Impact of Fiscal Discipline on Public Expenditure and National Income of India

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1. INTRODUCTION:

Economic planning in a mixed economy like India is different from any other socialist country, implying the co-existence of public and private sector entities. In a mixed economy, the state takes the initiative by spending in those areas where the private sector is unable to spend, or indifferent to the social benefits that can be derived by such spending. In country like India, the state accords very high priority to the development of infrastructure. Spending towards the development of infrastructure like roads, railways, construction of water channels, and production of energy helps in rapid economic development. The state also helps in building a social overhead capital for the private sector to raise its output. However, the state cannot rely upon the private sector for the development of basic industries; following the Mahalanobis strategy of development, the state accords a high priority to large-scale basic industries. Thus, public expenditure is one important growth driver of any economy. Economic growth must be sustained for a developing economy to address issues like unemployment, poverty, and inflation.

In the system of indicative planning, expansionary fiscal policy is used as an instrument for development. Increased expenditure leads to a fiscal imbalance — this gap between government revenue and expenditure, which is sought to be filled by deficit financing. In India, the need for deficit financing arises because of the government's failure to mobilize the desired volume of surplus, and because of increasing expenditure (mostly non-developmental expenditure) (Chaudhuri, 1978). This deficit creates inflationary pressure in the economy because of a high propensity to consume, various market imperfections, low production capacity in plants, and insufficient equipment. (Meier & Baldwin, 1978). If the increase in expenditure negatively influences economic growth, then policymakers need to be cautious while implementing an expansionary fiscal policy. If expenditure enhances economic growth, policymakers need to focus their attention on the potential of said expansionary fiscal policy. However, it is important to manage the deficit which arises due to increase in public expenditure, and its impact on the economy.

Fiscal discipline should be maintained while the government is in pursuit of higher economic growth. In India, the committee for Fiscal Responsibility Legislation was constituted on January 17, 2000, to oversee the current fiscal system and recommend a draft legislation on the fiscal responsibility of the government. It was announced in the 2000–01 budget that the government intended to introduce an institutional mechanism to the Fiscal Responsibility Act to restore fiscal discipline. The Fiscal Responsibility and Budget Management (FRBM) bill was introduced in the year 2000. The FRBM bill was totally undemocratic in its approach as it denied freedom to future governments with respect to fiscal management (FRBM-Circular, 2008). The FRBM Act is based on the preamble to provide responsibility to the central government to ensure inter-generational equity in fiscal management along with long-term macroeconomic stability, by achieving sufficient revenue surplus, thereby eliminating fiscal deficit. Fiscal discipline will be achieved by limiting government borrowings, debts, deficits, and curtailing higher public expenditure (Bagchi, 2004).

There is a lot of debate regarding the existing theoretical and empirical analysis on the economic effects of increased public expenditure. Some support increased public expenditure because it helps to put money into circulation, increases investment activity and employment, and reduces tax averseness. Others argue that an increase in public expenditure will lead to a fiscal deficit and create debt (Jamshaid, 2010). There are two approaches to understanding the relationship between public expenditure and economic growth. One is the Wagnerian Law approach and the other is the Keynesian approach. According to Wagner's Law of Increasing State Activities, higher government activity and public expenditure will lead to economic growth (Wagner, 1883). According to Keynes

(1936), expansionary fiscal policies will help to increase economic activities. The objective of this paper and its focus is to study the causal relationship between public expenditure and economic growth in the presence of the FRBM Act.

2. INDIA'S PUBLIC EXPENDITURE:

The government's activities started increasing post-independence; both, intensive and extensive expansion in government activities during the planning period resulted in a rise in public expenditure. In 1950–51 the total public expenditure (capital and revenue expenditure) was ₹ 900 crore, it rose to ₹ 7,843 crore in 1970–71, and to ₹ 1,63,520 crore in 1990–91 (RBI, 2017). In developing countries where national income has been steadily rising, an increase in public expenditure is a commonly noticed phenomenon. In some western countries, the proportion of public expenditure to national income has remained stable due to a proportionate rise in national income. India's GDP to public expenditure ratio was stable until 1990–91 at 28.7%, which rose from 15.3% in 1960–61. The government wanted to check the rise in public expenditure, and was able to reduce it to 24.7% in 1996–97, and subsequently to 25% in 1997–98 (Misra, 2016). Indian public expenditures can be classified under two heads i.e., developmental expenditure and non-developmental expenditure.

