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**GOVERNMENT SPENDING, TRADE  
OPENNESS AND ECONOMIC GROWTH  
IN INDIA: A TIME SERIES ANALYSIS**

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## ABSTRACT

The study examines the impact of aggregate government expenditure and its two broader components such as revenue expenditure and capital expenditure on the growth rate of output in the Indian context along with other key potential determinants of economic growth such as trade openness and private investment. It utilizes structural vector autoregression (SVAR) methodology for examining the dynamic response of output growth to the shocks in major macro economic variables wherein public expenditure is considered to be an important fiscal policy instrument. From the empirical analysis, the study finds that neither aggregate expenditure nor the capital expenditure does have significant influence on the growth rate of the economy. Rather, surprisingly, it is the revenue expenditure, to some extent, explains the variation in growth rate and it is again in the positive direction. Besides such relationship between public expenditure and output growth, it is mainly taxes, openness measure and private investment do influence growth rate. Contrary to the expectation, the taxes which should have a negative influence on the growth rate of output, surprisingly has a positive influence but openness measure and private investment have positive impacts in line with general expectation of the theory.

**Key Words:** Openness, Government Spending, taxes, Investment & Economic Growth

**JEL Classification:** E62, F43, H 51, H52

Government expenditure as a tool of fiscal policy can have profound influence on the stabilisation and economic growth depending upon its utilisation pattern and management by the government. Contrasts to the standard presumption that public expenditure supports the growth objective, evidences show that it may have desirable as well as undesirable effects on the economy. The sustained rise in the size of government expenditure in most of the developing economies in the past has frequently engaged the development economists in evaluating the effects of expenditure on economic growth. It is firstly Wagner (1883) in his “The law of an Increasing State Activities”, recognised the role of national income as one of the fundamental determinants of public expenditure. Economists in their subsequent theoretical works consider Wagner (1890)’s Law as the starting point to the analysis of the relationship between government expenditure and economic growth. The hypothesis has become a subject of intensive research motivating the economists as to know the direction of causality - whether causality runs from national income to government expenditure or vice-versa.<sup>1</sup>

It is contested that government spending causes expansion of domestic output and income, resulting in home demand for increasing imports. Increased imports leading to increase in income abroad may in turn result in demand for domestic exports and hence growth. Conversely, trade openness could also enhance demand for public goods and

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1 The causality is tested in a variety of functional forms for different country contexts. The studies finding evidence in support of Wagner’s law are Henning and Tussing (1974), Ganti and Kolluri (1979), Vatter and Walker (1986), Nagarajan and Spears (1990), Gyles (1991), Ram (1992), Lin (1995), Murthy (1996) Kolluri et al (2000). On the other hand, the studies finding evidence against Wagner’s law are Diamond (1977), Wagner and Weber (1977), Sahni and Singh (1984), Bairam (1992), Henrekson (1993), and Ashworth (1994) etc.

simultaneously reducing the ability of the government to collect taxes.<sup>2</sup> This holds when openness is due to tariff cuts. However, given tariff rates, openness due to elimination of non-tariff barriers could result in more government revenues and hence expansionary government policies. Thus, there could be an interaction between government spending, openness of the economy and economic growth (Ram, 1999 & Rodrik, 1998).

Given the arguments as regard to the favourable and unfavourable effects of government expenditure, while some economists theoretically argue for a low level of government expenditure as to promote economic growth, some favour for higher expenditure for boosting up the level of economic growth. Wagner (1883) points out that the volume of government expenditure is the yardstick for measuring the size of the state activity.<sup>3</sup> Higher level of government expenditure indicates a larger size of the government. Advocates of larger size of government argue that the increase in government expenditure in the form of provision of public goods such as health, education (meant for human capital formation) and infrastructure (meant for creating physical capital formation) bolsters up the economic growth by expanding the level of economic activities, as these expenditures are believed to have significant positive externalities. The proponents of smaller government argue that higher government expenditure undermines economic growth by squeezing the resource availability for the productive private sectors as it transfers the resources from the productive private sectors to the

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2 Government spending plays a risk-reducing role in economies exposed to significant amount of external risk (Rodrik, 1998). European countries have larger government sectors and are also more open. Cameron (1978) also argues that more open economies have higher rates of industrial concentration fostering stronger unionization and labor confederations which in turn results in larger demands for government transfers (social security, pensions, unemployment insurance, job training and so forth) to mitigate the external risks. He also showed that best single predictor of the increase in an OECD government's tax revenue was economy's openness.

3 Recently, economists also began considering revenue as a percentage of GDP to be a yardstick for measuring the size of government in an economy.

government. Thereby, it lessens the efficiency of expenditure (Ram, 1986)<sup>4</sup>.

