European Journal of Business and Management
ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online)
Vol.9, No.7, 2017

Demystifying the Sensitivity of Economic Growth to Government and Private Consumption Expenditures: An Empirical Study of India

Dr.B.Venkatraja
Assistant Professor of Economics
Shri Dharmasthala Majunatheshwara Institute for Management Development (SDMIMD)
Mysore- India

Abstract
Economic theorists and policy makers are divided over the role of private consumption spending and final government consumption spending in economic growth. The present paper is an attempt in resolving the underlying subject with specific emphasis on India. The major objective is to examine degree of sensitivity of economic growth to the changes in private consumption spending and government consumption spending. The study employs econometric techniques of estimating multiple linear regression model, variance decomposition and impulse response function for the secondary data of the post reform period. Results show that private consumption spending has positive and significant impact on economic growth of India. It has been found that a unit change in the GDP growth rate of Indian economy is caused mainly by the variances in private consumption spending and government spending appears to cause minimum variances in economic growth. Further, a unit increase administered to private consumption spending results in rise in future GDP growth rate by multiple times. Whereas, a given increase in government spending reduces future the economic growth throughout the time horizon. This leads to the conclusion that private consumption spending is the key to economic growth of India and higher government consumption spending is detrimental to growth. The policy makers may device more effective policies to create environment for increased private consumption and the government may leverage on investment spending for higher multiplier effect.
Keywords: economic growth, private consumption spending, government consumption spending, consumption expenditure

1. Introduction

Macroeconomic theories of Keynes, Milton Friedman, Modigliani and Ando, Duesenberry among others postulate the nexus between consumption spending and economic growth. These theorists were largely disagreeing each other on the nature of relationship and impact of consumption spending and growth. If Keynes had put up an argument on the significant role of consumption spending in the growth of the economy, Mundell was critical of such notion advocating that consumption spending preferably government consumption spending adversely affects the growth. Though the discussion on the underlying subject of the utility of consumption spending has a long history, with economic crisis emerging at different parts of the world frequently has scooped up the fresh debate. Economists owe enduring European economic slowdown to falling private consumption spending. Current economic crisis of China and Japan are believed to be due to the same reason. To overcome subprime crisis U.S Federal government did spend heavily on consumption of products and services. Many more such instances could be quoted for increased government consumption spending which happens to be non-adherence to Mundell's theory. Current consumption spending practices of the government and households at different countries as well as arguments of economists are conflicting. Having such unresolved problem as to what extent domestic economic growth is sensitive to private consumption spending and government consumption spending, there arises a need to carry out a study on the underlying debated subject. It is at this backdrop the present research has been pursued to examine the specific role of private consumption spending and government consumption spending in Indian case.

2. Review of Literature

Amin (2011) investigated the causal relationship between consumption expenditure and economic growth in Bangladesh using annual data from 1976 to 2009 in a bivariate framework. Using Johansen cointegration method and ARDL cointegration method, the empirical findings indicate that there exists long run cointegration between the variables. The application of Granger causality test revealed a long run unidirectional causal relationship running from economic growth to consumption expenditure. The study did not find any evidence of consumption expenditure becoming a cause of economic growth.

Whereas, Mishra (2011) had evidences of a unidirectional causal relationship which runs from real private consumption expenditure to economic growth in the long-run in India. His study focused on investigating the dynamics of relationship between real consumption expenditure and economic growth in India. The study

was carried out for the sample period of 1950-51 and 2008-09 by estimating the vector error correction regression and granger causality test. The result is consistent with the findings of Tokuoka (2010) who concluded that reviving private consumption spending was key to boost economic growth of Japan so as to rebalance economy by addressing pressures from Japan's aging population.

The study of Casaux and Ecochard (2011) examined the vital role of private consumption spending in economic growth of France. The paper estimated a consumption function to show that strong growth of private consumption in France during the pre-crisis decade is explained by the main determinants: real disposable income and wealth. The study outcome reflects that during the decade preceding the global financial and economic crisis, France experienced continued economic expansion, driven mostly by domestic demand, and in particular private consumption. Even during the crisis, private consumption was sustained by the working of the built-in fiscal stabilizers and stimulus measures. This has reflected the due significance attached to private consumption expenditure in the sustained economic growth.

