to be considered. Firstly, the extent of the forecasting error and secondly, the components of forecasting error. Our paper analyses the magnitude and sources of budget forecasting errors in Kerala.

The rest of the paper is organized as follows. Section II reviews the literature. Section III explains the data sources and methodology. Section IV interprets the estimates. Section V concludes and draws policy suggestions.

II Literature Review

One of the earlier attempts on fiscal marksmanship analysis was made by Allan (1965) in the case of Britain. According to Allan, the importance of fiscal marksmanship during that time was because that the margin for error was limited, given the tradeoff between inflation and full employment. In such a scenario, accurate predictions of budgetary estimates were important to meet the fiscal policy targets of having full employment without undesirably high inflation. Davis (1980), following up on Allan's study has taken a longer time series (from 1951 to 1978). Auld (1970) has done a fiscal marksmanship exercise for Canada for the post war period, till 1968. Auld (1970) says that if the government is to finance its long range programmes, accurate predictions is important. Morrison (1986) has done a fiscal marksmanship exercise in the United States for the years 1950-1983.

There have been a number of fiscal marksmanship exercises in the case of India. In one of the earlier attempts at analyzing budgetary estimates in India (for 1956-64), Paul and Rangarajan (1974) has done an analysis of two components of the capital expenditure of the state and union budget, namely construction and industrial development (the analysis was limited to these two because of the scope of the subject matter they were dealing with). In this study, the analysis of forecasting errors was based largely on graphs plotting the actual expenditure and the budget estimates. In their analysis, it is stated that while in both the components the budget estimates of the center were more accurate compared to the state. This difference was attributed to the different in efficiency in the budgetary process.

Asher (1978) has performed a more comprehensive fiscal marksmanship exercise for India for the period 1967-68 to 1975-76 for both the revised and budget estimates. The study showed that during that period, both the revenues and expenditures were consistently underestimated. However, it was observed that the extent of error for the expenditure side was larger. Chakrabarty and Varghese (1982) have used data from 1970-71 to 1979-80. One of the major findings of that study was that both revenues and expenditure and underestimated. Pattnaik (1990) has done a fiscal marksmanship exercise using the Theil's Index for the period 1951 to 1989. The study observes that the errors in the revised estimates are lower than the errors in the budget estimate (although there are large errors in both). It is stated that largely most of the errors in the estimates are systematic in nature for both the entire time period as well as sub time periods (the systematic errors were maximum for the period 1981 to 1989).

More recent studies on fiscal marksmanship in India have a different conclusion. A study done by K Nitin and Roy (2014), on the political economy conundrums of Finance Commissions, using data from 1990-91 to 2011-12 observes that the source of error in components such as tax revenue, non-tax revenue, interest payments, defense revenue expenditure, plan revenue expenditure and fiscal deficit were primarily due to random error. Rest of the components such as subsidy expenditure, non-plan revenue expenditure, capital expenditure and non-debt capital receipts had a higher systematic error (mean error and slope error). A very interesting point made in the paper is that while there is an attempt to have fiscal consolidation by controlling expenditure, the predictability of expenditure is quite low compared to revenue. In a similar study, Chakraborty and Sinha (2018) has done a fiscal marksmanship exercise of Union Budgets for the period 1990-1991 to

2016-17 and have come up with a similar conclusion. While we have elaborated on the studies which have been done at a national level, in this paper we focus on fiscal behaviour of subnational governments in India, by focusing on Kerala.

III Data and Methodology

The period of analysis is 2011-12 to 2016-17. We used the data from the Finance Accounts for the State of Kerala. The methodology used in the paper - using Theil's Index - is elaborated as follows.

III.1: The Theil's Index

The methodology which is used to assess the accuracy of a forecast is Theil's Index (Theil 1958). It is defined as:

$$U_1 = \frac{\sqrt{1/n\sum(P_t - A_t)^2}}{\sqrt{1/n\sum P_t^{\,2}} + \sqrt{1/n\sum A_t^{\,2}}} \qquad (1)$$

Here, P_t is the predicted value at time t, and A_t is the actual value at time t. U_1 is the inequality coefficient. The range of U_1, is from zero to 1. In case of a perfect forecast, the value of U_1 is 0, that is, P_t equals A_t. The value of U_1 equals one when either the value of P_t is equal to 0, for all A_t or the value of A_t equals 0 for all P_t. Unfortunately, this method has some serious defects. When one considers the actuals and the predicted values which have similar forecast errors but are at different distance from the origin they give very different values of U_1. This is a limitation of U_1.