The Keynesians view that government expenditure, as a fiscal policy instrument, is useful for achieving short-term stability and higher long-run growth rate. Therefore, they prescribe for government interventions in the economy through the fiscal policies as this plays a crucial role in the development process. They advocate for expansionary policies during economic contractions and vice versa for correcting the short-term fluctuations and increasing the long-term steady state growth rate. Otherwise, the economy would rest at a lower growth trajectory. As opposed to this view, the Classical economists deem fiscal policies to be ineffective as it crowds out private spending such as including investment spending. When government spending is raised, private goods are substituted for public goods, thus causing lowering of private spending on education, health, transportation and other services. Further, heavy government spending requiring more government borrowings (through bond-financing) may displace private sector in availing up of credits for financing its expenditure.<sup>5</sup> This can occur either by squeezing the supply of credit or raising the interest rate in the economy. The monetary approach to balance of payment also emphasizes the proposition that higher interest rate resulting from contraction in money supply leads to low investment and hence low growth rate of output in the economy.

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4 Theoretically, it is believed that the government is less efficient than the private sector and hence a larger size of the government would contribute to slower economic growth. The government's role as a provider of social and physical infrastructure through public investment and expenditure on goods and services can generate externalities in the form of better investment opportunities for the private sector. Thus, it is believed that resources can be optimally allocated.

5 It is also argued that expenditure may be productive or unproductive but the financing methods are likely to retard economic growth depending on how much proportion of it is financed through bonds and through money-financing and tax-financing (Gokan, 2002). Higher level of government expenditure financed by debt may preempt physical and financial resources from the private sector lowering investment and output and hence the growth rate.

It is also true that heavy government spending requires imposition of increasing amount of taxes. The effect of taxes may result in disincentive impact on the private sector to work and invest.<sup>6</sup> Moreover, this results in inefficient resource allocation and resting the economy at an under equilibrium. Thus, according to this Classical view, countries with higher government spending would experience lower economic growth. To the extent that the public sector engages in activities that can be undertaken in the private sector, and the way in which expenditure is being financed may have detrimental consequences. In contrast, in line with Keynesians, it could be argued that the government provision of necessary public goods for which no competition exists from private sector can definitely lead to faster economic growth. It is opined that “increasing the government expenditure during slumps in the business cycle as to drive up aggregate demand and thereby promotes economic growth. But there is a limit to increasing the size of government spending, as after a certain level, it may crowd out productive private expenditures resulting in recession and low growth rate”.

In the literature it is usually emphasized that the effect of government expenditure on economic growth depends on the type of expenditure that the government incurs whether government spending is orientated more towards current or capital heads. Government spending on capital heads is likely to directly augment capital formation and economic growth. Current expenditure, on the other hand, is argued to be less productive (unproductive) than capital expenditure.<sup>7</sup> The

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6 It is argued that current public expenditure while it provides utility to the households; it lowers economic growth because higher taxes needed to finance the consumption expenditure reduce the returns on investments and the incentives to invest (Devarajan et. al, 1996; Barro 1990).

7 Less productivity of total current expenditure implies that part of current expenditure is productive. All the current expenditures are not unproductive. Recently economists in India are viewing that a part of total current expenditure has capital component. Therefore, that part should be subtracted from the total current expenditure and should be included in the capital expenditure. This will give the quality of fiscal adjustment carried out in India.



provision of public goods which includes much of government consumption, is likely to have negative growth impulse. However, one can see that there are conflicts of views. Even according to some economists, apparently less productive expenditures like defence for example, may provide social and political stability that is necessary for growth, and reducing such spending could be counterproductive.

There are recent attempts in the literature examining the influence of government spending on economic growth. The effect of government spending is endogenised in the growth models as it has tax implications and income generating effects.<sup>8</sup> The governments, in welfare states, incur enormous amount of expenditure for health, education and provision of infrastructures which impact growth of economies. Neoclassicals while studying the regional imbalances across the countries incorporate public expenditure either as one of the exogenous or endogenous variables in their growth models. This helps in examining whether larger governments explain the observed differences in their long run growth rates. Barro (1990) points out that expenditure on investment and productive activities should contribute towards growth whereas government consumption spending is anticipated to be growth retarding. However, empirical studies also face greater dilemma in determining which particular items of government expenditure should be compartmentalized into investment and consumption.

Following the neoclassical proposition that whether government size matters for achieving higher growth rates, there are substantive studies concerning the examination of regional differences in economic growth. Results and evidences differ by country/region, analytical methods employed and categorization of public expenditures. Studies do not provide consistent evidence of significant relationship between

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8 The main message of endogenous growth models with fiscal policy is that higher taxation unambiguously reduces output, but that such losses may be offset, by using the proceeds for productive spending items (Barro, 1990; King and Rebelo, 1990, Turnovsky, 2000).

different components of government expenditure and economic growth. In a major debate regarding the evidence of OECD countries, Folster and Henerekson (1991) contests that the relationship between the two is negative whereas Agell et al. (1999) respond that it is not significant. However, the main conclusion in most of the studies is that government consumption spending has a negative influence on growth (Landau, 1983; Grier and Tullock, 1989; Barro 1991, Easterly and Rebelo, 1993) while public investment positively affects economic growth (Aschauer, 1989, Knight et al 1993 and Skinner, 1987). Some studies also show that total government spending too has a negative effect on growth (Romer, 1990, Alexander, 1990, Folster and Henerekson, 1999). With an exception, Barro (1991) finds that there is a weak correlation between public investment and growth. He interprets that either government investment is not a significant determinant of growth or governments are optimizing and invest up to the point where the marginal effect of such investment on growth is close to zero.

