

## **Public Expenditure and Economic Growth A Case Study of India**

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### **Abstract**

The purpose of this paper is to analyse the impact of public expenditure on economic growth of India from 1998 to 2012. This study includes annual data of total public expenditure (TPE) and Gross Domestic Product (GDP) per capita as indicator of Economic Growth. 'ADF Unit Root Test', 'Cointegration Test' and 'Granger Causality test' techniques have been applied. The study reveals that there is linear stationarity in both the variables that indicates the long run equilibrium and there is a positive impact of Total public expenditure on economic growth. There is a unidirectional relationship, i.e. from TPE to GDP found by Granger causality Test. There is positive impact of shocks from TPE to GDP and vice versa. This study is limited to India only for limited period. TPE has been taken in totality not head wise or any other way. This study is based on Long run dynamics. Therefore, a larger empirical study would be useful to replicate the results of this study. Economic growth is an important factor for economic development of country. There are various principles & policies made by government for TPE that leads to economic growth.

**Keywords:** Public Expenditure, Economic Growth, ADF Test, Granger Causality.

### **1. Introduction**

A predominant objective of public expenditure policy is clearly Sustained and equitable economic growth. Many public programs are specifically aimed at promoting sustained and equitable economic growth. Public expenditures have played an

important role in physical and human capital formation over a period of time. Appropriate public expenditures can also be effective in boosting economic growth, even in the short run. Therefore, the effect of public expenditures on economic growth may be a comprehensive indicator of public expenditure productivity. Ideally, the two components of such an indicator should be measurable: the contribution of public sector outputs to economic growth, and the efficiency with which these expenditures yield their outputs.

## 2. Review of Previous Literature

A variety of empirical studies, based on time-series or cross-country data, have aimed at estimating the contribution of public expenditures to economic growth. Some studies relate aggregate public expenditures to economic growth; others focus on the relationship between certain expenditure components, such as public investment, education or health expenditures, or their components, and economic growth.

There are some studies (V.Shivaranjani( 2010 ), Devarajan, Swaroop, Zou(1996), Anuradha De And Tanuka Endow (2008) ) which find developing countries like Bolivia , Nepal has positive relation for long run growth(unidirectional) while South Korea has positive bidirectional impact. Some studies(Muhlis Bağdigen & Hakan Çetintaş (2002), John Mudaki ,Warren Masaviru(2012)) find developing countries like Nigeria , Malaysia, Turkey ,Kenya has no/ weakly relation between public expenditure and economic growth. All those studies comprise with GAP among different countries economic status regarding importance of public expenditure for economic growth. **This study is an attempt to investigate the role of public expenditure in long run economic growth in India.**

## 3. Research Design and Methodology

- The Objective of study is to analyse the impact of public expenditure on economic growth of India under specified period i.e 1998-2012. There are two variables used under this study:

**Table 1:** Variable description and Source.

No.	Variable	Description	Data Source
1.	Total public expenditure(TPE)	All expenditure done by central government for the public either directly or indirectly.	<b>World Economic Outlook, IMF</b>
2.	Gross Domestic Product(GDP)	Expressed in billions of national currency units.	<b>World Economic Outlook, IMF</b>

- Hypothesis of Study is “Public Expenditure and Economic Growth of India are independent of each other (Ho:  $\beta = 0$ )”.
- Annual Data of India’s public expenditure and GDP in Indian rupees is used for the study.
- To investigate the relationship between public expenditure and economic growth ‘Granger Causality’, ‘ADF Test’, and ‘Cointegration Test’ techniques have been applied.

## 4. Analysis and Interpretation

### 4.1 Unit Root Test Results

Stationarity of the variables - TPE and GDP was tested using Augmented Dickey-Fuller (ADF) test. Table 2 report the results which suggest the rejection of the unit root null hypothesis of stationarity for TPE and GDP at the Second difference.

**Table 2:** Unit Root Test Results.

For TPE	ADF(level)	P value	ADF(first difference)	P value	ADF(Second difference)	P value
(with intercept)	2.5644(3)	0.9998	0.360161(3)	0.9718	-3.46049(3)	0.0239*
(with intercept and time trend)	-0.9034(3)	0.9229	- 2.057264(3)	0.5195	-5.124411(3)	0.0360*
For GDP	ADF(level)	P value	ADF(first difference)	P value	ADF(Second difference)	P value
(with intercept)	0.6749(3)	0.9844	- 2.626144(3)	0.1169	-3.96993(3)	0.0431*
(with intercept and time trend)	-3.5273(3)	0.0787	- 1.683301(3)	0.6998	-3.88157(3)	0.0476*

Note: “\*” indicates rejection the null hypothesis of unit root at 5% significant levels and The lag length of the ADF regression is specified in brackets [ ] and based on the t-statistics for appropriate lag length.

### 4.2 Cointegration Test Results

The results of Trace and Maximum Eigenvalue tests are reported in Table (3). They suggest the rejection of the null hypothesis of no co integration at 5% level. This means that the GDP and TPE are cointegrated and there is a stationary linear

combination between the variables. It shows Long run co-movement between the selected variables.