There is a revised version of the Theil's Index (Theil 1966). It is measured as follows:

$$U2 = \frac{\sqrt{1/n\sum(P_t - A_t)^2}}{\sqrt{1/n\sum A_t^{\,2}}}$$

Unlike U_1, which had a fixed range of 0 and 1, U_2 is not bounded on both sides. While it does have a lower bound of 0, it does not have an upper bound. This is because the de-nominator does not consist of the root of the summation of P-squared divided by n, unlike U_1. Similar to U_1, perfect forecast in case of U_2 is equal to 0.

A more rigorous index is the U_3. This has been used in Bhattacharya and Kumari (1988). Here, Q_t and a_t are lags, that is Q_t equals $P_t - P_{(t-1)}$ and at = $A_t - A_{t-1}$

$$U3 = \frac{\sqrt{1/n\sum(Q_t - a_t)^2}}{\sqrt{1/n\sum Q_t^{\,2}} + \sqrt{1/n\sum a_t^{\,2}}}$$

III.2: Types of Errors

There are two types of errors - systematic and unsystematic errors. We attempt to derive it in this section. To begin with,

$$\tfrac{1}{n}\sum(Pi - Ai)^2 = (\bar{P} - \bar{A})^2 + (sp - sA)^2 + 2(1 - r)\, sp\, sA$$

If we divide both sides by $(\sqrt{1/n\sum P_t^{\,2}} + \sqrt{1/n\sum A_t^{\,2}})^2$ (we will call this term D) we will get equation (1),

$$\frac{\tfrac{1}{n}\sum(Pi - Ai)^2}{D^2} = \frac{(\bar{P} - \bar{A})^2}{D^2} + \frac{(sp - sA)^2}{D^2} + \frac{2(1 - r)\, sp\, sA}{D^2}$$

And,

$$U_1^2 = \frac{(\bar{P}-\bar{A})2}{D^2} + \frac{(sp-sA)2}{D^2} + \frac{2(1-r)\, sp\, sA}{D^2}$$

Dividing both sides by D^2 we have,

$$1 = \frac{(\bar{P}-\bar{A})^2}{\sqrt{1/n\sum(P_t - A_t)^2}^{\,2}} + \frac{(sp-sA)^2}{\sqrt{1/n\sum(P_t - A_t)^2}^{\,2}} + \frac{2(1-r)\, sp\, sA}{\sqrt{1/n\sum(P_t - A_t)^2}^{\,2}}$$

For the sake of simplicity, we will label the above equation as,

$1 = U_m + U_s + U_c$

The first two components (U_m and U_s) of the equation is termed as the systematic error whereas the term U_c is the random error (David, 1978). If the systematic component of error is high, one can improve the forecasting by improving the forecasting method. This can be done adding more variables into the forecasting model or also by incorporating the fluctuations in the variables in the model. In case the random error is high, one cannot improve the forecasting further and the model used to estimate the error is a good model (Theil, 1958). We will see which component is higher in the case of Kerala.

IV State Finances of Kerala: Interpreting the Estimates

As a prelude to interpreting the fiscal marksmanship, a quick glance of the State finances of Kerala is given here. The revenue receipts to GSDP in Kerala is around 12 per cent in 2016-17. The tax revenue to GSDP is around 9.23 per cent in 2016-17. The tax revenue has two components, one is from own taxes including the GST, and the other is the share in central tax transfers. The cyclicality and uncertainties in GST returns and the tax devolution by the Finance Commission are two crucial aspects of revenue stability for the State. The non-tax revenue mainly consists of two components, own non-tax revenue including the lotteries, and the grants from the centre. The volatility in these components can also affect the State revenue. The phasing out of revenue deficits grants can affect the flow of funds to the State. As mentioned-above the lack of transparency relates to sharing of IGST apportioning is yet another crucial area of concern.