2.1 DEVELOPMENT EXPENDITURE:

During the planning era that lasted five years, the developmental expenditure increased due to expansion of developmental activities. The ratio of developmental expenditure (State and Central Government combined) to total expenditure was 36.2% in the year 1950–51. In 1980-81, this ratio was at its highest at 64.6%; there was a significant decline in the ratio during the liberalisation phase, when it stooped to 59.8% in 1990–91. In recent years public expenditure has gained increased significance, keeping this ratio at58.7% in 2011–12 and 58.6% in 2013–14 (Misra, 2016). In the revenue account, developmental expenditure has increased due to a rapid increase in subsidies. Subsidies paid from the union budget have increased to ₹ 2,58,000 crores in 2014–15 from ₹ 43,000 in 2002–03, as the ratio of subsidies to GDP reached to 2.58% in 2013–14 (Budget, 2016-17). The major subsidies currently are on food, fertilizers, and petroleum. The government is now trying to reduce these subsidies; because when these subsidies were introduced in the country, economic conditions were not favourable. The Government of India also initiated steps for improving education and healthcare. The expenditure on education in 2013 was 3.9% of the GDP compared to 6.3% of the GDP in Brazil. Public expenditure on health in India in 2013 was 1.1% of the GDP (World Bank Indicators, 2015).

2.2 NON-DEVELOPMENT EXPENDITURES:

After the first three decades of the planning period, the relative importance on non-developmental expenditure has reduced, but the absolute amount of non-developmental expenditure has increased, along with the share of non-developmental expenditure to the total expenditure. Non-developmental expenditure has a tendency to grow with the growth of per capita income and population. Public expenditure has a long-run tendency to increase relatively with the growth of national income aggregates such as GDP and population, as per the Law of Increasing State Activities (Wagner, 1883).

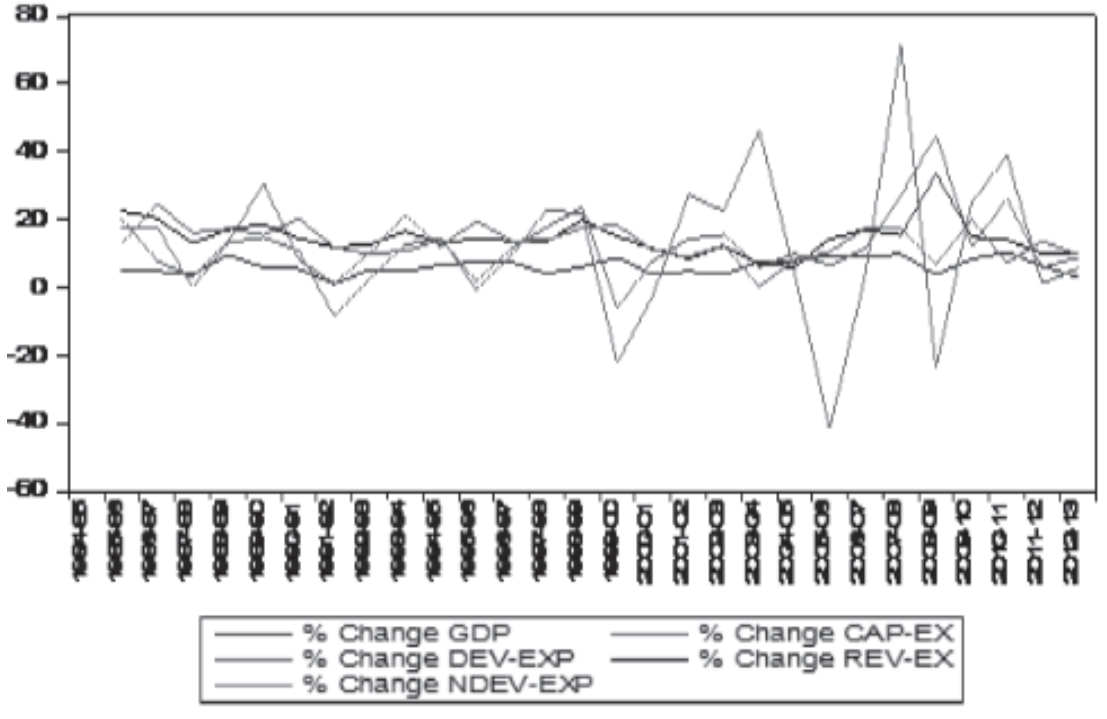
Non-developmental expenditures of India made by the central government towards areas such as defence have considerably increased; the defence expenditure in 1980–81 was ₹ 3278 crores. It rose to ₹ 10,874 crores in 1990–91, ₹ 1,24,374 crores in 2013–14, and ₹ 1,37,359 crores in 2014–15. India has experienced a rise in defence expenditure due to national security threats, which makes the postponing of defence modernisation strategy risky for the country. Another reason for increased expenditure is rapid change in defence technology and its rising cost.

