

The effects of government expenditure on sustainable economic growth in India: assessment of the circular economy

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ABSTRACT – REZUMAT

The effects of government expenditure on sustainable economic growth in India: assessment of the circular economy

Government expenditure is linked to the economic growth and is the driving force of the every country. In the post liberalization era, India has been exposed to the dynamics of the world economy due to which India has witnessed a significant impact of Government spending on its economic growth. The objective of this paper is to investigate the effects of the Central Government spending on the growth of the Indian economy over a period, from 2006 to 2016. The online data disclosures of the various ministries have been the major source of secondary data. Co-integration analysis is adopted to evaluate the effect of individual sectorial spending on the economic growth and gross domestic product. The economic spending is classified into 5 sectors namely: General Services, Social Services, Economic Services, Grants in Aid & Contribution and Public debt & Loans for analysis, as disclosed by the sources. The analysis gives us an idea of the various sectors which have a positive impact and the sectors which have a negative impact. The results would play an instrumental role in exploring the sectors in which the government should invest more, thereby contributing to an enhancement in the country's growth.

Keywords: government expenditure, economic growth, circular economy, Gross Domestic Product (GDP), integration analysis, emerging economies

Efectele cheltuielilor guvernamentale asupra creșterii economice durabile în India: evaluare în contextul economiei circulare

Cheltuielile guvernamentale sunt legate de creșterea economică și reprezintă forța motrice a fiecărei țări. În era post-liberalizării, India a fost expusă dinamicii economiei mondiale, datorită căreia India a asistat la un impact semnificativ al cheltuielilor guvernamentale asupra creșterii sale economice. Obiectivul acestei lucrări este de a investiga efectele cheltuielilor guvernului central asupra creșterii economiei din India pe perioada 2006–2016. Datele online ale diferitelor ministere au fost sursa principală de date secundare. Analiza co-integrării a fost adoptată pentru a evalua efectul cheltuielilor sectoriale individuale asupra creșterii economice și a produsului intern brut. Cheltuielile economice au fost clasificate în 5 sectoare și anume: Servicii generale, Servicii sociale, Servicii economice, Subvenții pentru ajutoare și contribuții și Datoria publică și împrumuturi pentru analiză, după cum se arată în surse. Analiza ne oferă o idee despre diferitele sectoare care au un impact pozitiv și sectoarele care au un impact negativ. Rezultatele joacă un rol instrumental în explorarea sectoarelor în care guvernul ar trebui să investească mai mult, contribuind astfel la o îmbunătățire a creșterii economice a țării.

Cuvinte-cheie: cheltuieli guvernamentale, creștere economică, economie circulară, produsul intern brut (PIB), analiza integrării, economii emergente

INTRODUCTION

Economic growth is pivotal to the sustainable progress of a country, especially in the case of emerging economies. Bökemeier and Greiner [1] suggested that a fundamental feature of emerging market economies consists in a high economic growth performance. The quality of life of the citizens of the country and the economic growth are intricately linked. Ghițuleasa et al. [2] suggested that a sustained growth is based on lowering carbon emissions and supporting environment-friendly farming practices. Investment in education, infrastructure

development, improvement in health and medical services, agriculture, housing sector, encouraging local and foreign investments, environmental-friendly measures and proliferation of business-friendly policies would drive the economic growth of the country. Addressing these sectors and the issues relating to it would stimulate the economic activity at the grass root level of the country, thereby driving economic growth from bottom to the top of the economic pyramid. This will also lead to the creation of a lot of jobs in the country and thereby increase employment. The various activities in the country are intertwined

together. Altering any phenomenon in one sector of the country affects the other, thereby the government needs to make judicious investment decisions to drive sustainable economic growth.