Table 1: State Finances of Kerala (as per cent of GSDP)

Kerala	Total Revenue Receipts (b+c)	Tax Revenu(b)	Non-tax Revenue ©	Revenue Expenditure (e+f+g)	*General Service (e)*	*Social Services (f)*	*Economic Services (g)*	Capital Expenditure
2011-12	10.44	8.71	1.73	12.65	5.58	4.46	1.68	1.06
2012-13	10.70	8.95	1.75	12.97	5.53	4.58	1.89	1.12
2013-14	10.57	8.49	2.09	13.01	5.72	4.51	1.71	0.92
2014-15	11.31	8.42	2.89	14.00	6.13	4.63	1.99	0.83
2015-16	12.29	9.20	3.09	14.01	6.43	4.92	1.98	1.34
2016-17	12.16	9.23	2.93	14.65	6.63	5.43	1.71	1.63

Source: (Basic Data), CAG Finance Accounts of Kerala (various years) and CSO estimates, Govt of India

The revenue expenditure to GSDP ratio is 14.65 %. The social service spending to GSDP ratio is around 5 per cent in the State. The capital expenditure to GSDP ratio is only around 1 per cent. Over the years, though capital expenditure has declined from 1.12 per cent of GSDP in 2012-13 to 0.83 per cent in 2014-15, one can see a marginal increase to 1.63 per cent in 2016-17. The State has recently initiated rupee-denominated "masala bonds" for capital investment through public sector entity. These bonds are backed by State guarantee. Kerala is the first State to go to international bond market for trading in rupee-denominated masala bonds. The impact of these initiatives on fiscal marksmanship is beyond the scope of our paper as it is off-budget initiatives.

Table 2: Deficits as per cent of GSDP in Kerala

	Revenue Deficit	Fiscal Deficit	Primary Deficit
2011-12	2.21	3.52	1.79
2012-13	2.27	3.64	1.89
2013-14	2.43	3.64	1.87
2014-15	2.69	3.64	1.74
2015-16	1.72	3.18	1.20
2016-17	2.49	4.25	2.31

Source: (Basic Data), CAG Finance Accounts of Kerala (various years) and CSO estimates, Govt of India

Kerala has fiscal deficit to GSDP ratio higher than the rule-based numerical threshold, which clearly shows the fiscal stress of the State to achieve fiscal consolidation through revenue buoyancy and not through expenditure compression. Therefore, it is crucial for us

to analyse the fiscal marksmanship of the State, disaggregating various macro-fiscal variables to understand the sources of errors in their fiscal forecasting and budgetary management.

Prior to estimate the Theil's U estimates, Table 3 gives simple fiscal marksmanship ratios of BE/Actuals and RE/Actuals. These ratios would reflect whether the macro-fiscal variables are over-estimates or underestimates (in aggregate). We observe that the BE/Actuals of the aggregate revenue receipts are overestimates during the time period. This means that the value of BE/Actuals is greater than 1. For tax revenue and non-tax revenue, it is 1.06 and 1.10 respectively. However, when we observe the same variables for the RE, we find the variables are slightly underestimated.

When we observe the expenditure side, we infer that there is an improvement in the estimates from the BE to the RE. By improvement, we mean that the extent of overestimation has declined from BE to RE. The BE/Actuals for the revenue expenditure and capital expenditure are 1.16 and 1.26 respectively. Both have experienced some degree of improvement in the RE, as the RE/Actuals have declined to 1.13 and 1.09 respectively (Table 3).

Table 3: Simple Ratios of Fiscal marksmanship in Kerala

	BE/Actuals	RE/Actuals
Total Revenue Receipts (I+II)	1.07	0.99
I. Tax Revenue (i+ii)	1.06	0.94
States Own Tax Revenue (i)	1.14	1.06
Share in Central Taxes (ii)	1.02	1.03
II. Non Tax Revenue (iii+iv)	1.10	1.14
States Own Non Tax Revenue (iii)	0.99	1.05
Grants From Center (iv)	1.22	1.24
Revenue Expenditure (v+vi+vii)	1.16	1.13
Social Services (v)	1.05	1.01
Economic Services (vi)	1.06	1.08
General Services (vii)	0.97	0.98
Capital Expenditure	1.26	1.09
Revenue Deficit	1.40	1.44
Fiscal Deficit	1.33	1.30
Primary Deficit	1.69	1.61

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

The point to be noted here is the significant volatility occurred in BE to Actuals in case of grants (1.22) on the revenue side, and capital spending (1.26) on the expenditure side. Now we turn to the Theil's U estimates of macro-fiscal variables.

IV.1: Theil's U for Budget Estimates

Table 4 shows that for the value of U_1, the errors in the total revenue receipts are low, at 0.054. Correspondingly, the components of total revenue receipts, i.e. tax revenue and non- tax revenue, are also low at 0.075 and 0.082 respectively.