Connolly and Li (2014) tested the Mundellian hypothesis that too much government consumption spending reduces economic growth. They used panel data for 31 OECD countries from 1999 to 2011. Results indicate that government consumption spending significantly reduces economic growth. A one percentage point increase in government consumption spending is associated with a 0.86 percentage lower growth rate in GDP. Their results corroborates Barro's (1991) finding. A 98 country cross-sectional regression estimation of Barro reveals that that non-productive government spending reduces growth.

Nyambe and Kanyeumbo (2015) studied to ascertain the role that government expenditure, household expenditure and inflation play in the growth of the Namibian economy. This study covers time series annual data for the period 1980 to 2011 and employs a multiple regression model for the analysis. The results posit the existence of a positive relationship between economic growth, government expenditure, household expenditure and inflation. With specific to the role of expenditure, the study results consider the government and household expenditures as vital components for the national income stream.

The empirical studies reviewed in this section are not unanimous on the impact of the private consumption expenditure and government consumption expenditure on the economic growth. Results vary may be owing to differences in the study period, study area, tools applied etc. The current study has been pursued to solve the ambiguity on the role of consumption spending by the government and households.

Reading through the review of past literature raises a question- as the consumption spending could be segregated into government consumption and private consumption spending, which is more significant in influencing the growth? Though a plethora of studies is available on the underlying subject, almost all of them focused on the impact of either government spending or private spending on growth separately. None of the studies estimated the relative impact of household consumption spending and government consumption spending on economic growth. Hence the question is not answered. The present study is an attempt in addressing this question. Further, this study contributes to the empirical literature also because hardly any study was done in Indian context.

3. Study Objectives

The main objective of the present paper is to study the impact of private consumption spending and government consumption spending on economic growth and to test the Mundellian hypothesis that too much government consumption spending reduces economic growth in Indian scenario. The study also focuses on measuring accurately the sensitivity of economic growth to the shocks in the two different components of consumption.

4. Research Methodology

4.1 Data and Period of Study

The study employs time series data on annual basis of the variables selected for the investigation. The study involves post reform period of India from1992-93 to 2015-16. The study is essentially secondary data based procured from the RBI publication.

4.2 Variables & Model Specification

The present study classifies consumption spending into three types- private consumption spending, government consumption spending and net export spending. The study examines the impact of such consumption spending on economic growth. Economic growth is measured by using the best available proxy variable i.e. Gross Domestic Product (GDP). The unit of measurement of all the variables is annual growth rate in percentage.

The study estimates the following model to examine the relative impact of the different components of consumption spending on economic growth.

$$Y= a + b_1X_1 + b_2X_2+ b_3X_3+e$$

In this model, Y is the GDP growth rate, X_1 is growth rate of private consumption spending, X_2 is growth rate of government consumption spending, X_3 is growth rate of net export spending. Whereas, b_1, b_2 and

b_3 are the elasticity coefficients of independent variables, a is the constant of the model and e is the error term of the model.

The study will levy due emphasis on measuring the impact of private consumption spending and government consumption spending on GDP. Net exports being another component of consumption spending, it has also been included in the model as control variable, though focus was not on studying its significance. Inclusion of net exports to model is to ascertain accurately the relative impact of private and government consumption expenditures.

4.3 Estimation Techniques

4.3.1 Multiple Linear Regression

Inorder to estimate the model developed for the study which aims at measuring the impact of consumption spending variables on economic growth the following multiple linear regression model has been tested.

$$GDP = a + b_1PCS + b_2GCS + b_3NEX + e$$

In this regression model Private Consumption Spending (PCS), Government Consumption Spending (GCS) and Net Expert Spending (NEX) form predictors and Gross Domestic Product (GDP) is the dependent variable.