Expenditure on interest payment is considered unproductive; it had increased during the planning period. In 2014–15, the interest payment expenditure of the central government alone was ₹ 4,04,019 crores, which was 3.2% of the GDP (Budget, 2016-17). Over a period of time, the amount of public debt has increased, and the interest liability of the government has also increased. The interest expenditure can be reduced by quick retirement of the debt; it can be financed disinvestment (Mundel & Rao, 1990).

One of the causes of rise in Indian public expenditure is high population growth. During the last six decades from 1951 to 2011, India has faced a population explosion. India was on the second stage of demographic transition in 1950 when the population was more than 36 crores; it rose to 120 crores in 2011 and 132 crores in 2016. Public expenditure needs to be curtailed for bridging the fiscal deficit.

Figure-1 shows a comparison of percentage change in GDP (substitute of economic growth), with real figures of revenue expenditure, capital expenditure, developmental expenditure, and non-developmental expenditure. There is highest fluctuation in percentage change in capital expenditure compared to other public expenditures. The percentage change in GDP is showing a constant trend with upward movement from year 2003–04.

Figure-1: Percentage Change in National Income & Public Expenditure.



Source: Reserve Bank of India, 2016–17

Both, public expenditure and national income, change simultaneously within the considered period. This creates the need for testing the direction of causality suggested by the Wagnerian law and the Keynesian approach.

3. LITERATURE REVIEW:

Extensive literature on the theoretical and empirical debate between Wagner's law and the Keynesian law attempts to validate the causal relation between public expenditure and GDP. Singh and Sahni (1984) examined the causal link between public expenditure and India's national income, and found a bi-directional causality between public expenditure and national income. Ahsan *et al.* (1992) studied data from the United States and failed to detect any causality between public expenditure and national income. Afxentiou and Serletis (1996), Ansari *et al.* (1997), and Abizadeh and Yousefi (1998) examined cross-country data; they were unable to find any evidence supporting Wagner's law. Bohl (1996) studied G7 countries (Post World War-II) and found evidence for Wagner's law in the United Kingdom and Canada out of G7 countries. Frimpong and Oteng-Abayie (2009) examined the West

African Monetary Zone country data and results supported neither Wagner's view nor the Keynesian view. Verma and Arora (2010), and Ray (2012) examined the causal relation between public expenditure and GDP on Indian data and found a short run causality between economic growth and public expenditure, supporting Wagner's law.

Muhlis and Hakan (2003), used the natural log of annual data of the Turkish economy from 1965–2000; co-integration and Granger causality tests support neither Wagner's law nor Keynes' hypothesis. Jamshaid *et al.* (2010), examined the direction of causality between public expenditure with some selected expenditure components, and the national income of Pakistan. The Toda-Yamamoto causality test was used for annual data of 1971–2006; results concluded in favour of Wagner's law. There exists a unidirectional causal relationship flowing from GDP to public expenditure. Olugbenga and Owoye (2007) used data from 1970–2005 for 30 OECD countries and found unidirectional and long run relationships from public expenditure to economic growth supporting the Keynesian law for 16 countries. On the other hand, unidirectional and long run relationships between economic growth and public expenditure supporting Wagner's law were observed for 10 countries, while four countries showed a bi-directional causal relationship between public expenditure and economic growth. Ergun and Tuck (2006) used the Granger causality test to investigate the causal links between the two variables for countries like Indonesia, Malaysia, Philippines, Singapore, and Thailand by using annual data from 1960–2002 and found that causality runs from public expenditures to national income only for Philippines.

