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Research Article

An Interstate Analysis of the Economic Impact of Public Expenditure in India from 1990-91 to 2018-19

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ABSTRACT

The study is an attempt to analyse the impact of public expenditure viz. revenue expenditure and capital outlay on the economic growth using panel dataset for 24 Indian states for the period from 1990-91 to 2018-19 in the presence of several control variables such as initial level of physical capital, initial level of human capital, credit-deposit ratio of the scheduled commercial banks according to the place of utilisation and a dummy variable for the north-eastern states. OLS (Ordinary Least Square) Regression and RE (Random Effect) GLS (Generalised Least Square) Regression models have been used for statistical analysis of the impact of public expenditure on growth. The study found positive and significant impact of initial level of physical capital on per capita GSDP, positive but insignificant impact of initial level of human capital on per capita GSDP, positive and significant relationship between credit-deposit ratio and GSDP per capita and growth-distorting impacts in north-eastern and hilly states. The revenue expenditure elasticity of per capita GSDP was found to be 0.92 while capital outlay elasticity of per capita GSDP was found to be 0.51 using RE-GLS regression.

Keywords: OLS, RE-GLS, Revenue Expenditure, Capital Outlay, Economic Growth, North-Eastern States, Economic Reforms.

1.Introduction

The question- "What really drives Economic Growth" has haunted economists for centuries. Today there are a variety of viewpoints as opined by different schools of economic thought. The proponents of laissez-faire policies such as Adam Smith have stressed upon the capital accumulation, technological progress, division of labour and specialization for stimulating the process of economic growth (Smith, 1776). Keynesian Economics as advocated by J.M. Keynes in 'The General Theory of Employment, Interest and Money (1936)', highlighted the role of government intervention in pulling the depression sunk economies into a state of normalcy and highlighted the role of an active fiscal policy during the times of economic slowdown and stimulate the level of effective demand in the economy (Keynes, 1936). Keynesian Theory advocates for a countercyclical fiscal policy whereby government expenditure gets a boost during economic slowdown and is reduced during booms to control for inflationary pressures in the economy. Endogenous growth theory as advocated by Paul Romer in his work 'Endogenous Technological Change (1990)' emphasized the role of government intervention through Investment in human capital and Investment in R & D (Research and Development) in fostering the process of economic growth (Romer, 1990). Both Keynesians and Endogenous growth theory highlight the role of state involvement in promoting economic growth albeit through different channels. While Keynesians advocate for stimulating the economy through government Investment expenditure in Infrastructure (Chirwa and Odhiambo, 2018), endogenous technological change stresses that R&D (Research and Development) by profit-seeking entrepreneurs leads to technological progress which in turn drives growth and development, knowledge, no-doubt, is non-rival but partially excludable and ,thus, correcting for the under-provision of knowledge requires government interventions (Romer, 1990). Endogenous growth models predicted the long-run growth impacts of productive public spending (Barro, 1990).
'The Theory of Public Finance' (1959) highlights three functions of government viz the allocation of resources, redistribution of Income and wealth and macroeconomic stabilisation (Musgrave, 1959). It was R.J. Barro, who

emphasised upon the policy response of the government for stimulating economic growth and incorporated the government sector in the existing models of endogenous economic growth (Barro,1990).

Public Expenditure in simple terms means expenditure done by the government. There is a clear demarcation of the workings of national and state governments in the Indian Constitution (The Constitution of India, 1950, Article-246, Schedule-VII, List-I, List-II & List-III). It has always been presumed that centralised governments don't have adequate knowledge of the local preferences and cost conditions and political pressure hinders the ability of the Central government for differential provision of public services and moreover, due to the proximity of the sub-national governments to the people, they, are more responsive to their preferences (Oates, 1999). That's why; sub-national governments (state governments & local governments) are necessary to provide the services that directly influence the people.
The present study is a focused attempt to call attention to the part played by the state governments in influencing per capita GSDP in the post-reform era.