Aschauer (1989) and Barro (1990) have indirectly related public investment with growth. Finding positive effects of public investment on private investment and productivity, they infer that private investment is growth enhancing. Easterly and Rebelo (1993) from their regression result found that although public enterprise investment have no effect on growth but the general government investment including the infrastructural investments on transportation and communication in developing countries consistently leads to higher private investment and economic growth. Barro (1991) from his cross-country regression for a large number of both rich and poor countries finds that an increase in resources devoted to unproductive government consumption is associated with lower per capita growth. Therefore, he concludes that a large public sector is growth impeding.

In an attempt, Kneller, Bleaney and Gemmell (1999) aggregating the data into 5-year averages in order to take into account the short-run

factors, examined the structure of the impact of taxation and public expenditure affecting the steady-state growth rates in endogenous growth model for a panel of 22 OECD countries. They evidenced that expenditures classified as non-productive and tax revenues classified as non-distortionary have equal coefficients, and consequently they couldn't reject the hypothesis of zero impact of these variables on growth. However, they observe that an increase in productive expenditure significantly enhances growth while an increase in distortionary taxes significantly retards growth. These results proved to be consistent with the prediction of Barro (1990) growth model. In their survey of literature, Nijkamp and Poot (2004) observed that Approximately 40 out of 123 meta observations examined, have an evidence of relationship between public infrastructure and economic growth. Therefore, they concluded that public infrastructure together with education promotes economic growth.<sup>9</sup>

Gupta et al. (2005) assessing the effects expenditure composition on economic growth for a sample of 39 low-income countries during 1990s showed that countries where spending is concentrated on wages tend to have lower growth, while those that allocate higher share to capital and non-wage goods and services by cutting their current expenditures register faster growth. In contrast, contrary to the general expectations, applying cointegration and error correction model in Indian context, Tulsidharan (2000) found that higher economic growth invariably is accompanied by an increase in government final consumption expenditure. This was similar to the results obtained by Devarajan, Swaroop and Zou (1996), for 43 numbers of developing countries. Kweka and Morrissey (2000) have also observed similar result for Tanzania where they observed that consumption expenditure has a positive impact on economic growth while capital expenditures, which are usually considered productive, had adverse impact on growth. Khundrakpam

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9 As much as 72 percent of the articles revealed a positive impact of public infrastructure and only 8 percent revealed a negative influence of it on economic growth.

(2001) from the application of ARDL model evidenced that although public expenditure has a positive influence on economic growth over the long run but trade off between the two occurs in the short-run suggesting for maintaining a proper balance between public sector expenditure and investment for economic growth.

Thus given the contrasting arguments, the inference can be drawn out that while Classicals favour for a small size of government for promoting economic growth, Keynesians support for a larger size of the government as to promote growth. Ram (1986) also stressed the view that a larger government size may deter economic growth by hurting the efficiency of private sector.<sup>10</sup> In contrast, the Neoclassicals clearly brought out the qualitative effects of different kinds of government expenditures on economic growth.

As observed from the above survey, there is no agreement regarding the direction of causality between public spending and economic growth, implying a potential endogeneity problem in the regression analysis (Folster & Henerekson, 1999). The actual relationship between public expenditure and growth is not well understood and there is a need for more empirical research (Grier & Tullock, 1989). Empirical studies designed to resolve the expenditure and growth issues are mostly upon the Denison growth accounting framework, according to which growth is explained in terms of the changes in physical capital, human capital, technology, and efficiency in resource use. If public expenditure enhances any of these elements, a positive contribution to growth is expected. The main conclusion that can be derived is that it is the capital expenditure,

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10 This is based upon the notion that the regulatory system of the government imposes excessive burden and costs on the economy thereby, affecting the productivity of the private sector. Some economists, however, argue that a larger government size is a more powerful engine of economic development. Harmonizing the conflicts of interest between the private and society, prevention of exploitation, securing an increase in productive investment and providing a socially optimal direction for growth and development are the areas where the role of government is seen is of crucial importance.

which contributes to growth. Therefore, it is the composition rather than the level which is important and that, in the same, the distinction between capital and current expenditures can be misleading. The focus should be to distinguish productive from unproductive expenditure, which is quite a daunting task. There are certain current expenditures by the government like education, health, transportation are quite productive and contributory but the capital expenditure if it is not exploited properly may be quite unproductive. Hence the classification of expenditure into current and capital expenditure is not necessarily in line with unproductive and productive but they may be different only in definitions. The study empirically attempts to prove which component is productive, which has not been examined comprehensively taking into account the channels such as private investment through which government expenditure could affect the growth.

