

## **Impact of Government Capital Expenditure on Economic Growth:**

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### **Abstract**

This study makes an analysis of the impact of government capital expenditure on economic growth in Nigeria over a period of 1986 to 2018. To achieve the objective of the study, annual time series data on GDP and capital expenditures on agriculture, education, defence and transportation were collected from the online database of Central Bank of Nigeria (CBN) and the Budget Office of the Federation (BOF). The data were analyzed using co-integration and vector error correction models. Result of the Johansen Co-integration test shows the existence of the long run equilibrium relationship among the variables. The results further show that capital expenditure on agriculture is positive but statistically insignificant. It shows that a percentage increase in capital expenditure on agriculture increases economic growth by about 0.16 %. However, capital expenditure on defence is negative and statistically significant. It reveals that a percentage increase in capital expenditure on defence decreases economic growth by about 2.51%. Furthermore, capital expenditure on education is positive and statistically significant. It shows that a percentage increase in capital expenditure on education increases economic growth by about 1.17%. In addition, capital expenditure on transportation is positive and statistically significant. It reveals that a percentage increase in capital expenditure on transportation increases economic growth by about 0.95%. In addition, the error correction term of the vector error correction model is -0.57 is negative and significant as expected, however it is low. Based on the findings, the study recommends that more resources should be allocated to capital expenditure on agriculture, education and transportation because of their positive impact on economic growth. However, Anti- Corruption agencies should be strengthened to fight mismanagement and corruption in the public sector especially in the defence sector. This will address the wastages in the sector and will contribute to the improvement of the economy as a whole.

**Keywords:** Capital expenditure, Economic growth, Impact and Vector error correction model.

## **Introduction**

Government expenditure and economic growth are two critical issues that characterized relevant part of studies in public finance. Its significance is tied to the important role of government expenditure in controlling the economy. Kanayo, Akujinma and Francis (2016) opine that government expenditure is part of fiscal policy which influences economic activities, thus, shaping and improving the welfare of citizens. Jumare, Yusuf and Muhammed (2016) opines that expenditure pattern of government are usually categorized into two: recurrent expenditures or government final consumption expenditure on goods and services for current use to directly satisfy individual or collective needs of the members of the community. Recurrent expenditure on state provided goods and services that are provided on a recurrent basis every week, month and year, such as salaries, and resources for state education and defence.

However, Chioweoke and Ray (2014) view capital expenditure as government investment in goods and services intended to create the long time effect. It entails spending on electrical installation, roads, communication and research spending on defence, space, genetics and other developmental imperatives needed for economic take-off and sustainability. This is otherwise called future investment. It looks into the long-term survival of the country and hence funds are directed towards infrastructure development. According to Kanayo, Akujinma and Francis (2016) recurrent and capital expenditure of the government can elicit instability in the business cycle, address unemployment and inflation problems when properly executed. As opine by Jelilove and Musa (2016), the government finances its spending through revenue from oil. Furthermore, Kanayo *et al* (2016) added, taxation, loan from individuals and organizations (domestic loans), international organizations like the International Monetary Fund (IMF), World Bank and other foreign countries (external loans) as a means of financing government expenditure. However, Black (2013) defined tax as the compulsory payment collected from individuals; firms by federal, state or local government. Citizens give up a significant amount of their income each year to pay the taxes necessary to finance government expenditures. Businessmen, civil servants, firms and institutions pay some amount of money as tax. The government's planned receipts and expenditures for some future period, normally a year is known as a budget. The budget is the planned action of what will be spent in a particular fiscal year. African countries have been spending a lot of money to provide for the essential services of their citizens. But these countries are still battling with malnutrition, poverty and poor standard of living that characterize an underdeveloped country.

According to World Bank development report (2006), developing countries invest about \$200 billion a year in new infrastructure representing four percent of their national output and a fifth of their total investment. The result has been a dramatic increase in infrastructure services for transport, defense, education and agriculture.

Government spending in Nigeria has continued to rise due to huge receipts from production and sales of crude oil and the increased demand for public goods. According to the Federal Ministry of Finance Report (2015), statistics show that total government expenditure and its components have continued to rise in the last three decades. In Nigeria, government expenditure from 1960 to 2018 larger fraction of the population lives below the poverty line despite the programs of various administrations to improve welfare. The National Bureau of Statistics (2016) reported that the proportion of the population that lives below the poverty line increased significantly from 17.10 million in 1980 to over 90 million in 2016. From the Central Bank of Nigeria's statistical bulletin (2016), capital expenditure raised to N1,587.6 trillion by 2016. Invariably, recurrent expenditure has been favored over capital expenditure for the last two decades. As opined by Kanayo *et al* (2016) capital expenditure is supposed to provide more infrastructures for our industries to attract investments for development of the economy. The relevant of infrastructure in economic development is indomitable as it has the potential for creating more employment opportunities for our growing population. However, there are some sectors that need to be revived and strengthened, if the country wishes to attain economic growth and development. This is because depending on oil sector in the economy has brought an anomaly. Duruji and Dibia (2017) gave some of the anomalies created by oil as; poor political leadership in the management of the resources which has led to underdevelopment of the country. The country also suffers from gradual and yet steady shrinking away of many other sources of income that hitherto supported the country through its pre-oil period especially solid minerals, agriculture and agricultural related products. Following that direction, Shuaib, Igbinosun and Ahmed (2015) stressed the need to diversify the economy into sectors.