2. Review of Literature

Landau (1986) in his paper has analysed the impact of government expenditure on economic growth for 65 less developed countries for the period 1960-1989. He divided the government expenditure as a percentage of GDP into five categories and concluded that none of these significantly promotes economic growth.
Easterly and Rebelo (1993) have attempted to analyse the effect of fiscal policy on growth of about 100 developed and developing nations from the period 1970 to 1988. The study found that transport and communication investment and general government investment is positively correlated with growth. They find a negative relation between growth and public consumption expenditure and positive impact of expenditure on education on growth.
Devarajan, Swaroop and Zou (1996) have analysed the relationship between the composition of public expenditure and economic growth. The study concluded that developing countries are excessively allocating their resources towards capital expenditure instead they should increase allocations to revenue expenditure.
Kneller, Bleaney & Gemmell (1999) analysed the growth effects of fiscal policy for a panel of 22 OECD countries using a 5 year average for the period 1970-95 and found that productive expenditures raise the growth rate while non-productive expenditures don't significantly promote growth.
Singh and Singh (2002) have stated that while Punjab experienced rapid growth and rising per capita income, these trends were reversed in the post-reform period. Economic Reforms which were thought to be a panacea for all the ills of the economy didn't serve well. The higher rate of growth in Punjab was correlated with the rise in investment expenditure by the government. Though the total budgetary allocations are increasing, the relative share of the developmental expenditure in the total expenditure has declined in the post reform period. Capital Expenditure which creates capacity in social and economic infrastructural facilities has declined sharply as a percentage of Net State Domestic Product (NSDP). They suggested a reorientation of the government's investment planning and strategy.
Zagler (2003) attempted to analyse the long-run linkages between growth and various categories of government spending (expenditure on education, research and development, investment on public infrastructure and innovation subsidies) using co-integration analysis for the Austrian economy during 1976-2000. The results reveal the positive impact of public infrastructure investment, public education and innovation rate on growth. Innovation subsidies exert a positive but indirect effect on growth via promoting innovation.
Haque (2003) studied the impact of composition of public expenditure on economic growth first using pooled regression for a panel of 33 developing countries and then using cross-sectional data. Results in panel and cross-sectional findings contradict with each-other. While the panel result suggests that switching public expenditure from investment to consumption is growth enhancing. But, the cross-sectional study reveals the opposite i.e. switching public resources from consumption to investment are growth enhancing.
Le and Suruga (2005) have studied the impact of public expenditure and foreign direct investment on economic growth for 105 developing and developed countries for the period 1970-2001. While public capital expenditure promotes economic growth, public current expenditure negatively impacts growth.
Bose, Haque & Osborn (2007) have analysed the impact of public spending on growth for 30 developing countries covering the years 1970 to 1990. The study reveals a strong positive relationship between the share of central government capital expenditure in GDP and economic growth. Total expenditure in the education sector and investment expenditure in the education sector have positive and significant associations with growth. The authors concluded that to promote economic growth, public expenditure should be directed towards education.
Moreno-Dodson (2008) on the basis of seven fast growing countries has analysed the relationship between public spending and economic growth using three econometric techniques OLS, SURE and GMM over the duration of 1960-2006. The results indicate that public spending has a positive and statistically significant impact on the growth rate of per capita GDP.
Haque and Kneller (2008) studied the effect of public Investment on growth in the presence of corruption for 58 different countries using three-stage least squares for simultaneous equation system and found that

public Investment positively impacts growth only in those countries which have low corruption Thus, to increase the efficiency of public investment and increase economic growth, the authors suggest to deter corruption.

Ghosh and Gregoriou (2008) found the impact of composition of public expenditure on economic growth for 15 developing nations covering the period 1972 to 1999 using GMM techniques and concluded that current spending has positive and significant effects on the growth rate while capital spending has negative and significant effects on the growth rate.

Mallick (2008) has used the Structural Vector Autoregression (SVAR) technique. The author has studied the impact of aggregate government spending and its broader components viz. revenue and capital expenditure on growth rate of output. The findings reveal that both the aggregate expenditure and capital expenditure doesn't have a statistically significant impact on the growth rate of the economy.

Bhanumurthy and Singh (2009) in a study for Indian states found that revenue and capital expenditure on social Infrastructure is highly correlated with growth.

Jain & Kumar (2013) found capital outlay to be more growth inducing than the revenue expenditure.

Sasmal and Sasmal (2016) using panel data found that public expenditure on infrastructure development has promoted economic growth which in turn has led to a reduction in poverty for Indian states for the period 1990-91 to 2009-10.

Mohapatra and Giri (2016) analysed the causality between components of public spending and growth for India for the time-period ranging from 1980-2013 using ARDL approach. The study suggested that development expenditures have statistically significant and positive impact on economic growth which leads to increase in productivity and hence economic growth.