The per capita income in India had increased only by a meagre 1% until 30 years' post-independence. It was termed as the "License Raj". Very few licenses would be given for business operations which majorly included electrical power, Steel and communications. The growth rate started to increase as India moved towards the idea of liberalization. The Liberalization, Privatization and Globalization reforms of 1991 was the game changer for the Indian economy. A very huge public sector had emerged in the country which made continuous losses. At the same time business owners who had last licenses built up vast empires without much competition. Investments in public infrastructure were very weak due to the prevalence of public sector monopoly.

From the line chart below, it can be observed that the GDP growth in the country is mediocre until 1991. Once the LPG measures were introduced in 1991, subsequently many other policy changes followed. The reforms ended the License Raj, lead to the reduction of interest rates and various tariffs. This again led to the demise of public monopoly and the approval of foreign direct investment in many sectors in an automated manner. The country took nearly 10 years to adjust to the changes and assimilate the new drivers of economic growth. India started to move towards a free market economy. The major change and increase in GDP is observed from 2001 and the growth rates of the Indian economy started to grow faster at 9% from 2003 to 2007. But again, the global financial crisis hit the Indian economy and the growth rate moderated in 2008.

According to the analytics designed by Goldman Sachs, India is predicted to become the 3rd largest economy by 2035 only behind the US and China. Since the start of 2012 India entered a period of reduced growth at 5.6% economic growth. From 2014 India started to recover again entering a phase

of accelerated growth of 6.4% and by 2017 the growth rate became 8%. Even though there were many ups and downs in the economic growth rate of the country it was observed that the growth rate almost doubled every 5 years. Through the years, the spending patterns of the government has changed drastically, as observed in the pre LPG era, the government spending wasn't focused much into infrastructure development, education, health and business creation. The investment was more into public sector undertakings, which happened to fail with huge losses. Later on, as the years progressed and the policies were liberalized, the government went more into a regulatory mode, thereby letting private businesses do the business operations part. The government started to act more as a policy supervisor to create an environment conducive to productivity than doing business itself. It started to invest in social services so as to elevate the lifestyle of the citizens of the country. There was a major shift in the spending patterns, boosting the country's growth. This paper investigates the link between the nature of the government expenditure and its spending patterns and its impact on the country's economic growth. This research attempts to empirically validate the link between government disbursements and economic growth witnessed by India in the past decade. This paper also attempts to establish the association between revenue and capital account governmental expenditure and the Gross Domestic Product (GDP).

LITERATURE REVIEW

It has been postulated that public spending can directly influence the economic growth of the country by the Keynesian macroeconomic model. Multiplier effects on aggregate demand are known to trigger an increase in the profitability, employability and investment due to an enhancement in government spending. The human capacity is ultimately elevated due to investments in healthcare, training and social and social services leading to be an economic contributor [4, 5]. Expenditure multipliers provoke an increased