**Table 3:** Cointegration Test results.

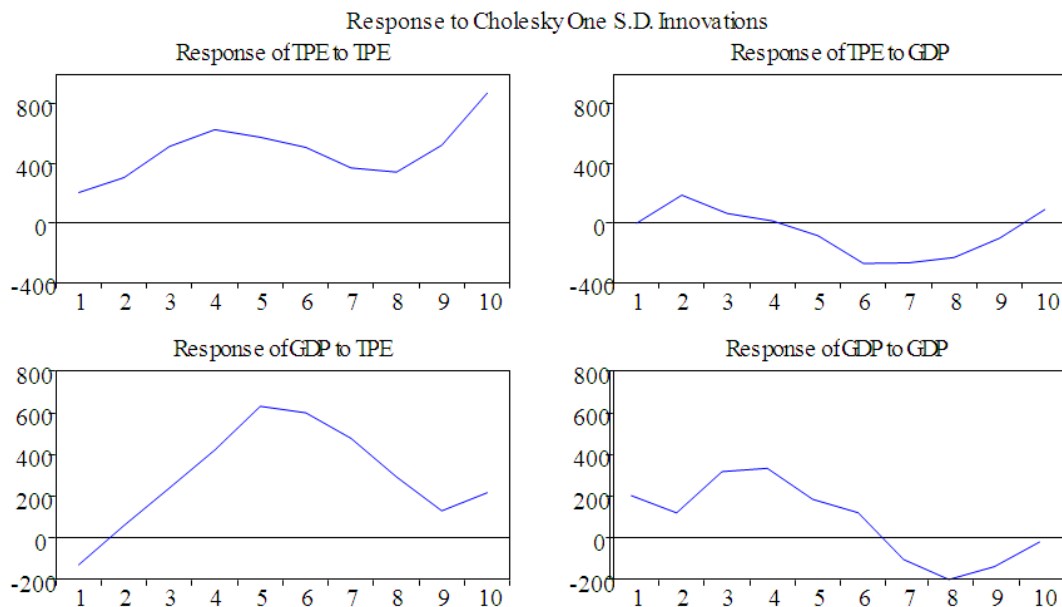
Trace Test					Maximum Eigenvalue Test			
Hypothesized No. of CE(s)	Eigen value	Trace Statistic	Critical Val. (5%)	Prob.	Eigen value	Maximum Eigenvalue	Critical Val. (5%)	Prob.
None *	0.726807	22.09625	12.32090	0.0009	0.726807	16.86848	11.22480	0.0046
At most 1 *	0.331111	5.227776	4.129906	0.0264	0.331111	5.227776	4.129906	0.0264

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

### 4.3 Impulse Response Function (IRF) Results

IRF is another way to check the relationship between public expenditure and economic growth as it particularly explains how a shock in one of these variables would affect the course of the other variable.



**Figure 1:** Impulse Response Graph.

In figure1, Row 1 If we give positive shocks in total public expenditure then total public expenditure increases slowly for short period itself then fall down but at end it keeps upward and GDP first increases for one period then fall down for next five periods and then it increases throughout the period. It means there is a positive impact of TPE to GDP after some period. Row 2, when positive shock is given from GDP in itself and TPE then GDP is falling down consistently but TPE increases linearly for some period and then falls down for 4 periods and then keeps upward. This why, we believe that the direction of causality is going from the TPE to GDP and the other way but not with the same pattern. However, this shock has its maximum effect in the third quarter and it stays consistent. The results of the IRF does not support hypothesis; which investigates a positive relationship between GDP and TPE. However, the relationship between the two variables was found Positive for the India data.

#### 4.4 Granger Causality Test Results

The empirical literature analyses the relationship between public expenditure and economic growth through Granger – causality. GDP is said to be Granger caused by TPE if TPE helps is the prediction of GDP or equivalently if the coefficient of lagged TPE statistically significant. It means TPE granger causes GDP. The test reveals that causality goes from public expenditure to economic growth and not the other way. This proves that expansion in public expenditure will boost the economic growth.

**Table 4:** Granger causality Results.

<b>Null Hypothesis:</b>	<b>F-Statistic</b>	<b>Prob.</b>
<b>GDP does not Granger Cause TPE</b>	<b>2.40583</b>	<b>0.1520</b>
<b>TPE does not Granger Cause GDP</b>	<b>15.9204</b>	<b>0.0016*</b>

\*Indicates the rejection of null hypothesis of no causality at 5% significance level.

## 5. Conclusion

This paper tests the stationarity of the two variables, estimates the Cointegration regression, IRF and tests for existence and the direction of causality. The results of this paper confirm the existence of long run equilibrium relationship between public expenditure and economic growth. The relationship has been found positive that is GDP responds positively to a shock in TPE. In other words, an improvement in the public expenditure will cause economic growth to increase. Granger Causality Test also supported the result of IRF that there is a unidirectional relationship from TPE to GDP (TPE granger cause GDP) and not the other way. These results prove that null hypothesis of TPE and GDP independence has been rejected for Indian economy over the time period of our analysis.

The economic implication of this paper is very important. All test find positive relationship between public expenditure and economic growth. An increase in public

expenditure encourages economic growth and vice versa .i.e. found by IRF results. Therefore, the government should increase their public expenditure to encourage economic growth.

## References

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