4.3.2 Variance Decomposition

The regression estimation shows only the impact of predictors on the dependent variable. It does not accurately measure how much variability in dependent variable is due to the changes or shocks in the independent variable and how much is owing to its own (dependent variable) shocks. Further, regression does not measure variability in the dependent variable at different stages over a long period due to shocks in independent variables. Variance decomposition technique is applied in this study which measures accurately the variability of GDP at different stages over the long period of time for the volatility in private consumption spending and government consumption spending as well as GDP itself. In the general linear model, the relationship between the two variables is captured by the linear equation:

$$Y = a + bX + c$$

Y = dependent variable or response variable, and X = independent variable or explanatory factor.

With every unit change or shocks in X, there is a corresponding variation in Y. The variance decomposition focuses on the 'response variable' i.e. Y which responds to the variations in the independent variable i.e. X. Specifically the variance of Y for the shocks of other endigenous variable in the model can be presented as follows.

$$Var(Y) = E(Var[Y|X]) + Var(E[Y|X])$$

In this equation Var(Y) is variance of Y, E(Var[Y|X]) is explained variation of Y directly due to changes in X and Var(E[Y|X]) reflects unexplained variation comes from somewhere other than X. Thus, the variance decomposition bringsout the variance of Y owing to : (1) the expected variance of Y with respect to X, and (2) the variance of the "expected variance of Y" with respect to X. In other words, the variance of Y is its expected value plus the "variance of this expected value."

In summary, the result derived through this process enables to isolate to appreciate the fact that the response in Y has variation; this variation is comprised of two components. When these components are decomposed they are one type of variation that is explained by the changes of X and another variance that is completely due to chance stance, i.e. unexplained.

4.3.3 Impulse Response Function

Impulse response function provides even more accuracy on the relationship between the variables in the system. This econometric technique explains the responsiveness of the endogenous variable in the system to shocks to each of the other endogenous variables. For each endogenous variable in the system, a unit shock is applied to the error, and the effects over time are noted. Impulse response function estimates accurately the percentage change in GDP for a given percentage change in the private consumption spending and government consumption spending over the long run.

4.3.4 Hypotheses

The following two hypotheses are tested in this study.

Ho1. Private consumption spending does not have significant impact on economic growth.

Ho2. Government consumption spending does not have significant impact on economic growth.

5. Results and Discussion

Multiple linear regression model has been estimated to assess the nature and size of impact of consumption spending components on the economic growth of India and the results are presented in the Table-1. From the regression estimation results, it appears that 98 per cent change in the economic growth rate is explained by the model. Durbin – Watson statistic being around 2, the model qualifies the goodness of fit. Reliability of results is strengthened by high and significant F value. Further, the results are not inflated with multi-collinearity. To test

for the multi-collinearity in the model, Variance Inflation Factor (VIF) has been tested and from the results it appears that the model is free from the problem of predictors being correlated. Based on the results, the regression model can be presented as under:

$$GDP = .057 + 1.099PCS + (-4.745)GCS + .009NEX$$

The coefficient value of PCS is positive as expected. From the results, private consumption spending elasticity of GDP appears to be unitary. This implies that a 1 percent increase in the private consumption spending will accelerate economic growth by almost 1 percent and vice versa. From this it could be derived that in India higher growth could be achieved through larger household consumption. The beta coefficient of PCS is statistically significant leading to the rejection of the first hypothesis of the study which states that private consumption spending does not have significant impact on economic growth. In other words, private consumption spending has significant impact on the growth rate of Indian economy. This confirms the findings of Mishra (2011).

Interestingly, general government consumption spending in India appears to have negative impact on the GDP growth rate. The government final consumption spending includes all government current expenditures for purchases of goods and services which include compensation of employees. It also includes expenditure on defense and security, but excludes government military expenditures. Such spending of the government not only has negative impact on growth but also the magnitude of negative impact is large. If the government consumption spending increases by 1 percent the GDP growth rate is expected to decline by more than 4.7 percent. This result supports the Mundellian hypothesis that too much government consumption spending reduces economic growth. But the beta coefficient is not statistically significant which leads to the acceptance of the second hypothesis of the study- government consumption spending does not have significant impact on economic growth.

To avail accurately the relative impact of private consumption spending and government consumption spending on economic growth net export spending has been added to the model as a control variable, though the objective was not to test its significance.

Table-1. Estimation of linear regression model.