Table 4: Tax and Non-Tax revenue: Theil's U for Budget Estimates and Actuals

U	Total Revenue Receipts	Tax Revenue	Non-tax Revenue
U_1	0.054	0.075	0.082
U_2	0.111	0.154	0.172
U_3	0.443	0.624	0.509

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

When we consider the revenue expenditure and capital expenditure, it can be observed that the value of U_1 is 0.152 and 0.168 respectively. Overall, based on U_1, which is measured in the scale 0-1, we can infer that the errors are quite low (Table 5).

Table 5: Revenue and Capital Expenditure: Theil's U for Budget Estimates and Actuals

U	Revenue Expenditure	Capital Expenditure
U_1	0.152	0.168
U_2	0.332	0.374
U_3	0.791	0.644

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

The primary deficit has highest magnitude of error at 0.612 when compared to revenue deficit (0.532) and fiscal deficit (0.417) (Table 6). This pattern is observed for all indices of Theil (U_1, U_2 and U_3). The fiscal deficit has less error in projections when compared to revenue deficit, may give a hint that the fiscal adjustments has happened in capital spending, to adhere to numerical threshold ratios of deficits prescribed in FRBM.

Table 6: Deficits: Theil's U for Budget Estimates and Actuals

U	Revenue Deficit	Fiscal Deficit	Primary Deficit
U1	0.532	0.417	0.612
U2	1.661	1.119	2.270
U3	0.949	0.950	0.973

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

IV.2: Theil's U for Revised Estimates

From Table 7, we observe that the value of U_1 of RE for total revenue receipts is slightly higher than that of BE. The value of U_1 for the total revenue receipt is quite low, i.e.

0.064. Correspondingly, the tax revenue and non-tax revenue is also similar to that of BE, that is 0.087 and 0.070 respectively (Table 7).

Table 7: Tax and Non-Tax revenue: Theil's Index for the Revised Estimates

	Total Revenue Receipts	Tax Revenue	Non-tax Revenue
U1	0.064	0.087	0.070
U2	0.126	0.169	0.150
U3	0.644	0.974	0.390

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

On the other hand, the value of U_1 for the revenue expenditure, and capital expenditure is respectively 0.128 and 0.118 (Table 8). From this, we can infer that for these components, the RE have a lower forecasting error than that of BE. Overall, besides the total revenue, we can conclude that the estimates have either remained similar or improved from BE to RE.

Table 8: Revenue and Capital Expenditure: Theil's Index for the Revised Estimates

	Revenue Expenditure	Capital Expenditure
U1	0.128	0.118
U2	0.274	0.240
U3	0.741	0.588

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

The Theil's Us based on RE –Actuals also revealed that primary deficit has the highest magnitude of error when compared to revenue deficit and fiscal deficit. Primary deficit is fiscal deficit deducted for interest payments, which reflects the current fiscal policy stance of the government. The fiscal sustainability of a government can be either based on primary surplus or based on the principle of real rate of interest less than the real rate of growth of economy. The significant magnitude of errors in the primary deficit reflects the stress of the government's current fiscal policy stance.

Table 9: Deficits: Theil's Index for the Revised Estimates

	Revenue Deficit	Fiscal Deficit	Primary Deficit
U1	0.503	0.380	0.573
U2	1.487	0.961	1.932
U3	0.955	0.932	0.955

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

IV.3: Interpreting the Error components

At the aggregate level, when we observe the key components of revenue and expenditure in BE, we infer that for total revenue receipt (both tax revenue and non-tax revenue), revenue expenditure and capital expenditure the random component of the error is greater than the systematic component (i.e. it is greater than 0.5). More precisely, the random error for these components are 0.62, 0.85, 0.54, 0.60 and 0.59 respectively (Table 10).

At the disaggregated level analysis of revenue receipts, an important point to be noted in Table 10 is the systematic errors in the own tax revenue projections in Kerala. In the non-tax revenue component, the systemic errors (0.49) in grants was found as high as the random errors (0.50). On the expenditure side, the errors in social sector expenditure were found to be both systematic bias (0.45) and random errors (0.55). This might be the reflection of the adjustments in the State budgets in the social sector despite projecting high in Budget Estimate phase. The capital expenditure also incurred systematic errors (0.41) and random errors (0.59).