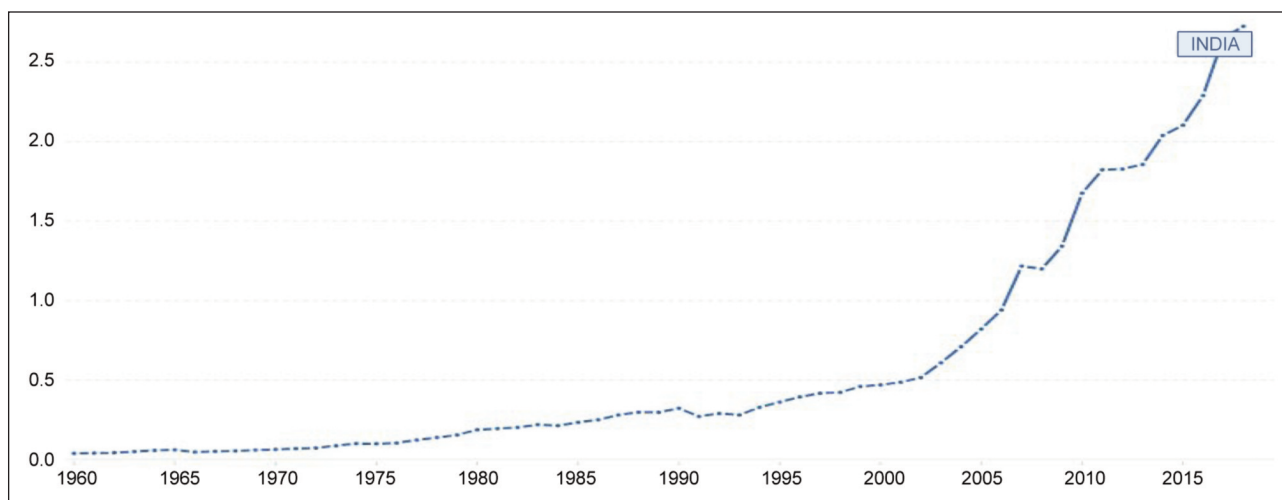


Fig. 1. GDP of India for the sample period from 1980 to 2016 in USD (Trillion) [3]

output when the aggregate demand is augmented by the government spending. The opponents claim that such an approach diminishes the accumulation of capital in the country in the long run and hinders the growth of the economy in the short run [6]. The Government expenditure have been classified as productive and unproductive, and it has been observed that unproductive expenditures have either indirect or no impact on the rate of economic growth. Whereas, productive expenditures have a positive impact on the rate of the economic growth of the country [7]. It has been understood that basic infrastructural spending has an effect on the country economic growth. Consider spending on railway and road network so as to move the goods across the country. Such expenditures ensure that there is an enhancement in the connectivity between various parts of the country and thereby promote trade leading to a contribution to economic activity.

According to Lee and Gereffi [8] developing economies have an opportunity to upgrade in both social and economic terms by linking into global value chains. On the other hand, Hendriks [9] argued that developing countries need to attract the "right kind" of foreign investment in line with their short- and long-term goals. Many countries are victims to poor public spending on medicine and healthcare. The spending pattern is such that, the disbursed amount assists hospitals and people in the cities who are in minority rather than the majority located in semi urban and rural areas. This leads to poor health causing decreased productivity, which in turn affects economic growth and productivity. The heavy proportion of the poor relies on traditional medicine and home remedies [10]. Moreover, it has been observed that when the quality of the labor force plays a pivotal role in the country's growth and leads to more economic activity. This originates from the fact that labor force is an essential production factor for determining the production level. Thereby, if the labor force and its quality is elevated the production levels will spur up, contributing to economic growth. There would be a great impact on innovation and productivity [11, 12]. The quality of the human capital is determined by the education in the country. Economic growth has one pivotal influencer, which is education. The nation's wealth has two critical components; physical and human capital [13]. The latter is a very important production factor, which contributes to economic growth. Up-liftment of the lives of people can happen by the development of human capital, which leads to growth in the country by triggering economic activity, as people can lead a higher quality of life. Strategies should be designed to induce a change in the pattern of the spending of the government [10]. Studies have found that there is a negative impact on the education and health development programs in the country when governments design budgets that intensive in defense spending [14]. Previous studies conducted on the impact of government spending pattern that are intensive in defense budgets have led to inconclusive results. It is observed that some studies have

displayed that defense expenditure has had a positive effect on the economic growth of the country [6, 15]. On the contrary, a few other studies have found that defense expenditure has a negative impact on the economic growth [16]. Spulbar et al. [17] argued that low-and middle-income countries are distinguished by certain features such as: fast technological change, demographic dynamics, poverty, but also unsustainable economic growth. Moreover, Birau et al. [18] revealed that inequality of chance, in the case of an overpopulated emerging country like India, involves negative effects such as economic and social disequilibrium due to inefficient distribution of resources. Hawaldar et al. [19] highlighted the importance of economic sustainability based on a case study for India based on economic production and long-term economic growth, but without any negative influence on environmental, social, or cultural aspects.