Mohapatra (2017) has investigated the causal linkages among public health expenditure, economic growth and IMR for 16 major Indian states for the period 1990-2010 using panel data and found that public health expenditure promotes economic growth and reduces IMR in the long run.

Ashwani and Sheera (2017) have studied the impact of public spending on economic growth for 19 Indian states from 1999-2000 to 2009-10 and found that while capital spending positively impacts growth, revenue expenditure negatively impacts growth.

Mishra (2019) using PVAR found fiscal multipliers for 17 non-special category Indian states for the period from 2001-02 to 2013-14 and found that the multiplier effects of capital outlay on income is greater than the multiplier effects of revenue expenditure in both short-run and long-run.

Marjit *et al.* (2020) have found the negative effect of revenue expenditure on growth and positive impact of capital expenditure on per capita income.

3. Data Sources & Variables

The data is unbalanced. The dependent variable in our model is $GSDP_{FC}$ (Gross State Domestic Product at factor cost) at constant prices. GSDP data for the analysis period is available in 'Handbook of Statistics on Indian States' for five partially overlapping sub-periods. That is, we have GSDP series from 1990-91 to 1992-93 at 1980-81 base year, from 1993-94 to 1999-2000 at 1993-94 base year, from 1999-2000 to 2004-05 at 1999-2000 base year, from 2004-05 to 2014-15 at 2004-05 base year and finally from 2011-12 to 2020-21 at 2011-12 base year. However, EPWRF data has converted the different base year data into one common base of 2011-12 and is convenient to use for the purpose of analysis. So, the data for GSDP is taken from the EPWRF time-series database at constant 2011-12 prices.

The following independent variables are included in the analysis-

a.)-Per capita Revenue Expenditure of the state governments at constant 2011-12 prices.

b.)-Per capita Capital outlay of the state governments at constant 2011-12 prices.

Data for Revenue Expenditure and Capital Outlay is taken from 'State Finances- A Study of Budgets' which is also an annual publication of the RBI. These data have been appropriately transformed into real terms using GSDP deflator which is calculated from EPWRF time-series database using the following formula-

GSDP deflator =

[2011-12 Back Series – GSDP (Current Prices)/2011-12 Back Series- GSDP (Constant Prices)] *100.

c.)-Initial GSDP per capita as a proxy variable for initial level of physical capital. Per capita GSDP for 1980-81 is taken at constant 2011-12 prices. Data for initial GSDP is taken from EPWRF time-series database.

d.)-Initial school enrolment ratios as a proxy variable for initial level of human capital. The data for initial school enrolment ratio (1980-81) is taken from EPWRF time-series database. Initial school-enrolment ratio has been calculated by taking the weighted average of gross-enrolment ratio at primary(I-V), upper primary (VI-VII) and secondary level (IX-X). The weights assigned are 1, 2 and 3 respectively.

e.)-Credit-Deposit Ratio of the Scheduled Commercial Banks according to the place of utilisation. This variable is included to incorporate the effect of financial inclusion. The data for this variable is also taken from 'Handbook of Statistics on Indian States'.

f.)-a dummy for north-eastern states

For the purpose of our study, 24 Indian states which haven't been bifurcated after the introduction of Economic Reforms or introduction of NEP (New Economic Policy) of Liberalisation, Privatisation and Globalisation of 1991 have been taken into consideration. Moreover, as Ahluwalia (2000) emphasized that liberalisation

reduced the degree of control exercised by the central government in many areas and left much scope for state-level initiatives. Thus, the period after 1991 is considered to be apt for analysing the state government' budgetary allocations.

The states included in the study are Assam, Andhra Pradesh, Bihar, Arunachal Pradesh, Gujarat, Haryana, Goa, Himachal Pradesh, Kerala, Karnataka, Maharashtra, Madhya Pradesh, Nagaland, Manipur, Mizoram, Meghalaya, Odisha, Punjab, Sikkim, Rajasthan, Tripura, Uttar Pradesh, Tamil Nadu, and West Bengal. The state of Bihar was divided into Jharkhand and Bihar in 2000, Andhra Pradesh into Andhra Pradesh and Telangana into 2014, Madhya Pradesh into Chhattisgarh and Madhya Pradesh in 2000, Uttar Pradesh into Uttar Pradesh and Uttarakhand in 2000. However, to maintain the continuity in the database, after the bifurcation of Bihar, Andhra Pradesh, Madhya Pradesh and Uttar Pradesh, the study takes the data from these states only and excluded the newly formed states. This is not expected to influence our results since all variables are in per-capita terms.