The relationship between public expenditure and economic growth yields mix results and the debate is never ending. Designing policy which addresses important issues like recession, inflation, stagflation, unemployment, and income inequality is very cruisial. It gives central authorities the ability to boost their economy through fiscal measures, notwithstanding a change in the share of government spending to GNP. Knowing this long-term relationship helps to reach an estimate regarding the public spending and national output. This further enables researchers and the government to recognize a yardstick against which the fiscal policy can be designed. The dynamic between government spending and national output also contributes to the sustenance and preservation of public finances. This is important more so when the government is having a hard time limiting its expenditure, in order to maintain fiscal discipline. Thus, understanding this dynamic helps provide an academic outline based on which, fiscal policy adjustment plans related to medium-term budgetary goals can be formulated, scrutinized, and judged.

4. METHODOLOGY:

The objective of this paper is to study the causal relationship between public expenditure and economic growth in the presence of the FRBM Act. Determinants of economic growth are not taken into account. Granger (1969) proposed the concept of causality using a VECM model. In this study, Granger causality is used to investigate the causality between public expenditures and GDP growth based on the VECM model.

4.1 Data & Findings:

The data used for testing the causal relationship between public expenditure and economic growth is captured for the period from 1980–2016. The study uses a natural log of annual data of GDP, Development Expenditure (DEX), Non-Development Expenditure (NDEX), and the Net Fiscal Deficit to GDP ratio (NFD). A dummy variable is taken to capture the impact of the FRBM Act (DFRBM); a value of zero from 1980 to 2002, and a value of one from 2003 to 2016. The data is taken from the RBI's Handbook of Statistics, 2015–16. Nominal variables are deflated into real ones by the GDP deflator (2004–05 constant price). This study uses tests like the ADF, Johansen cointegration test, and Granger causality test.

4.1.1 Stationarity Test:

For conducting a causality test, stationarity of the time series is a must; the efficacy of any autoregressive model for establishing the relationship among variables is based on the assumption of stationarity of the variables. Non-stationarity of time series implies that variables may be co-integrated in the long run. Thus, stationarity and co-integration tests must precede the causality test based on VAR. The Augmented Dickey Fuller (ADF) test can be employed to test the unit root (Green, 2003). Following this, AR(p) regression should be estimated by equation (1) for testing the unit root. The model is 'augmented' by ΔY_{t-j}.

$$\Delta Y_t = \mu + \beta Y_{t-1} - \sum_{j=1}^{p} \alpha j \, \Delta Y_{t-1} + \varepsilon_t \quad \text{..... (1)}$$

The ADF unit root test has a H_o: $\beta = 0$ versus an H_1: $\beta < 0$. The results in Table 1 of the ADF test show the order of integration of the variables and the presence of a unit root. The variables are stationary at first difference, meaning that GDP (Y) is stationary at I(1) first difference; the Net Fiscal Deficit (NFD), Development Expenditure (DEX), and Non-Development Expenditure (NDEX) are also stationary at I(1) first difference.

Table 1: Unit Root Test

Variables	Order of Integration	t-statistic & Prob.	Stationarity	Variable	Order of Integration	t-statistic & Prob.	Stationarity
Y	I(0)	0.551228 (0.9868)	Not-Stationary	**Y**	I(1)	-4.724860 (0.0003)	Stationary
NFD	I(0)	6.438175 (1.0000)	Not-Stationary	**NFD**	I(1)	-4.995687 (0.0006)	Stationary
DEX	I(0)	4.107904 (1.0000)	Not-Stationary	**DEX**	I(1)	-0.107904 (0.0000)	Stationary
NDEX	I(0)	4.14974 (1.0000)	Not-Stationary	**NDEX**	I(1)	-3.17300 (0.0000)	Stationary

Estimates show that the null hypothesis of non-stationarity is rejected at first difference for all variables at the particular level of significance described by the p-values in parenthesis. This implies that all the variables are integrated of order one I(1).