RESEARCH METHODOLOGY

The impact of components of Governmental expenditure on GDP is attempted in this research endeavor. Secondary data is gathered from various government portals and the website of the Reserve Bank of India. The data for the variables considered in the study was obtained from the annual financial statements of the Central Government of India.

Data on Gross Domestic Product is gathered from the website of the Ministry of Statistics and Programme Implementation, Government of India. The independent variables considered for the study are Revenue Account and Capital Account disbursements. In the Revenue Account the subcategories considered are General services, Social services, Economic services and Grants. In Capital Account, the variables considered are General services, Social services, Economic services and Public debt & Loans. The data for a period of 2 decades, ranging from 1996–2016, is collated and analyzed. Data captured is analyzed in two stages. Most of the economic variables falls into the category of non-stationary variables. Firstly, unit root test is conducted to check whether the variables are stationary or not. Subsequently, Cointegration analysis with the help of EViews software. Time series data considered here is first tested for stationary using Augmented Dickey Fuller (ADF) test and then Johansen test is conducted for testing cointegration in the data.

EMPIRICAL ANALYSIS

Time series data from the period 1998 to 2016 has been used in this study. The respective variables under consideration are General Services, Social Services, Economic Services and Grants in Aid & Contribution. The data has been compiled and constructed from various bulletins and data disclosures of the Reserve Bank of India and Government of India. All the variables in consideration are in real terms. Descriptive statistics of the data considered are discussed in table 1.

Table 1

DESCRIPTIVE STATISTICS OF THE ECONOMIC VARIABLES					
Measure	Revenue Account Disbursements				
	GSR	SSR	ESR	Grants R	
Minimum	97671.76	9014.15	73437.45	39806.16	
Maximum	924736.15	131471.07	614201.15	344032.49	
Mean	365627.94	54337.6395	291051.4	127085.0835	
SD	252026.172	41180.53	194799.396	98761.98182	
Measure	Capital Account Disbursements				
	GSC	SSC	ESC	PDLC	GDP
Minimum	9328.58	3377.76	5717.27	199485.3	1301788
Maximum	99183.05	4903.24	182500.8	5738835	15253714
Mean	43951.3	1899.893	46015.55	1800279	5681052
SD	31784.1	2007.372	47860.26	1638216	4508512

All the data for the respective categories and the descriptive statistics for the same are given in the above table. The figures are in cores. Under the **Revenue Account**, General Services averages at 365627.94 crores and it ranges from 97671.76 to 924736.15 with a standard deviation of 252026.172. Again, the Social Services average at 54337.6395 with a range of 9014.15 to 131471.07 with a standard deviation of 41180.53. Similarly, Economic Services averages at 291051.4 with a range from 73437.45 to 614201.15 with a standard deviation of 194799.396. Grants, average at 127085.0835 and range from 39806.16 to 344032.49 with a standard deviation of 98761.98182. Now, let us consider the **Capital Account**. Here, General Services averages at 43951.3 and ranges from 9328.58 to 99183.05 with a standard deviation of 31784.1. Social Services averages at 1899.893 and has a range of -3377.76 to 4903.24 and the standard deviation is 2007.37. When considering the Economic services, it averages at 46015.55 and ranges from 5717.27 to 182500.8 with a standard deviation of 47860.26. Public debt averages at 1800279 and it ranges from 199485.3 to 5738835 with a standard deviation of 1638216. Considering the GDP trends, they average at 5681052 and range between 1301788 and 15253714 having a standard deviation of 4508512.

Unit Root Test

The variables involved in the unit root tests are Economic services, General services, Social services and Grants under the Revenue Account. Similarly, in the Capital Account the test is done for Economic services, General services, Social services and Public debt and Loans. The Augmented Dickey Fuller (ADF) Unit Root Test is done. This test enables us to understand whether the variables are stationary or non-stationary, that it's a unit root (table 2).