4. Descriptive Statistics

A correlation matrix has been deployed to find out the possibility of correlation among the regressors and hence multicollinearity. As a result of multicollinearity, it becomes extremely difficult to separate the impact of each independent variable on the dependent variable as the variables share a large amount of information and Multicollinearity can have several consequences, both in terms of the model's interpretation and its statistical reliability (Koutsoyiannis, 1977).

The table-1 depicts a low degree of positive correlation (0.15) between logarithmic value of gross enrolment ratio and logarithmic value of revenue expenditure, avoiding the likelihood of multicollinearity between them. Correlation coefficient between logarithmic value of gross enrolment ratio and logarithmic value of capital outlay (-0.01) which is around zero, thus, no multicollinearity between them.

Correlation coefficient between logarithmic value of gross enrolment ratio and logarithmic value of credit deposit ratio of scheduled commercial banks on the basis of the place of utilization is 0.13 i.e. a low degree of positive correlation between the variables and this avoids any possibility of multicollinearity between the variables.

The correlation coefficient between logarithmic value of gross enrolment ratio and logarithmic value of initial level of physical capital is 0.59 which indicates moderate degree of positive correlation between the initial level of physical capital and initial gross enrolment ratio.

The correlation matrix shows that the logarithmic value of capital outlay and logarithmic value of credit deposit ratio are moderately correlated with a correlation coefficient of -0.27. Similarly, the logarithmic value of revenue expenditure and logarithmic value of credit deposit ratio are moderately negatively correlated with a correlation coefficient of -0.22. The logarithmic value of initial level of Physical Capital and logarithmic value of credit-deposit ratio are not correlated with a correlation coefficient of just -0.01. The table shows low degree of positive correlation (0.23) between log of capital outlay and log of initial level of physical capital and moderate degree of positive correlation (0.42) between initial level of physical capital and logarithmic value of revenue expenditure.

The table- 1 reports a high degree of positive correlation between log of revenue expenditure and log of capital outlay as is indicated by the correlation coefficient of 0.86 between them and the correlation coefficient is statistically significant at a 0.05 level of significance. That is, a high degree of multicollinearity between revenue expenditure and capital outlay. So, we don't include these two variables in the same model to avoid multicollinearity.

Table:1-Correlation Matrix between the Explanatory Variables

Variables	logre	logco	logcdr	logX	logH
logre	1.000				
logco	0.8616*	1.0000			
logcdr	-0.2292*	-0.2776*	1.0000		
logX	0.4205*	0.2310*	-0.0190	1.0000	
logH	0.1572*	-0.0108	0.1389*	0.5920*	1.0000

(Source: Authors' computations from STATA)

5. Model Specification

The specification of the model is based on the existing literature in the area but certain modifications and innovations have been introduced to suit the state-specific data and requirements of the study.

While specifying the model, the first step is the selection of dependent variables and the independent variables which in our case are the gross state domestic product and public expenditure respectively. However, a large number of factors besides public expenditure do impact economic growth. For instance, Initial conditions of a country which reflect upon the level of development and living standards also do influence the impact of different categories of public expenditure on economic growth (Moreno-Dodson, 2008). Following Levine and

Renelt (1992), Barro (1991), Bose et.al (2003), Moreno-Dodson (2010) we use Initial GDP per capita as a proxy variable for initial level of physical capital and initial school enrolment ratios as a proxy variable for initial level of human capital. Inclusion of initial per capita GDP controls for possible effects of convergence on output growth (Bose *et.al* ,2003). Studies including Bose et.al (2003) found positive impacts of initial GDP per capita on growth rate of GDP. However, according to the Conditional Convergence Model, Initial conditions have no implications on a country's per capita income in the long-run (Johnson & Papageorgiou,2020) the specified model tests this assumption. Following the literature, we take the initial level of human capital and initial level of physical capital as control variables.

Since, there haven't been any significant attempts on the part of state governments in north-eastern regions to increase their own tax revenue (Dutta & Dutta, 2015). The lion's share of the revenue for financing the government expenditure in north-eastern states comes from the central transfers (Sarmah & Panda, 2023). Further, the growth trends have functioned differently in north-eastern states with economic activities concentrated only in selected pockets of the region (Datta, 2001). Taking into consideration their different growth trajectories, a dummy variable (DV) has been taken in the model to incorporate these effects. It seemed relevant to take a dummy variable for north-eastern states in the study and is hypothesised to negatively impact per capita GSDP of the state.