According Alshahrani and Alsadiq (2014), expenditure on transport and basic infrastructure positively affect the basic productive capacity of the economy in the long run. Education is one of the bedrocks for economic growth and development. More so, Barro (1991) opines that expenditure on education and defence are more like public investment than public consumption. Looking at agricultural sector, it can be seen that the agricultural sector in spite of it neglect still remains the source of economic vibrancy in the developed and developing economies. Given the issues raised on huge budgetary allocations and spending without corresponding appreciation in economic growth,

favouring of recurrent expenditure over capital expenditure for the last two decades, the research focus on the impact of government capital expenditure on economic growth in Nigeria from 1986 to 2018. Therefore, the broad objective of this paper is to examine the impact of government capital expenditure on economic growth. In order to achieve the broad objective of the study, the specific objectives are:

- (i) To examine the impact of government capital expenditure on agriculture, defence, education and transportation on economic growth in Nigeria.
- (ii) To investigate the long run relationship between government capital expenditure on agriculture, defence, education and transportation on economic growth in Nigeria.

### **Hypotheses of the Study**

To achieve the objectives of the study and to provide answers to the research questions, the following hypotheses are formulated and stated in the null form:

H<sub>O1</sub>: Government capital expenditure on agriculture, defence, education and transportation has no significant impact on economic growth in Nigeria.

H<sub>O2</sub>: There is no long run relationship between government capital expenditure on Agriculture, defence, education, transportation and economic growth in Nigeria.

### **Theoretical framework**

There are many theories that discussed about Government Capital Expenditure and its impact on economic growth. For the purpose of this study, we are going to have a look at the following;

#### **Adolph Wagner's Theory**

Adolph Wagner, a German economist of the latter half of the 19th century, who based his Law of Increasing State Activities on historical facts, primarily of Germany, which reflected the growing importance of government activities and expenditure as an inevitable feature of a "progressive" state. The author tried to establish a direct link between economic development and growth and the relative size of public sector and consequently public expenditure. As cited by Magableh (2006), Wagner proposed that there is a tendency for an expansion of the size of public sector activity relative to the economy along with economic and cultural progress. Also as cited by Bagdigen and Centintas (nd): Wagner's law is based on empirical observations in a number of western industrializing countries. It

does not contain any priory property. The author put his model forward with regard to posterior results, i.e. he made his suggestion depending on empirical results observed in a number of industrializing countries. The main implication is that as a community output increased in the past, public expenditure grew as well.

Moreover, public expenditure increases at a faster rate than the rate of the community output. From this point of view, Wagner termed this as “[the] law of increasing expansion of public and particularly state activities’ becomes for the fiscal economy the law of the increasing expansion of fiscal requirements...” Since then, this is well-known as the ‘Wagner’s Law’.

### **Keynesian Theory of Public Expenditure**

Keynes (1953) in his book ‘the General Theory of Employment, Interest and Money’, asserted that Fiscal policy is an indispensable tool for stabilization in the economy. It entails the use of government capital expenditure and revenue program to produce desirable impact on the national income, production and employment. Fiscal policy stabilizes the economy in the long run by moderating short run economic fluctuations. According to the Keynesians, an increase in government expenditure increase total demand, national income and interest rate, thereby causing private investment to decline. For the purpose of this study, the Keynesian theory is adopted to explain the impact of government capital expenditure on economic growth. This is because Keynes regards government capital expenditure as key factor, which could be utilized as a policy instruments to promote economic growth. From the Keynesian thought, government capital expenditure contributes positively to economic growth. Hence, the study argued that an increase in the government consumption would lead to increase in employment, profitability and investment through multiplier effect on aggregate demand. As a result, government capital expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers.