The null hypotheses for the Revenue account variables are the following:

Table 2

UNIT ROOT TEST OF REVENUE ACCOUNT VARIABLES			
Revenue Account			
Variables	ADF t-Statistic	5% Significance	Probability
ESR	-2.129502	-3.673616	0.4983
GSR	-2.719657	-3.759743	0.2433
SSR	-2.748037	-3.710482	0.2321
GRANTS_R	-1.783872	-3.673616	0.6721

- ESR has a unit root;
- GSR has a unit root;
- SSR has a unit root;
- GRANTS_R has a unit root.

The results show that the probability is more than 0.05. Thereby the null hypothesis cannot be rejected. It is conclude that, all the variables ESR, GSR, SSR are non-stationary.

Table 3

UNIT ROOT TEST OF CAPITAL ACCOUNT VARIABLES			
Capital Account			
Variables	ADF t-Statistic	5% Significance	Probability
ESC	-2.564322	-3.67362	0.2978
GSC	-1.939014	-3.673616	0.5955
SSC	-2.574695	-3.690814	0.2937
PDLC	-0.911926	-3.673616	0.9333

The null hypotheses for the Capital account variables are the following:

- ESC has a unit root;
- GSC has a unit root;
- SSC has a unit root;
- PDLC has a unit root.

The probability obtained is more than 0.05. The null hypothesis should be accepted. Thereby, all the respective variables ESC, GSC, SSC and PDLC are non-stationary. For GDP, the null hypothesis is GDP has a unit root. It is observed that the probability is more than 0.05; hence the null hypothesis cannot be rejected. Hence, GDP is a non-stationary variable. The Augmented Dickey Fuller test indicates that all the variables being used are non-stationary at level.

Cointegration Test

Since the variables are non-stationary Johansen cointegration test is performed, which is as follows. The test will help understand whether the variables are cointegrated or not. The test is separately run for revenue account and capital account. An insight on the type of effect is gained, namely; positive or negative effect, which the variables have on the GDP and economic growth of India.

The null hypothesis is the following: "The variables are not correlated".

Table 5 reports the trace statistics. A* denotes the rejection of the hypothesis. In the table Critical Value denotes the standard value, whereas the Trace statistic is the value obtained from the test. The variables where the Trace Statistic is higher than the Critical Value are rejected. This means that the variables are correlated. The results show the cointegration equations at the 0.05 level.

The null hypothesis is: The variables are not correlated.

The table 6 reports the statistics for Max-Eigen value. A* denotes the rejection of the hypothesis at the 0.05 level. In the table Critical Value denotes the standard value, whereas the Max-Eigen Statistic is the value obtained from the test. The variables where the Max-Eigen Statistic is higher than the Critical Value are rejected. The Max-Eigen value test indicates the cointegration equation at the 0.05 level.

The equation of utility is presented in table 7. All the equations where the hypothesis is rejected are of value from the results of 5 and table 6. But, the only equation of primary importance to us is in table 7. It gives the perspective as to what are the various effects of the variables of the Revenue account on the GDP of the country. The effects of the variables on GDP are considered by reversing the signs before them. It can be observed that the Economic services, General services, Social services and the Grants all have a positive effect on the GDP of India.

Table 4

UNIT ROOT TEST OF GDP			
GDP			
Variables	ADF t-Statistic	5% Significance	Probability
GDP	0.322608	-3.673616	0.9971

Table 5

UNRESTRICTED COINTEGRATION RANK TEST (TRACE TEST) – REVENUE ACCOUNT				
Hypothesized no. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.955294	111.9149	69.81889	0.0000
At most 1*	0.744908	55.97709	47.85613	0.0072
At most 2*	0.640186	31.38671	29.79707	0.0325
At most 3	0.387159	12.98770	15.49471	0.1153
At most 4*	0.206966	4.173998	3.841466	0.0410

Table 6

UNRESTRICTED COINTEGRATION RANK TEST (MAXIMUM EIGEN VALUE) – REVENUE ACCOUNT				
Hypothesized no. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.955294	55.93781	33.87687	0.0000
At most 1	0.744908	24.59038	27.58434	0.1154
At most 2	0.640186	18.39901	21.13162	0.1156
At most 3	0.387159	8.813701	14.26460	0.3020
At most 4*	0.206966	4.173998	3.841466	0.0410