Many studies have highlighted the role of financial development and financial inclusion in promoting the growth (Levine, 2005; Mohan, 2008; Sehrawat et al., 2015). Financial Inclusion will stimulate economic growth in rural and underserved areas (Committee on Financial Inclusion, 2008). Following this, the present study also includes credit deposit ratio of the scheduled commercial banks on the basis of the place of utilisation as a proxy variable for financial inclusion and financial development. Higher credit deposit ratio would mean that a larger proportion of the deposits are being used to advance credit.

The model specified for testing the effects of public expenditure i.e. revenue expenditure and capital expenditure on GSDP is written in the form of an equation with per capita gross state domestic product as the dependent variable and a set of conditioning variables (initial level of physical capital and initial level of human capital) as well as other variables of interest (credit deposit ratio of scheduled commercial banks on the basis of the place of utilisation and dummy for north-eastern states) as the regressors with separate modelling for revenue expenditure and capital outlays.

Certain controlled variables like 'shock', 'black-market premium', 'fiscal deficit as a proportion of GDP' as included by Devarajan *et. al* (1996) for developing countries and Easterly & Rebelo (1993) for 100 developed and developing countries, Ghosh and Gregoriou (2008) for 15 developing countries are not included in the present study because we don't have state-specific data for these variables and it is assumed that shock component, black-market premium don't have different impacts for different states. Fiscal deficit of the state governments influences the level of public expenditure of the state governments (Hazarika & Nayak, 2022) but this needs to be examined whether there is any evidence to believe that sub-national fiscal deficit influences economic growth of the states because high fiscal deficit of some state governments may not influence the national interest rate, hence no possibility of crowding out private investment from the market. However, the paper doesn't take fiscal deficit as a control variable.

Initial level of physical capital (X) proxied by GSDP per capita in 1980 and initial level of human capital proxied by the weighted average of the school-enrolment rates at primary, upper-primary and senior-secondary level in 1980-81 are hypothesized to have a positive impact on the Gross State Domestic Product of the state as evidenced from the existing literature (Moreno-Dodson, 2010). Following Ashwani and Sheera (2017), Marjit *et al.*(2020) the study hypothesised negative relationship between RE and growth, positive impact of capital outlay on growth following Ashwani and Sheera (2017), Bose *et. al.* (2007), Marjit *et.al* (2020). Revenue expenditure could have a positive influence (Ghosh and Gregoriou, 2008) on growth and studies have found positive revenue expenditure multipliers (Mishra, 2019). Financial Inclusion will stimulate economic growth in rural and underserved areas (Committee on Financial Inclusion, 2008).

The above chosen variables are incorporated in the models, the present study uses Wooldridge (2010) for the specification of the models-

Model-1

a.)-The Single-Equation Linear Model and OLS Estimation:-

$lnY_{it} = \alpha_t + \beta_1 lnXi + \beta_2 lnH_i + \beta_3 lnR_{it} + \beta_4 lncdr_{it} + \beta_5 D_{it} + u_{it}$

where t= 1,2,3,...

b.)-For Random Effect (RE) Generalised Least Square (GLS) Regression:-

$lnY_{it} = \alpha + \beta_1 lnXi + \beta_2 lnH_i + \beta_3 lnR_{it} + \beta_4 lncdr_{it} + \beta_5 D_{it} + u_i + e_{it}$

Model-2

a.)-The Single-Equation Linear Model and OLS Estimation:-

$lnY_{it} = \alpha_t + \beta_1 lnXi + \beta_2 lnH_i + \beta_3 lnC_{it} + \beta_4 lncdr_{it} + \beta_5 D_{it} + u_{it}$

b.)-For Random Effect (RE) Generalised Least Square (GLS) Regression:-

$lnY_{it} = \alpha + \beta_1 lnXi + \beta_2 lnH_i + \beta_3 lnC_{it} + \beta_4 lncdr_{it} + \beta_5 D_{it} + u_i + e_{it}$

Where subscripts 'i' and 't' indicate the cross-section observation here, Indian states and time-series dimension, here, annual data of the variables respectively.

InY_{it} = Natural logarithm of per capita Gross State domestic product at constant 2011-12 prices.