Predictors	Beta coefficients	t	sig	VIF
Constant	.057	.083	.935	
PCS	1.099	40.423	.000*	1.054
GCS	-4.745	-.412	.685	1.231
NEX	.009	1.464	.159	1.213
$R^2 = 0.989$				
Adj. $R^2 = 0.987$				
D-W = 2.029				
F= 577.445 Sig. =0.000				

Dependent variable: GDP

* Significant at 1% level

Regression results do not explain how much variability in economic growth is caused by its own shocks and how much variation is caused by shocks in the other endogenous variables viz. private consumption spending and government consumption spending. Variance decomposition technique provides such analysis for a longer period. The results are presented in Table-2.

The results of variance decomposition reflect how much variance of GDP is due to own shocks, how much changes is because of shocks in private consumption spending and how much change in GDP is explained by the shocks of government consumption spending over the period of time. In a time horizon, private consumption spending appears to cause the largest variation in GDP. While shocks in government consumption spending has the least share in the total variance of GDP. Variance decomposition estimation shows that nearly 45 percent variation in GDP is owing to the shocks in private consumption spending, whereas changes in government consumption spending cause only 21 percent variance in the GDP growth rate. It is significant to note that 34 percent of variation in GDP is caused by its own shocks. Thus, from the results it appears that the forecasting error in economic growth is significantly explained by the lagged values of private consumption spending. The findings of variance decomposition show that forecasting error in economic growth is not significantly explained by government consumption expenditure. This supplements regression results.

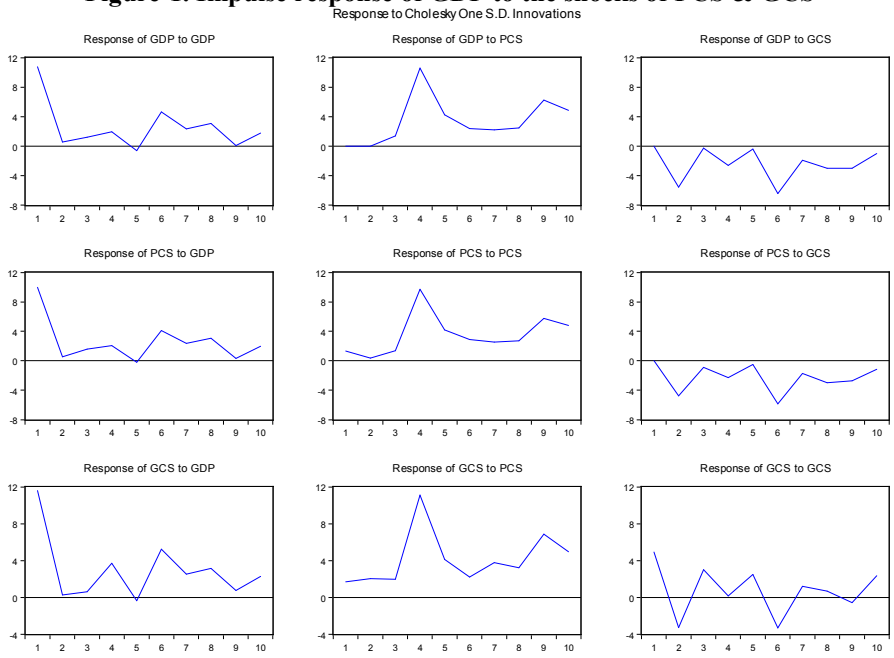
Table-2. Variance decomposition of GDP

Variance Decomposition of GDP:

Period	S.E.	GDP	PCS	GCS
1	10.79473	100.0000	0.000000	0.000000
2	12.14547	79.20006	0.000167	20.79977
3	12.28529	78.38919	1.242002	20.36881
4	16.55942	44.54282	41.75368	13.70350
5	17.10903	41.85474	45.25548	12.88978
6	19.00458	39.89472	38.29898	21.80630
7	19.37227	39.84504	38.17239	21.98257
8	19.99497	39.77820	37.35898	22.86283
9	21.16380	35.50736	42.08963	22.40301
10	21.80963	34.11732	44.57684	21.30584