In the present context of Indian economy, since there have been persistent attempts and overriding concern by all the governments including the center to contain revenue expenditures and thereby to bridge the revenue deficits in the budgets as set out in the Fiscal Responsibility and Budget Management Bill (FRBMB) legislated by the Centre in the parliament and mandated in the budgets, it is imperative to examine whether revenue expenditure has adversely affected the economic growth or it helps the economy to grow, along with examining the impact of aggregate expenditure and capital expenditure on growth. This forms the basic motivation of the present study.

In a world, where often the economists measure the size of government from government's volume of expenditure, and then try to relate fiscal policy and economic growth, it is interesting to re-look at the relationship between public expenditure (according to its classification) and economic growth in India. As many of the developing economies and even some of the developed ones have experienced a sustained rise in their level of public expenditure, and consequent increase

in deficits and debt, this has led the economists and the policy makers to examine in various country contexts the impact of government size on economic growth and thereby suggest or formulate prudent expenditure and revenue policies of the government. In order to deal with the issue in the Indian context, the study analyses the relationship in a time series framework after taking a look at their behavioural pattern from the observed trends.

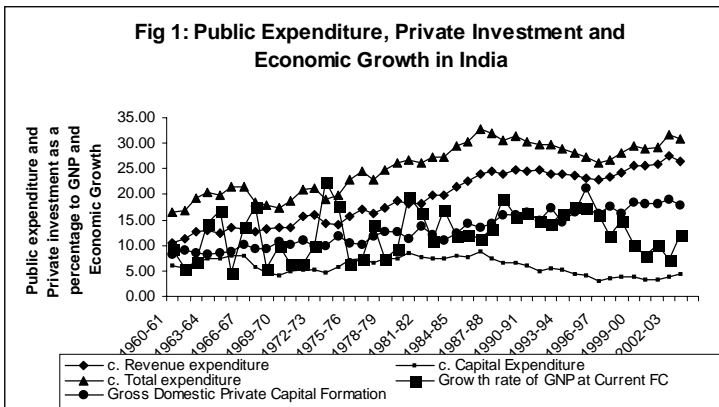
### **Relationship Between Public Expenditure and Economic Growth in India**

Examining the pattern of public expenditure and economic growth rate in India, it could be observed from Figure 1 that there was a dramatic slump in the behaviour of total public expenditure as a percentage of GNP in 1996-97. This was following a period of secular rising trend in the total public expenditure. This dip in total expenditure may partly be attributed to the sustained and cautious policy measures undertaken by the state and the central governments since the early 1990s. This measure was aimed at reducing the fiscal profligacy and pruning the unproductive government expenditures. This fall in expenditure could also partly be attributed to the shortfall in revenue receipts especially arising due to the fall in custom and excise duties. However, the implementation of Fifth Pay Commission in the immediate period i.e. 1997-98 has further led to a sharp rise in the current expenditure. This again pushed up the level of aggregate expenditure in 2001-02 to almost the maximum level as attained in the 1987-88 in terms of as a percentage of GDP.

Since the government could not control over the current expenditure in the subsequent years which was committed in nature, the government adopted a fiscal compression strategy by cutting down capital expenditure. Thus, the fiscal adjustment has been made with regards to the compression of capital expenditure. The figure 1 shown below reflects that, as there has been a greater decline in the capital expenditure over the years, so also the fluctuating growth rate has been pushed down to a

lower level. But this slump in the growth rate has been experienced after a time lag of slowdown in the capital expenditure. Of course this slowdown in the growth rate could be due to a variety of internal and external factors, but fiscal factor may be one of the important reasons.

The most important observation could be made out from the Figure 1 that although there is no much fluctuations of private investment which is critical to growth rate, but there is a fluctuating trend in the growth rate which could be due to the fiscal adjustments and other extraneous factors in the economy. Therefore, before concluding that quality of fiscal adjustment is the principal reason of slow down in the growth rate of the economy, it is imperative to examine the relationship between them in an appropriate empirical setting.



## Data Sources and Description

The study in order to examine the impact of government expenditure on economic growth, defines government expenditure as the sum of current/revenue and capital expenditures of both levels of governments (centre and state). In order to convert the nominal expenditure into real, the total expenditure is deflated w.r.t GNP at factor cost deflator. The real growth rate is computed by following a simple growth rate formula on the GNP at factor cost at the constant

prices (1993-94=100). For deciphering the impact of current expenditure from capital expenditure on the real growth rate, the total expenditure is divided into current and capital and in order to convert them into real, both expenditure variables are deflated w.r.t GNP at factor cost deflator.