InX_i = Natural logarithm of initial level of physical capital.
InH_i = Natural logarithm of initial level of human capital.
InC_{it} = Natural logarithm of per capita Capital outlay of the state governments.
InR_{it} = Natural logarithm of per capita Revenue expenditure of the state governments.
$InCdr_{it}$= credit-deposit ratio of the scheduled commercial banks according to the place of utilisation.
D_{it} = 0 if a particular state belongs to mainstream states and 1 otherwise i.e. if a state belongs to north-eastern states.
u_{it} = between entity-error.
e_{it}= within entity error.
Initial level of physical capital and Initial level of human capital are state specific characteristics and remain constant over time.
β_1, β_2, β_3, β_4 and β_5 are the parameters of the model.
The models specified are log-log or double log models and as a result, the coefficients estimated will give a direct measure of elasticities. β_3 in models 1 and 2 will measure revenue expenditure elasticity and capital expenditure elasticity of GSDP respectively.

6. Results

Table: 2- Linear Regression & Random Effect Generalised Least Square Regression between Capital Outlay & GSDP in the Presence of Controlled Variables-

Variables	Linear Regression	RE GLS Regression
Initial level of physical capital	0.64***	0.57***
	[6.86] (0.09)	[4.95] (0.11)
Initial level of human capital	0.29*	0.32
	[1.75] (0.168)	[1.64] (0.20)
Credit-deposit ratio	0.31***	0.27**
	[4.21] (0.075)	[3.11] (0.08)
Capital outlay	0.42***	0.51***
	[12.89] (0.032)	[14.91] (0.03)
North-eastern dummy	-0.33**	-0.43**
	[-2.66] (0.126)	[-3.05] (0.14)
Constant	-0.77	-0.67
	[-1.26] (0.61)	[-0.82] (0.82)
N	641	641
R^2 overall	0.76	0.75
R^2 within		0.67
R^2 between		0.85

(Source: Authors' Computations from STATA)

Values in the [] indicate 't' values for linear regression and 'z' values for REGLS regression and values in () indicate standard error.

The results for model 1 and 2 are reported by pooled OLS and random effect GLS (Generalised Least Square) regression. Coefficient for initial level of physical capital is significant in the two regressions meaning that the states which have high initial level of per capita GSDP have higher per capita GSDP. This means that poor states continue to remain poor. The initial level of human capital is significant only through OLS and that too only in Model 2 and becomes insignificant in other regression implying that enrolment rates are not determining per capita GSDP. Credit-deposit ratio is also a significant determinant of per capita GSDP implying that states with high credit-deposit ratio have higher per capita GSDP. This also underscores the significance of private Investment if we assume that credit is taken for productive purposes by households and entrepreneurs. Capital outlay is significant at 1 percent level of significance in all regressions and capital outlay elasticity is found to be 0.51 for RE GLS regression and 0.42 for OLS regression. This suggests that even after controlling for initial conditions of a particular state, higher capital outlay will lead to an increase in per capita GSDP. The elasticity coefficient of 0.51 means that 1 percent increase in capital outlay, on an average, will increase per capita GSDP by 0.51 percent. Revenue Expenditure is significant at 1 percent level of significance in all regressions and revenue expenditure elasticity of GSDP is found to be 0.92 for RE GLS regression and 0.79 for OLS regression. This suggests that even after controlling for initial conditions of a particular state, higher revenue expenditure will lead to an increase in per capita GSDP. The elasticity coefficient of 0.92 means that 1 percent increase in revenue expenditure, on an average, will increase per capita GSDP by 0.92 percent.

Coefficient on the north-eastern dummy can be interpreted as a measure of historical disadvantage of north-eastern and hilly states over mainstream states. This dummy is negative and significant underscoring the

growth retarding effects in these states. Pooled OLS reports only overall R^2 while GLS regression accounts for the panel characteristics of the data also and reports within panel and between panels R^2.