4.1.2 Cointegration Test:

After testing stationarity, the next step is to check if there were any long run tendencies between public expenditure and national income. Maximum likelihood test procedure is used, to identify the number of cointegrating vectors with the help of two statistical tests i.e. trace test statistic and the Maximum Eigen value test statistic (Johansen, 1988; Johansen and Juselius, 1990)

Table 2 below shows that the null hypothesis of no co-integration is rejected; this indicates cointegration at the 5% level of significance with lag lengths of 2 according to the Schwartz criterion. The estimates suggest that there is cointegration and a long-run relationship between GDP (Y), Development Expenditure (DEX), Non-Development Expenditure (NDEV), and Net Fiscal Deficit (NFD).

Table 2: Johansen Cointegration Test:

Ho: No Co-integration	Max-Eigen Statistic	Critical Value (5%)	Prob.	Trace Statistics	Critical Value (5%)	Prob.
Y and NFD						
Reject	22.75283	14.26460	0.0018	26.97910	15.49471	0.0006
Y and DEX						
Reject	25.93730	14.26460	0.0005	29.08608	15.49471	0.0003
Y and NDEX						
Reject	16.26972	14.26460	0.0238	16.92812	15.49471	0.0302

4.1.3 Causality Test:

The Granger Causality Test based on the Vector Error Correction Model (VECM) is used to estimate the causality between public expenditure and national income in the presence of a dummy variable of fiscal discipline (the FRBM Act). The test involves estimating the following equations of regression:

$$Y_t = \sum_{i-1}^{n} \alpha_i NFD_{t-i} + \sum_{i-1}^{n} \beta_i Y_{t-j} + \gamma_1 DEX_t + \gamma_2 NDEX_t + \gamma_3 DFRBM_t + u_{1t} \quad (2)$$

$$DEX_t = \sum_{i=1}^{n} \emptyset_i NFD_{t-i} + \sum_{i=1}^{n} \delta_i DEX_{t-j} + \gamma_1 NDEX_t + \gamma_2 DFRBM_t + \gamma_3 Y_t + u_{2t} \quad (3)$$

$$NDEX_t = \sum_{i=1}^{n} \beta_i NFD_{t-i} + \sum_{i=1}^{n} \beta_i NDEX_{t-j} + \beta_1 DEX_t + \beta_2 DFRBM_t + \beta_3 Y_t + u_{3t} \quad (4)$$

Where,
Y= National income,
DEX = Development Expenditure,
NDEX = Non-Development Expenditure,
NFD = Net Fiscal Deficit to GDP,
DFRBM = Dummy Variable for FRBM Act.

Estimating the lag length for the causality test is important because causality results are sensitive to the number of lags included (Gujarati, 2011). Akaike (AI) and Schwarz Information Criterion (SIC) are used to select the optimal lag length (k) of the causality test. The following hypotheses were tested:

Hypothesis:

Null Hypothesis	Alternate Hypothesis
$H0_A$: Y does not Granger cause DEX	**$H1_A$**: Y Granger cause DEX
$H0_B$: Y does not Granger cause NDEX	**$H1_B$**: Y Granger cause NDEX

The Granger Causality Test based on the Vector Error Correction Model (VECM) can be used as the variables follow I(1) order of integration, and are co-integrated. VECM is used as an alternative to the VAR model, because if individual variables are non-stationary at level and are co-integrated, the VECM model includes the error correction term, which is obtained from the co-integrating regressions. This has led us to use the VECM (Gujarati, 2011).

For estimating the causality by VECM using cointegrating variables, the optimal lag has to be selected, as causality estimates are cumbersome and sensitive to the selected lag length. The optimum lag length (k) is 2, based on AI and SC and LR criteria; the maximum order of integration (d) is 1 for the model. The Granger Causality Test using VECM and chi-square statistics is shown in Table 3.