As expenditure variable may not have a direct impact, rather it may have an indirect impact on the real growth rate by impacting upon domestic private sector investment, the study considers domestic private sector investment as measured by gross domestic private sector capital formation as the intermediating variable in the process. In order to convert the nominal investment into real investment, the nominal investment is deflated with respect to gross domestic capital formation deflator.

Besides the above factors, the study takes into account openness measure and tax revenue as the explanatory variables which may have significant influence on the growth rate of the economy. Tax revenue may have a distortionary impact on the private sector and hence may adversely affect the growth rate. Openness might have led to technological diffusion and might have raised productivity of the economy, thereby affecting the growth rate. In order to measure openness of the economy, the study defines openness as the volume of export plus import relative to GNP of the economy and real tax revenue is defined as nominal tax revenue deflated w.r.t. GNP deflator of the economy.

The data on government expenditure and revenue are collected from various reports of Indian Public Finance Statistics published by the Ministry of Finance, Government of India. The data on GNP at factor cost and gross domestic private capital formation for measuring investment are collected from National Accounts Statistics of India published by Central Statistical Organisation and the data on export and import are collected from the Handbook of Statistics on the Indian Economy (RBI, 2005).



## **Econometric Application**

The study in order to examine the impact of government expenditure on economic growth utilizes the structural vector auto regression (SVAR) model. The suitability of the model in the present context arises from the fact that it enables us to establish the dynamic relationship among the variables in the model and it has definite advantages over the usual unrestricted vector auto regression. In the usual unrestricted VAR, estimating number of irrelevant coefficients that play unimportant roles consumes considerable degrees of freedom and apart from that it unidentifies the variables in the model, making the estimation sometimes unreliable/biased. The estimates from its impulse response and variance decomposition also give rise to biased estimates.

The innovations in unrestricted VARs are not identified with the underlying structural errors due to the correlation of residuals across equations as in the case of instantaneous causality. Therefore the impulse responses generated by such a VAR do not possess a structural interpretation. While there is no unique way to deal with such a problem, a popular way of overcoming the problem, due to Sims (1980), is the transformation of the residuals to orthogonal form of triangulating the system, which involves a causal ordering of the variables. The transformed VAR allows the interpretation of the evolution of the system as a function of the orthogonalised innovations in the variable system. A related approach to respond to the problem of interpreting VARs has been the development of SVARs which introduce theoretical restrictions to identify underlying shocks (see Eviews 6.0). The present technique imposing restrictions on these irrelevant/insignificant coefficients, it avoids the problem in the estimation. The study arranges the variables in the following order: openness measure, real tax revenue, real public expenditure, real gross domestic private investment, and real growth rate.

(EXIM, CTR, CTE, GDPCF, GRGDP)

Whereas,

- GRGNP - Growth Rate of Real GNP at factor cost
- GDPCF - Gross Domestic Private Capital Formation
- CTE - Combined Total Expenditure of Centre and States.
- CRE - Combined Revenue Expenditure
- CCE - Combined Capital Expenditure
- CTR - Combined Total Revenue and
- EXIM - Volume of Exports plus Imports measuring trade openness of the economy

The openness measure may have an impact on output growth with some lag. Output growth may not respond immediately to the openness of the economy. When investment would take place, it would give rise to import demand for raw materials. Then output produced can be consumed in the economy and part of it can be exported to the foreign market raising the domestic income. Government spending may have complementarity and competitive relationship with the private sector investment. Tax is included in the model as an endogenous variable as government spending has implication for taxes. The above is the logical basis of ordering variables in the model.

### **Result Discussion**

As for applying any time series model, one requires to know the time series properties of variables included in the model, we examine the unit root properties of the variables in Table 1. The Table shows that with ADF test, trade openness measure (EXIM), combined total expenditure (CTE), revenue expenditure (CRE), capital expenditure (CCE) and combined total revenue (CTR) are integrated of order one i.e.  $I(1)$  while growth rate of real GDP (GRGNP) and Gross domestic private capital formation or investment (GDPCF) are integrated of order zero i.e.  $I(0)$ . However, when the same variables are considered for PP test all of the variables are found to be integrated of order zero i.e.  $I(0)$ .

Following PP tests, which takes care of both the autocorrelation and heteroscedasticity problem into account, we apply SVAR technique on the level of variables without considering for their differences as differencing the variables would take away the original property of the variables in the model.

**Table 1: Unit Root Test Result**

	ADF (In levels)	PP Test (In Levels)
GRGNP	-5.34(3) <sup>T</sup>	
GDPCF	5.06(2) <sup>c</sup>	-6.92(1) <sup>C</sup>
CTE	-2.82(1) <sup>T</sup>	-5.48(1) <sup>C</sup>
CRE	-2.99(1) <sup>T</sup>	-5.83(1) <sup>C</sup>
CCE	-2.38(1) <sup>T</sup>	-4.22(1) <sup>N</sup>
CTR	-3.62(1) <sup>T</sup>	
EXIM	-2.75(1) <sup>T</sup>	-4.03(1) <sup>c</sup>

*Note:* The critical values at 1%, 5% and 10% are -3.597, -2.93 and -2.60 respectively for inclusion of constant but without trend © and -4.19, -3.52 and -3.19 respectively for constant with trend (T).