Table 7

COINTEGRATION EQUATION – REVENUE ACCOUNT				
GDP	ESR	GSR	SSR	GRANTS_R
1.000000	-0.171270	-0.752644	-0.006418	-0.249400
	0.04327	0.02456	0.01783	0.01483

Table 8

UNRESTRICTED COINTEGRATION RANK TEST (TRACE TEST) – CAPITAL ACCOUNT				
Hypothesized no. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.998230	193.5376	69.81889	0.0000
At most 1*	0.972168	85.81014	47.85613	0.0000
At most 2	0.524192	24.92338	29.79707	0.1642
At most 3	0.470966	12.29678	15.49471	0.1432
At most 4	0.082991	1.472847	3.841466	0.2249

The null hypothesis is: The variables are not correlated. The table 8 reports the trace statistics. A* denotes the rejection of the hypothesis. In the table, Critical Value denotes the standard value, whereas the Trace statistic is the value obtained from the test. The variables where the Trace Statistic is higher than the Critical Value are rejected. This means that the variables are correlated. The results show the cointegration equations at the 0.05 level.

The null hypothesis is: The variables are not correlated. The table 9 reports the statistics for Max-Eigen value. A* denotes the rejection of the hypothesis at the 0.05 level. In the table Critical Value denotes the standard value, whereas the Max-Eigen Statistic is the value obtained from the test. The variables where the Max-Eigen Statistic is higher than the Critical Value are rejected. The Max-Eigen value test indicates the cointegration equation at the 0.05 level.

Table 9

UNRESTRICTED COINTEGRATION RANK TEST (MAXIMUM EIGEN VALUE) – CAPITAL ACCOUNT				
Hypothesized no. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.998230	107.7275	33.87687	0.0000
At most 1*	0.972168	60.88675	27.58434	0.0000
At most 2	0.524192	12.62660	21.13162	0.4872
At most 3	0.470966	10.82394	14.26460	0.1632
At most 4	0.082991	1.472847	3.841466	0.2249

Table 10

COINTEGRATION EQUATION – CAPITAL ACCOUNT				
GDP	ESC	GSC	SSC	PDLC
1.000000	-3.409982	-0.052223	0.347668	1.706816
	0.05739	0.07328	0.03134	0.04567

All the equations where the hypothesis is rejected are of value from the results of table 5 and table 6. But, the only equation of primary importance to us is in table 7. It gives us the perspective as to what are the various effects of the variables of the Revenue account on the GDP of the country. The

effects of the variables on GDP are considered by reversing the signs before them. It can be observed that the Economic services and General services have a positive impact whereas Social services and Public debt & Loans have a negative effect on the GDP of India.

DISCUSSION AND CONCLUSIONS

The objective of the paper is to investigate the various effects of the respective components namely; Economic services, Social services, General Services, Grants and Public debt & Loans on the GDP of the country. The spending patterns of the government have seen tremendous variation over the years, especially from 2000. To investigate the effect of changing patterns of spending and its effect on the economic growth from an economic perspective the Johansen cointegration test has been used. The test has been used over the period of 1996 to 2016. Unit root test is used to identify if the variables are stationary or not, which is then followed by cointegration test to understand the respective relationships. In the long run spending on Economic services, General services, Social services and Grants has proved to have a positive effect on the GDP of the country from the perspective of the Revenue Account. In Capital account, the Economic services and General services have a positive impact on the Economy but Social services and Public debt & Loans display a negative effect on the GDP of the country. The results are significant from a policy perspective. The findings are pivotal especially from the point of view of an emerging (developing) country such as India. In, such countries, the government has to judiciously allocate limited resources in the most beneficial way. The allocation should stimulate economic activity and drive the production of more goods and services within the country.

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