Table 3: Granger Causality (VECM) Test Estimates:

VEC Granger Causality/Block Exogeneity Wald Tests Sample: 1 37 Included observations: 34			
Dependent variable: D(Y) (k= 2) (d = 1)			
Excluded	**Chi-sq**	**Df**	**Prob.**
D(NFD_GDP)	22.27326	2	0.0000***
D(DEX)	36.62636	2	0.0000***
D(NDEX)	9.448273	2	0.0128***
All	56.50451	6	0.0000***
Dependent variable: D(DEX) (k= 2) (d = 1)			
Excluded	**Chi-sq**	**Df**	**Prob.**
D(NFD_GDP)	0.686010	2	0.6204
D(Y)	1.537502	2	0.3548
D(NDX)	10.70314	2	0.0032***
All	17.40165	6	0.0286**
Dependent variable: D(NDEX) (k= 2) (d = 1)			
D(Y)	1.979588	2	0.3717
D(NFD_GDP)	0.121590	2	0.9410
D(DEX)	1.26453	2	0.5389
All	18.46106	6	0.0248**

k = optimal lag and d = maximum order of integration, Exogenous Dummy variables: DFRBM = dummy variable for the FRBM Act.

Note: Numbers in parentheses are probability values.

*****, **, *and denote significance at 1 percent, 5 percent, and 10 percent respectively.**

The Granger Causality Test results with respect to public expenditure and national income reveal that a unidirectional causality runs from public expenditure to national income. Development expenditures (DEX) cause a rise in national income; stimates show the direction of causality from development expenditure (DEX) to national income (Y). Non-development expenditure (NDEX) also causes a rise in national income; estimates show the direction of causality from non-development expenditure (NDEX) to national income (Y). DFRBM is taken as an exogenous dummy variable for the FRBM Act; the estimates of the causality test are carried out by incorporating the impact of the fiscal discipline policy under the FRBM Act. Estimates of causality support the Keynesian approach, which says developmental expenditure plays an important role in economic growth.

5. CONCLUSION:

This study attempts to investigate the causal relationship between developmental expenditure, non-developmental expenditure, and national income in the presence of the FRBM Act. The Act has been put in place for eliminating fiscal deficit and removing fiscal impediments in conducting effective policy-making and prudent debt management. The role of the FRBM Act is important as India has a history of consistent fiscal deficit due to increased public expenditure; the modern measure to control fiscal imbalance is by curtailing the less important expenditures.

The econometric model of cointegration and Granger Causality are used to investigate the causal relationship between public expenditure and national income. Estimates of the cointegration test shows non-spurious and long run relationships among the variables. Causality estimates show unidirectional causality between developmental expenditure and growth in national income. Developmental expenditure causes a significant increase in national income; but, growth in national income does not lead developmental expenditure to increase, rejecting the causality. An exogenous dummy variable of the FRBM Act is used to incorporate the effect of fiscal responsibility and curtailing public expenditure, to maintain fiscal deficit. This study supports the Keynesian hypothesis in the Indian economy, thus results contributing to existing literature. Developmental expenditure will lead to more income growth in India. Thus, in order to maintain fiscal discipline, non-developmental expenditure should be curtailed. The relationship between developmental expenditure and income growth can be understood as: the fiscal policy should allocate more resources towards developmental expenditure, which in turn will help to stimulate economic growth. Developmental expenditure such as capital outlay will lead to more capital formation in the economy. On the other hand, non-developmental expenditures such as defence expenditure and interest payment are important to maintain the economy as they neither increase assets nor reduce the liability. However, other non-developmental expenditures can be curtailed to maintain the fiscal deficit.

The challenge with Indian policy makers is that economic growth in India does not correspond to the increase in developmental expenditure; in spite of an increase in developmental expenditure, Indian growth has not risen to the level of other less developed countries. Repeated occurrences of economic stagnation have created serious doubts about the rationality underlying the budgetary allocation of resources. Thus, it is advisable for Indian policy makers to look into rational budgetary allocation of resources, towards development-oriented expenditure, in order to achieve higher economic growth.

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