The variance decomposition result presented in Table 3 shows that the growth rate of output is being majorly explained by itself, then by private investment, taxes, and openness measure of the economy. The aggregate government expenditure does not significantly explain growth rate of output.

Corresponding to the above variance decomposition result, the impulse response result reported in Figure 2 shows that the response of growth rate to one unit standard deviation shock in trade openness is negative in the first horizon but it is insignificant, then has become positive till 6<sup>th</sup> horizon and thereafter it has again become negative and decays. Looking at the shocks in tax revenue, it surprisingly shows that the response of growth rate is significantly positive in the 1<sup>st</sup> horizon and then has become negative and again becomes positive from 6<sup>th</sup> horizon

**Table 2: Lag Selection in VAR model**

Models with alternative expenditures	Lag	LogL	LR	AIC	SC	HQ
Total Expenditure	0	-44.96	NA	2.50	2.71	2.57
	1	138.98	312.70	-5.45	-4.18*	-4.99*
	2	164.10	36.42	-5.46	-3.13	-4.62
	3	184.79	24.82	-5.24	-1.86	-4.02
	4	224.87	38.08*	-5.99*	-1.56	-4.39
Current Expenditure	0	-39.19	NA	2.21	2.42	2.29
	1	155.54	331.04	-6.28	-5.01*	-5.82*
	2	169.98	20.93	-5.75	-3.43	-4.91
	3	187.60	21.15	-5.38	-2.00	-4.16
	4	232.74	42.88*	-6.39*	-1.95	-4.78
Capital Expenditure	0	-80.98	NA	4.30	4.51	4.38
	1	92.81	295.45*	-3.14	-1.87*	-2.68*
	2	117.32	35.54	-3.12	-0.79	-2.28
	3	143.95	31.95	-3.20	0.18	-1.98
	4	176.05	30.50	-3.55*	0.88	-1.95

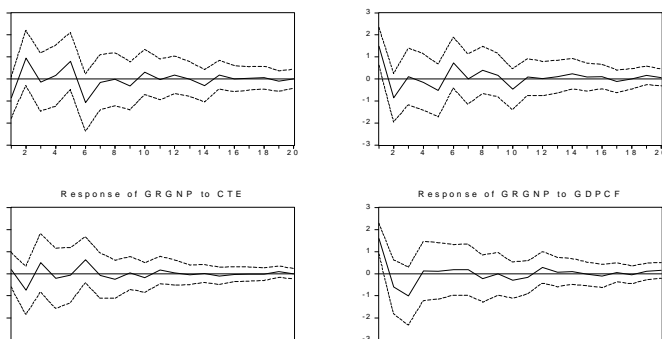
*Note:* As fiscal policy usually produces effects on macro activities with a significant lag, therefore, a maximum lag of 4 has been chosen for estimating in VAR for all the three models with different government expenditures.

to 9<sup>th</sup> horizon and then dies off. Compared to the shock in tax revenue, the response of growth rate to shocks in aggregate expenditure although surprisingly negative and later it is positive but not significant in any horizon. The response of the growth rate to the shocks in private investment is significantly positive in the initial horizon and suddenly

**Table 3: Variance Decomposition of GRGNP**

Horizon	EXIM	CTR	CTE	GDPCF	GRGNP
1	7.89	24.02	0.37	27.97	39.75
2	13.81	24.80	5.19	24.78	31.42
3	11.51	20.51	6.02	27.69	34.26
7	19.44	21.00	7.34	22.55	29.67
8	19.14	21.57	7.59	22.47	29.24
9	19.55	21.56	7.53	22.30	29.06
10	19.55	22.19	7.51	22.20	28.55
15	19.90	22.04	7.56	22.29	28.22
20	19.81	22.13	7.55	22.36	28.14

becomes negative in later horizon and then gradually its impact decays down as the horizon progresses.

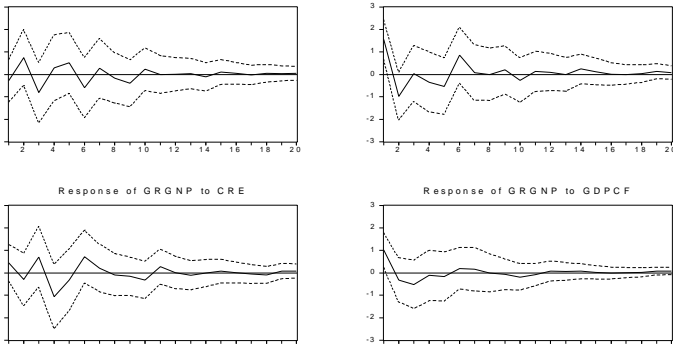
**Figure 2: Impulse Responses of GRGNP to Structural Shocks in Total expenditure along with all other variables**