Table: 3- Linear Regression & Random Effect Generalised Least Square Regression between Revenue Expenditure & GSDP in the Presence of Controlled Variables-

Variables	Linear Regression	RE GLS Regression
Initial level of physical capital	0.42***	0.32**
	[4.53] (0.09)	[2.56] (0.12)
Initial level of human capital	0.09	0.1
	[0.75] (0.12)	[0.62] (0.16)
Credit-deposit ratio	0.28***	0.14**
	[4.45] (0.06)	[2.51] (0.05)
Revenue expenditure	0.79***	0.92***
	[17.10] (0.04)	[25.80] (0.03)
North-eastern dummy	-0.33***	-0.45***
	[-3.68] (0.09)	[-4.56] (0.09)
Constant	-1.86***	-1.54
	[-3.29] (0.56)	[-1.54] (1.001)
N	643	643
R^2 overall	0.91	0.901
R^2 within		0.92
R^2 between		0.88

(Source: Authors' Computations from STATA)

All the variables have the expected signs. The study found the coefficient of capital outlay to be smaller than revenue expenditure because the estimated coefficients give a measure of the elasticities i.e. percentage change in per capita GSDP to one percentage increase in public expenditure. Since, 1 percent increase in revenue expenditure is much more than 1 percent increase in capital outlay because of base effect, the absolute impact of 1 unit increase in capital outlay on per capita GSDP is much more than 1 unit increase in revenue expenditure.

- **Long-run elasticity of GSDP is inelastic for both revenue expenditure and capital outlay**. This means that 1 percent increase in public expenditure leads to less than proportionate increase in per capita GSDP. Thus, public expenditure is not always an efficient tool for promoting economic growth. It should be employed only iff private sector lacks any incentive to invest and private consumption is dwindling.
- **Revenue expenditure elasticity is found to be more than capital outlay elasticity**. This may seem contrary to the earlier findings of Mishra (2019), Himanshi & Bansal (2022) and other studies which calculated public expenditure multipliers and found capital outlay multipliers to be much larger than revenue expenditure multipliers. However, our study finds elasticities i.e. proportionate change in per capita GSDP in response to a 1 percent change in public expenditure. Since, revenue expenditure is a major component of total expenditure, as a result, 1 percent increase in revenue expenditure is much bigger than 1 percent increase in capital outlay in absolute amount. That is, revenue expenditure tries to give a bigger push but it is capital spending which drags the economy farther. We found that economic growth responds more to a capital outlay stimulus than an equivalent stimulus of revenue expenditure. So, economists suggest reducing revenue spending and promoting capital outlay for increasing growth rate of the economy and achieving fiscal consolidation targets. However, government schemes and policies aimed at reducing revenue expenditure have to face the resistance and backlash from various stakeholders involved. This is because the steroid of revenue expenditure fuelled growth generally delivers undoubtedly faster and positive although short-term results. As a result, there is little incentive for policymakers to end the reckless populism until circumstances in the form of mounting fiscal deficit force it. Due to this fear, successive governments seldom abandon the freebies and reckless populist schemes of the previous governments. Infact, they introduce more of such schemes as these directly lure the voters and give the largest political dividend.

7. Conclusion

This study has delved into finding the intricate relationship between public spending and GSDP. For public spending, the study relied upon revenue expenditure and capital spending in different models and found their impact on per capita GSDP- an indicator of economic growth and development of the country. The empirical analysis was done for the time-period 1990-91 to 2018-19 and a rigorous model was formulated in the presence of several controlled variables like initial level of physical capital, initial level of human capital, credit deposit ratio of scheduled commercial banks, a dummy for north-eastern states. The study demonstrated a significant

and positive relationship between- (a.)-revenue expenditure and per capita GSDP, (b.)-capital outlay and per capita GSDP. These results concluded that public spending plays a crucial role in influencing growth outcomes and governmental expenditure functions through the different routes in an economy.

In Keynesian Economics, the government expenditure (G) is an important component of aggregate demand (AD) in an economy. Government's consumption and Investment expenditure stimulate aggregate demand through the multiplier effect. However, the extent of multiplier depends on the nature, type and quality of public spending. For instance- Jain and Kumar (2013) estimated fiscal multipliers for Indian states and central government and found higher multipliers for capital outlay as compared to revenue expenditure. Bose & Bhanumurthy (2015) also found the capital expenditure multipliers (2.45) to be higher than transfer payments multiplier (0.98) and other revenue expenditure multipliers (0.99) for India. So, it is advisable for the policy-makers to strike a balance between revenue and capital expenditure, establish coordination among expenditure heads of the different tiers of the government and strike a balance between conflicting goals of long-term economic stabilisation and economic growth. Public expenditure shouldn't be used as a growth stimulator during normal times. Governments should restrict themselves in the provision of public goods only and in promoting the social welfare of the people.

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