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# Revenue-expenditure nexus: Case of Kerala

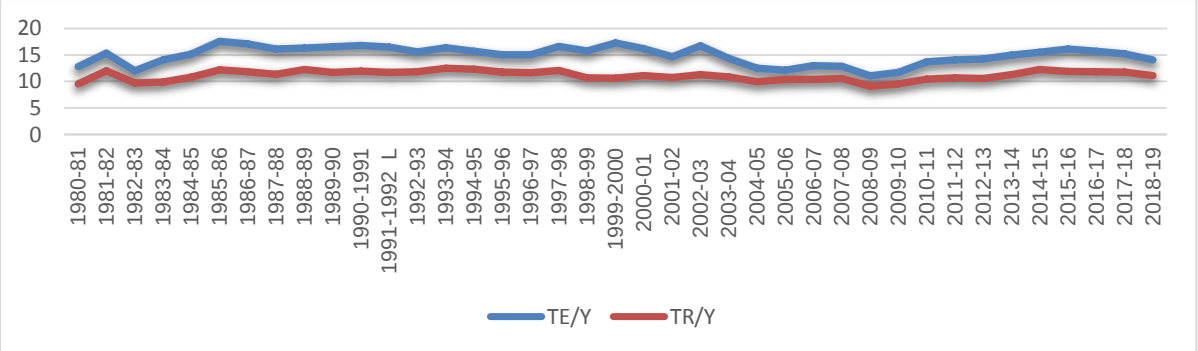
Shamna Thachaparamban

Assistant Professor, Gulati Institute of Finance and Taxation, Thiruvananthapuram

## Introduction

Fiscal reforms must target both expenditure management and revenue mobilisation simultaneously. Furthermore, fiscal consolidation can eventually happen either through an increase in revenue or a decrease in expenditure, or by balancing both of them. Likewise, if the decision to raise revenue and increase expenditures is taken simultaneously, it would have an ambiguous impact on the deficit. According to latest trend, Kerala's Revenue Expenditure stand at an average of 90.39 % (ranging from 91.8 per cent in 2017-18 to 89.58 per cent in 2022-23RE) of total expenditure, and 125 percentage of total revenue receipt (TRR) of Kerala. It typifies the discrepancy between revenue and expenditure (see. figure.1). In this regard, the fiscal consolidation strategy needs an evaluation of the initial level of revenues and expenditures with the temporal relationship existing between them. This paper analyses the long run and short run relationship between revenue and expenditure based on theoretical propositions of public finance.

Figure.1: Share of expenditure and revenue to state income




*Note: TE=Total Expenditure, TR=Total Revenue receipts and y=Gross State Domestic Product.*

**Revenue–Expenditure nexus: Established hypotheses**

Theoretically, there are four different propositions regarding the revenue-expenditure relationship. *The tax-and-spend hypothesis* (Friedman, Buchanan, and Wagner, 1978) argues that there is a positive causal relationship between public revenue and expenditure and that the government adjusts expenditures to the level of revenues, so that control of taxation is essential to limiting growth in government expenditure. Buchanan and Wagner stated that the causal relationship is reverse, that is, an increase in government revenues may lead to a decrease in government expenditures through fiscal illusion[1]. The *spend-and-tax hypothesis* of Peacock and Wiseman (1961; 1979) advocates that expenditures cause revenue, suggesting that a temporary increase in government expenditures in response to such crises will lead to higher permanent taxes. That is, higher expenditures would lead to higher taxes. At the same time, the *fiscal synchronisation hypothesis* argues governments may concurrently change expenditures and taxes (Meltzer and Richard, 1981; Musgrave, 1966). The *Institutional Separation Hypothesis* (Baghestani and McNown, 1994) suggests that revenues and expenditures are independent of one another, which means the decisions on taxation are taken independently from the allocation of government expenditures. The government decides separately about spending and revenues. So, there is no long-term relationship between government spending and revenues. Totally, the endogenous growth models suggest that the government's tax and expenditure policies can affect steady-state growth rates in either direction. In general, a change in deficits is attributed to changes in government spending, tax revenue, or both, or to the growth performance of a state.