Table 10: Error components of the Budget Estimates

	$\frac{(\bar{P}-\bar{A})^2}{D^2}$	$\frac{(sp-sa)^2}{D^2}$	$\frac{2(1-r)\,sp\,sa}{D^2}$
Total Revenue Receipt (I+II)	**0.38**	**0.00**	**0.62**
I. Tax Revenue (i+ii)	**0.15**	**0.00**	**0.85**
States Own Tax Revenue (i)	0.80	0.12	0.08
Share in Central Taxes (ii)	0.08	0.08	0.84
II. Non-tax Revenue	0.30	0.16	0.54
State Own Non-Tax Revenue (iii)	0.00	0.49	0.51
Grants from Centre (iv)	0.49	0.01	0.50
Revenue Expenditure (v+vi+vii)	**0.23**	**0.17**	**0.60**
General Services (v)	0.24	0.61	0.15
Social Services (vi)	0.45	0.00	0.55
Economic Services (vii)	0.12	0.44	0.45
Capital Expenditure	**0.41**	**0.00**	**0.59**
Revenue Deficit	0.06	0.71	0.23
Fiscal Deficit	0.08	0.56	0.35
Primary Deficit	0.08	0.69	0.22

Note: *$D^2 = (\sqrt{1/n\sum P_t^{\,2}} + \sqrt{1/n\sum A_t^{\,2}})^2$

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

In RE, in the case of total revenue receipts and revenue expenditure, the random component is greater than 0.5. Specifically, they are 0.61 and 0.74 respectively. However, disaggregating the tax revenue into own tax revenue and tax transfers, we found that bias in projections was prominently high for own tax revenue projections (0.78) (Table 11). The own non-tax revenue projections also have shown bias relatively higher than random errors. This has policy implications in terms of reforming the lottery revenue. The grants

from Centre also have shown high systematic bias (0.76). The volatility in grants to the States also affect the stability of revenue at the State level. On the expenditure front, in case of capital expenditure, the systematic component (0.42) is found greater than the random component (0.17). (Table 11).

Table 11: Error components of the Revised Estimates

RE	$\frac{(\bar{P}-\bar{A})^2}{D^2}$	$\frac{(sp-sa)^2}{D^2}$	$\frac{2(1-r)\,sp\,sa}{D^2}$
Total Revenue Receipt (I+II)	**0.01**	**0.38**	**0.61**
I. Tax Revenue	0.11	0.31	0.58
States Own Tax Revenue (i)	0.78	0.02	0.20
Share in Central Taxes (ii)	0.51	0.01	0.48
II. Non-tax Revenue (iii+iv)	0.81	0.02	0.17
State Own Non-Tax Revenue iii)	0.74	0.10	0.16
Grants from Centre (iv)	0.76	0.00	0.24
Revenue Expenditure (v+vi+vii)	**0.23**	**0.03**	**0.74**
General Services (v)	0.48	0.41	0.11
Social Services (vi)	0.05	0.08	0.87
Economic Services (vii)	0.45	0.30	0.25
Capital Expenditure	**0.12**	**0.46**	**0.42**
Revenue Deficit	0.08	0.58	0.33
Fiscal Deficit	0.09	0.44	0.47
Primary Deficit	0.09	0.62	0.29

Note: *$D^2 = (\sqrt{1/n\sum P_t^{\,2}} + \sqrt{1/n\sum A_t^{\,2}})^2$

Source: (Basic Data), Finance Accounts (various years), Government of Kerala

For BE, we can interpret that for most of the key components, there is little room for improvement of forecast error as most of them have the random components which are higher than the systematic error. What is interesting is that, while we move from the BE to RE, the systematic component of the capital expenditure and non-tax revenue has a relatively higher systematic component. This means that the fiscal marksmanship can be improved by using better policy innovations, to deal with the constrained fiscal space within the fiscal rules.

V Conclusion

We analyse the subnational public finance practices in Kerala to understand the challenges of revenue-led fiscal consolidation in an emerging country like India. Against the backdrop of fiscal rules, we analyse the fiscal marksmanship – the fiscal forecast errors - in the context of Kerala. The magnitude of the fiscal forecasting errors is found relatively

higher for tax revenue. The sources of errors - decomposed into biasedness, unequal variation and random components - are analyzed and our results found that the proportion of error due to random component has been significantly higher than the systematic bias for all the macro-fiscal variables, except for grants, own revenue (both own tax and own non-tax) and capital expenditure. This has policy implications as volatility in intergovernmental transfers can affect the stability of subnational public finances. Identifying innovative policy tools in strengthening Additional Resource Mobilisation (ARM) programmes is significant to maintain the human development achievements of the State and also the growth-inducing capital formation in Kerala.

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