When the aggregate expenditure is replaced with the revenue expenditure (which forms a sizeable part of total expenditure), the variance decomposition result presented in Table 4 shows that revenue expenditure to some extent explains the variation in growth rate of output in the economy along with total taxes and openness measure significantly explains the growth rates over the horizon. However, it is interesting to note that when revenue expenditure is exerting influence, the impact of

investment is becoming less significant. This may possibly be due to certain components in revenue expenditure, which affects private investment in the economy. The revenue expenditure explaining the growth rate of output may be due to the fact that revenue expenditure incurred on certain productive sectors enhances the productivity of the economy and thereby contributing to economic growth. This is also supported from the impulse response result produced in Figure 3.

Corresponding to the above variance decomposition result, the impulse response presented in Figure 3 shows that although the response of growth rate to one standard deviation shock in trade openness is

**Figure 3: Impulse Responses of GRGNP to Structural Shocks in Total Revenue Expenditure along with all other variables**



negative in the 1<sup>st</sup> horizon like the previous estimates and becomes positive in 2<sup>nd</sup> horizon but the responses are insignificant and decays around 10<sup>th</sup> horizon. On the other hand, the response of growth rate to shock in tax revenue is surprisingly found to be significantly positive in the initial horizon and becomes negative immediately till the 6<sup>th</sup> horizon and again become positive like the previous case. The overall effect depends on the accumulated responses of output growth. The response of growth rate to the shocks in revenue expenditure is although surprisingly found to be positive in the first horizon, but significantly negative in 4<sup>th</sup> horizon and significantly positive in 6<sup>th</sup> horizon and then suddenly the response decays down. The shocks in private investment

**Table 4: Variance Decomposition of GRGNP**

Horizon	EXIM	CTR	CRE	GDPCF	GRGNP
1	0.93	26.45	2.18	11.24	59.19
2	5.91	30.99	2.68	10.42	49.99
3	9.26	23.72	5.62	9.89	51.51
7	10.83	23.26	13.37	7.79	44.74
8	10.93	23.21	13.39	7.78	44.69
9	11.64	23.14	13.35	7.71	44.16
10	11.73	23.17	13.69	7.79	43.62
15	11.65	23.24	13.89	7.75	43.47
20	11.64	23.26	13.96	7.77	43.37

has a positive and significant influence on the output growth rate and suddenly becomes negative and the response of real output growth is not persistent to this shock. It decays from 6<sup>th</sup> horizon. These results are quite in line with expectation except the fact that tax is exerting a positive impact on the growth rate which is quite consistent with our previous result. The possible reason could be that when people pay taxes it is out of their hard individual earnings of the people even working in the government offices. Of course, people working in the government office also contribute to taxes. However, when the government employees would be paid off their salaries, some individuals might think that it is taxpayers' money so they should pay their services to the government effectively. This leads to contributing towards the growth rate of output in the economy.

Further, with replacement of revenue expenditure with capital expenditure in the VAR model, the variance decomposition result produced in Table 5 shows that capital expenditure does not have significant influence in explaining the variation in growth rate of output while private investment has become significant along with continuance of government revenue and openness measure. This raises the question about the relationship between different forms of government expenditure and private investment i.e what relationship holds between them. This also raises the question that whether dominant influence of one over the

other nullifies latter's impact on the real growth rate. This paper leaves this question for further empirical test, as the objective of the paper is confined to examining the influence of government expenditure on real growth rate of the economy.

Corresponding to the above variance decomposition analysis, the impulse response result shown in Figure 4 indicates that the response of growth rate of output to one standard deviation shock in trade openness and tax revenue is almost similar as seen in the previous cases. Although, the responses are positive for both but it seems to be significant for the

**Table 5: Variance Decomposition of GRGNP**

Horizon	EXIM	CTR	CCE	GDPCF	GRGNP
1	2.57	23.86	3.06	23.16	47.36
2	14.46	18.86	6.52	23.50	36.66
3	14.72	17.63	6.69	24.14	36.81
7	22.51	16.03	7.13	21.94	32.38
8	21.69	17.55	7.56	22.16	;31.04
9	22.60	17.43	7.54	21.74	30.69
10	23.00	17.75	7.37	21.25	30.63
15	23.08	17.56	7.70	22.02	29.65
20	23.02	17.76	7.74	22.02	29.47