**Empirical evidences**

There has been a plethora of studies on this nexus. Some of the studies support the tax and spend hypothesis (Ram, 1988; Bohn, 1991; Mounts and Sowell, 1997; and Chang, Liu, and Caudill, 2002). On the other hand, Anderson, Wallace, and Warner (1986) and Jones & Joulfaian (1991) argued in favour of the spend and tax hypothesis. Manage and Marlow (1986), Miller and Russek (1989), and Owoye (1995) support the fiscal synchronisation

[1] For reference, Buchanan, J. M. and Wagner, R. W (1978), 'Dialogues Concerning Fiscal Religion', Journal of Monetary Economics, 3, 4, pp. 627-636. Allen Peacock and Jack Wiseman (1961), The Growth of Public Expenditure in the United Kingdom, NBER, Princeton. Friedman, M., (1978), "The Limitation of Tax Limitation", Policy Review, Summer, 7-14.
Peacock, A.T. & Wiseman, J. (1979), "Approaches to the analysis of government expenditure growth", Public Finance Quarterly, vol. 7, no. 1, pp. 3-23.

hypothesis. Whereas, Hoover & Sheffrin (1992), Baghestani, and McNown (1994) have all found evidence in favour of the institutional separation hypothesis. Studies from India also show different outcomes. Dhanasekaran (2001) provides evidence for spending and tax by using the Granger causality test. Whereas Nithin (2012) tested these empirical hypotheses in Indian states, categorising them into four different groups, Kerala is included under the category of fiscally stressed states (FSS). The author argues that large amounts of their resources are spent on interest payments on past debt, leading to institutional separation between revenue and expenditure. On the other hand, Chaudhuri and Sengupta (2009) deduce in their study that fiscal synchronisation seems to be the mode in Kerala and Andhra Pradesh, and revenues lead to expenditure in Karnataka. While, for Tamil Nadu, data failed to show any evidence of causality. But when analysing different pairs of expenditures and revenues, such evidence could not be found in Kerala (Shamna, 2015)[2].

**Empirical analysis**

This paper analyses the long-run and short-run relationship between public spending and public revenue on the basis of theoretical propositions for Kerala. Since the series of government expenditures and revenues are found as integrated in order one, I (1), an attempt has been made to test whether there exists a long-run equilibrating function (steady state) between them with the assumption that the error correction mechanism would push government finances towards the levels required by the inter-temporal budget constraint. Lack of co-integration among the variables implies that under unchanged fiscal policies, the debt stock of the state government is unsustainable.

The analysis of the cointegrating relationship between expenditures and revenues does not favour a long-run equilibrating relationship for the period between 1980–81 and 2016–17. So, the Granger causality framework is used to examine the dependency between expenditures and revenues after taking the first-difference of the data. That is, whether expenditures cause revenue or revenue causes expenditures.

The testable function is specified as follows;

$$\Delta l Y_t = \alpha + \sum_{i=1}^{p} \beta \ \Delta l Y_{t-i} + \sum_{i=1}^{p} \phi \ \Delta l X_{t-i} + \varepsilon_{lt} \quad (1)$$

$$\Delta l X_t = \alpha + \sum_{i=1}^{p} \beta \ \Delta l X_{t-i} + \sum_{i=1}^{p} \phi \ \Delta l Y_{t-i} + \varepsilon_{lt} \quad (2)$$

[2] May be due to methodological differences. Their analysis was based on per capita data.