The regression estimation shows the impact of the two components of consumption spending on growth and the variance decomposition explains how much each variable including GDP growth rate causes the variance in GDP growth rate. But they do not explain precisely the response of economic growth for the shocks in the private consumption spending and government consumption spending in a time horizon. To meet this requirement, impulse response function is applied. Figure-1 explains the responsiveness of the endogenous variable in the system to shocks to each of the other endogenous variables. So, for each endogenous variable in the system, a unit shock is applied to the error, and the effects over time are noted. Figure-1provides sufficient evidences to understand that future values of GDP growth rate respond significantly and positively to the shocks of private consumption spending up to 5years. Whereas for a unit shock administered to the current government expenditure on purchase of goods and services, the future values of GDP growth rate respond negatively throughout.

Figure-1. Impulse response of GDP to the shocks of PCS & GCS



6. Conclusion and Policy Implications

The major findings of the study could be summarised as: private consumption spending has positive and significant impact on economic growth of India. In every 1 unit change in the GDP growth rate of Indian economy, nearly 45 percent of such change is contributed by private consumption spending, government spending contributes only 21 percent and reaming 34 percent change is caused by GDP's own shocks. Further, 1 unit increase in private consumption spending increases GDP growth rate by multiple times up to 5years. Whereas, a given increase in government spending reduces the economic growth in the long run. From the findings it could be inferred that, private consumption spending is the key to economic growth of India and higher government consumption spending is detrimental to growth. The significant response of GDP growth rate to a given change in the private consumption expenditure may be owing to large size of multiplier associated

with the private consumption spending. The government consumption spending such as purchases of goods and services, compensation of employees which include expenditure on defense and security are less productive and their ability to multiply income by creating several rounds of employment is low. Mundellian theory advocates that since government consumption spending is financed through taxes, people spend less and save more expecting a tax raise to meet increased government expenditure. This reduces standard of living of individuals in specific and production and economic growth in general. Results support Mishra's (2001) findings on the significant role of private consumption spending in growth and also confirms Mundellian hypothesis that too much government consumption spending reduces economic growth.

The findings of the study have some policy implications. Since private consumption expenditure appears to be the growth accelerator, the government may encourage household consumption spending through policy initiatives. Lowering the direct tax burden, reducing the indirect tax rate and multiplicity by early implementation of GST, extending social security to unorganised sector, clear labour laws will enhance the confidence of the society to spend more and save less. These are apart from the policies for employment and income generating activities. As the government consumption spending reduces the economic growth, the government may reduce its final consumption spending and allocate more towards government investment spending which arguably has higher multiplier effect on economic growth.

References

Amin, Sakib-Bin. (2011). Causal Relationship between Consumption Expenditure and Economic Growth in Bangladesh. *World Journal of Social Sciences*. 1(2), 158 – 169

Barro, Robert J. (1991). Economic Growth in a Cross Section of Countries. *Quarterly Journal of Economics*. 106, 407- 443.

Casaux, Suzanne and Ecochard, Pierre. (2011) Private consumption in France – Stubbornly high, or responsive to determinants?, *ECFIN Country Focus.* 8(1), 1-8.

Connolly, Michael and Li, Cheng. (2014) Government Consumption Spending Inhibits Economic Growth in the OECD Countries, retrieved from: https://danieljmitchell.files.wordpress.com/2014/07/21-connolly-and-li-siena-2014.pdf

Mishra, P. K. (2011). Dynamics of the Relationship between Real Consumption Expenditure and Economic Growth in India*, Indian Journal of Economics & Business.* 10(4), 553

Nyambe, Jacob M. and Kanyeumbo, J. N. (2015) Government and Household Expenditure Components, Inflation and their Impact on Economic Growth in Namibia, *European Journal of Business, Economics and Accountancy*. 3(4), 81-86.

Reserve Bank of India. (2015). Handbook of Statistics on Indian Economy, https://www.rbi.org.in/scripts/AnnualPublications.aspx?head=Handbook%20of%20Statistics%20on%20Indian%20Economy

Tokuoka, Kiichi. (2010). Rebalancing in Japan: The Role of Private Consumption, IMF Working Paper, WP/10/293. Retrieved from: https://www.imf.org/external/pubs/ft/wp/2010/wp10293.pdf