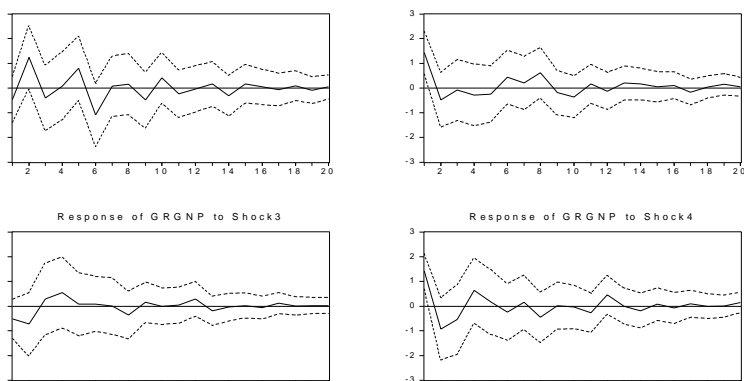
tax revenue only. However, the response of output growth rate to one-unit standard deviation shocks in capital expenditure is negative while it is consistently found to be significant and positive to the shocks in private investment. The response for the later is persistent till 15<sup>th</sup> horizon. These results are found to be robust after changing the order of the variables in the SVAR and even by dropping the tax variable in the model.

### **Conclusion and Policy Suggestions**

The study examined the impact of aggregate government expenditure and its two broader components on the growth rate of output in order to decipher their impact in the Indian economy. It utilized the



**Figure 4: Impulse Responses of GRGNP to Structural Shocks in Total Capital Expenditure along with all other variables**



structural vector autoregression (SVAR) methodology for examining the dynamic response of output growth to the shocks in major macro variables wherein the public expenditure is considered to be one of the fiscal policy instrument variables. The study found that neither aggregate expenditure nor the capital expenditure does have significant influence on the growth rate of the economy. Contrary to the popular believe that revenue expenditure which is utilized for current consumption and in most unproductive ways, to some extent, positively explains the variation in growth rate of output. This finding to certain extent, strengthens the findings of the earlier studies made by Tulsidharan (2000) in the Indian context and Kweka and Morrissey (2000) in Tanzania context and also the results obtained by Devarajan, Swaroop and Zou (1996), for 43 numbers of developing countries. There are some elements within current expenditure which could be very productive and the reduction of which may adversely affect the growth. Besides such relationship between public expenditure and growth rate of output, it is mainly taxes and openness measure of the economy do influence the growth rate of the economy in all VAR specifications. Further, most surprisingly, it is seen that the taxes which should have negative influence on growth rate of output, have a positive influence and trade openness measure is in line with the general expectation, mostly has a positive overall impact.

From this, it can be concluded that trade openness in emerging economies favours for a speed growth as it helps in enhancing output growth. The taxes all the time should not be seen as a hindrance for achieving higher growth rate. When taxes get translated into forced savings, it may result in investments in physical capital by some individuals or corporates, thereby, leading to higher growth rate. As argued in the above, since tax is a compulsory contribution by some private individuals to the government and if the individuals working in the government, perceive that it is a contribution from the private sector from their hard earned income, then the individuals may contribute effectively to the total output of the economy. The capital expenditure seen to have no impact or adversely affecting the growth rate is quite surprising in a developing economy like India. There might be leakages in the capital expenditure, as a result capital expenditure becomes current expenditure without any desirable impact on the economy. Rather, contrarily, current expenditure which is thought to be unproductive has a positive contribution towards enhancing real output growth. There is no reason why all the current expenditures to be believed to be unproductive as a significant part of it is consumed for human capital formation and promoting welfare of the people which is the cornerstone to the implications of the theory of endogenous economic growth. The government should give careful consideration while incurring expenditure as empirical estimates show that capital expenditure merely involves draining of resources of the government without contributory impact on the economy. The reverse may be the case with the current expenditure. Hence, the study suggests for a proper classification of expenditure according to their degree of productiveness and prioritizing for incurring expenditure. Another important thing to note is that in India there could have been a competition between government capital investment and private sector investment. The competition between the two may be in the license regime and in some years of delicensing regime as well, till mid 1990s. That had kept the growth rate at a lower level.

The Figure 1 plotted previously also portrays the same picture. When the capital expenditure attained its maximum level towards the end of 1980s, the private investment and growth rate prevailed at a lower level. However, the fluctuations in the growth rate at a lower level occurring during 1997-02 when private investment has picked up to its maximum level is quite perplexing.

Recently, in line with the European Massachtrict treaty, the government of India in an effort to enforce the Fiscal Responsibility and Management Bill Act (2003) has been trying to completely eliminate the revenue deficit and reduce the combined fiscal deficit to 6 per cent of GDP by 2008-09. But this fiscal rule setting seems to be highly puzzling in a developing country context. It may be sound for the economy to eliminate the gross fiscal deficit but may prove dangerous when it targets the productive expenditure along with total revenue deficit, which is found to be growth enhancing. The government should not cut down the growth stimulating expenditures merely for the sake of bringing down the deficits. At times some of the revenue deficits are found to be capital creating in nature. In a sense, all revenue deficits are not unproductive. Once revenue deficits are eliminated, if the government targets gross fiscal deficit, the axe would fall on pruning capital expenditures which is critical to capital formation and growth of an economy. Hence, the study suggests the caveat for a careful policy exercise regarding which expenditure to curb and which expenditure to sustain in the economy.

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