For example, when the null hypothesis is RE does not Granger-cause RR where the testable model.

$$\Delta l RR_t = \alpha + \sum_{i=1}^{P} \beta \ \Delta lRR_{t-i} + \sum_{i=1}^{P} \phi \ \Delta lRE_{t-i} + \varepsilon_{1t} \quad (3)$$

But the outcome fails to validate any causal link between expenditure and revenue variables. Alongside checking the relationship between spending and revenue, it couldn't find a feedback effect or long-run adjustment between total revenue receipts and revenue expenditure except a link from state domestic product to total expenditure (see Appendix Tables 1 and 2). These test results can be related to the common pool problem of political economy, in which the complexities of the government to increase revenue and decrease expenditure, especially expenditure under the revenue account, widen the gap between expenditure and revenue, leading to a seemingly persistent and unsustainable gap.

**Conclusion and policy implications**

This paper analyses the relationship between Kerala's expenditure and revenue on the basis of theoretical propositions from public finance. In addition, empirical analysis of the relationship between fiscal factors and growth is essential for understanding public finance behaviour and future budget trajectory. The results of the analysis highlight the need for robust measures to improve public finance governance and policy implementation. This indicates the need for effective measures to improve the tax administration so that the tax evasion tendency may be checked, other malpractices may be avoided, and to find alternate sources of revenues. So, this analysis specifies the need for the policy intervention of state finance to consider measures to curb the growth of non-developmental revenue expenditure and boost the growth of SDP. For this, the government should direct public spending in such a way as to generate more employment and income opportunities, keeping unproductive revenue expenditure in check, reducing subsidies by effective targeting for needy groups, and increasing capital expenditure by better use of all sources available, including central assistance and private investment. It should also take effective measures to improve the tax administration without increasing the tax base, which will improve the quality of public finance.

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## Appendix

| **Table1:** Results - co integrating relationships | | | |
|---|---|---|---|
| SR - RE | RR - RE | RR – REIP | SR -RE IP |
| L Max Test | | | |
| 13.4<br>( 0.65) | 11.71<br>(0.12) | 12.52<br>(009) *** | 16.111 (0.02)<br>** |
| 0.39 (0.52) | 0.024<br>(0.87) | 0.126<br>(0.72) | 0.002<br>( 0.95) |
| Trace Test | | | |
| 13.85<br>(0.18) | 11.735<br>( 0.190) | 12.64<br>(0.12) | 16.54<br>(0.05) |
| 0.39971 (0.52) | 0.024<br>(0.88) | 0.1264 (0.72) | 0.0002 (0.95) |

Note: *Johansen derives two tests of the hypothesis that there are at most r co integrating relationships, namely the maximum Lamda-max test statistics and the trace statistics. The Lamda-max test statistic tests the null hypothesis of r co integrating vector(s) against the specific alternative of r +1cointegrating vector(s). The trace statistic, on the other hand, tests the null hypothesis of no cointegrating vector (r = 0) against a general alternative of one or more co integrating vectors (r > 0). Here, SR= state own revenue, REIP= revenue expenditure - interest payment. The numbers in parenthesis are the p-values. *, **, and * ** denotes significant at 10%, 5% and1% level respectively.*

| **Table 2:** Results from Engle Granger Test | | | | | | |
|---|---|---|---|---|---|---|
| Models independent | SR – REIP | SDP – TDE | RE – SR | TEIP – SR | SR – RE | TE - SDP |
| ΔL GSDP | No cointegrating relationship | No cointegrating relationship | No cointegrating relationship | No cointegrating relationship | No cointegrating relationship | 0.707<br>(1.89) |
| ΔL TDE | | | | | | |
| ΔL RR | | | | | | |
| Ect – 1 | | | | | | -0.58<br>(-3.69) *** |
| R2 | | | | | | 0.42 |
| DW | | | | | | 1.95 |
| Constant | | | | | | 0.02<br>(0.96) |

**Note:** ****p< 0.01; **p<0.05; and *p<0.10. Ect represents error correction term. Rows show independent variables and column shows the relationship. In these models, the last column shows the significant error correction term with negative sign.*