### **Empirical Review:**

Some studies have been carried out in foreign countries to investigate the impact of government capital expenditure on economic growth. In an attempt to investigate the effect of government capital expenditure on economic growth. Tabar, Najafi and Badooie (2017) examine the impact of government capital expenditure on education and economic growth in Iran from 1981-2012 using multiple regression analyses. Finding of the study reveals that capital expenditure on education has a positive and significant effect on GDP (economic growth). But the study is conducted in a country which does not share the same

characteristics of Nigeria. However, in multiple regression analyses, the often complex data set can lead to false conclusion if they are not analyzed properly. On the contrary, Chandio, Jiang, Rehman and Jingdong (2016) examine the impact of government capital expenditure on Agricultural Sector and Economic Growth in Pakistan over the period 1983-2011, using Augmented Dickey-Fuller (ADF) unit root test, Johansen Co-integration test and Ordinary Least Square (OLS) technique in the analysis of the data. The results show that there exist a long-run relationship between government capital expenditure on agriculture and economic growth in Pakistan.

However, OLS technique is responsive to outliers and the test statistics might be unreliable when the data is not normally distributed. There is also the tendency to over fit. Added to that, the research is done in a country that does not share same characteristics with Nigeria. However, Maingi (2017) studies the impact of government capital expenditure on economic growth of Kenya from 1960-2008. Using vector estimation technique on economic growth, the findings reveal that government capital expenditure on education and defence, have positive and statistically significant effect on economic growth. However, the study is conducted in a country which does not share same characteristics with Nigeria. In addition, vector estimation technique can be difficult to estimate for complex situations, since they use little economic theory. In Nigeria, researches have been conducted to examine the impact of government capital expenditure on economic growth. Furthermore, Kanayo *et al* (2016) examine the long run relationship between government expenditure and economic growth, short-run and long-run adjustment and the effect of government expenditure on Nigeria's economic growth from 1970 to 2015. They employed vector error correction model. The results show the existence of a long run relationship between government expenditure and economic growth in Nigeria and Nigeria would achieve a steady growth if preferences are giving to capital expenditure over recurrent expenditure and the greater causality effect result envisages that capital expenditure have significant effect on Nigeria's economic growth. Nonetheless, error correction model may suffer from small sample bias. Comparatively, Egbetunde and Fasanya (2013) analyze the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 making use of annual time series data. The study employs the Bounds test (ARDL) approach to examine the long run and short run relationship between public expenditure and economic growth in Nigeria. Their findings indicate the impact of total capital expenditure on economic growth to be negative. However, according to Gujarati, Porter and Gunasekar (2009) the distributed lag models can be problematic when the lag length is long, especially in small samples.

## Gap in the Literature

Given the literatures reviewed, very few studies examined the impact of government capital expenditure on economic growth in Nigeria using the sectoral analysis. This is because there are many conflicting views and empirical findings on the impact of government capital expenditure and economic growth. Some studies revealed that there is a positive impact between government capital expenditure and economic growth. This can be seen in the studies carried out by Tabar, Najafi and Badooie (2017), Lahirushan and Gunashekara (2013), Quy (2017), Nasiru (2012) etc. On the contrary, those studies that find negative impact include Gong and Zou (2012) and Hasnul (2015).

In addition, the literature reviewed used different methods in their attempt to examine the impact of government capital expenditure on economic growth. However, previous studies show that limited attention was given to this phenomenon, that is, sectoral analysis on; education, agriculture, transportation and defence focusing on capital expenditure extending the period of 2018. Moreover, there are controversies in findings as early stated and different methods were used to arrive at these different findings. These led to different policy recommendations by different researchers. To contribute on the few existing research works in this direction and to improve in the quality of the studies conducted, this study focus on an empirical analysis on the impact of government capital expenditure on; agriculture, defence, education and transportation on economic growth in Nigeria from 1986 to 2018. However, this study employs Johansen co-integration and vector error correction models.

## Materials and Methods

To empirically examine the impact of government capital expenditure on economic growth in Nigeria from 1986 to 2018, the study subjected the variables to unit root test for stationarity, co-integration and vector error correction model. The study employs secondary data which were collected from the publications of various Government agencies. Data on Gross Domestic Product is gotten from National Bureau of statistics (NBS) Statistical Bulletin. The data on government capital expenditures on the selected sectors (agriculture, education, transportation and defence) is gotten from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Budget Office of the Federation.

## Model Specification

### Johansen Co-integration

Co-integration test is applied mainly to determine whether the variables in the model are co-integrating or not. According to Gujarati *et al* (2009), variables are co-integrated if there

exists a long term relationship between them. Co-integration deals with the relationship among a group of variables where unconditionally each has a unit root. Co-integration is an econometric technique use for testing the non - stationarity of time series variables. The existence of co-integration relates to the existence of long run equilibrium relationship among a set of non-stationary variables.

The co- integration model can be specify as

$$Y_t = A_t Y_{t-1} + \dots + A_t Y_{t-1} + B_t \gamma + e_t \dots \dots \dots (1)$$

Where;

$Y_t$  = dimensional vector of non-stationarity

$\gamma$  =  $\gamma$  – dimensional vector of deterministic variable

$e_t$  = stochastic error residual

When a unit root exists in the series, the best approach is to use the Johansen test. If the variables are co-integrated, this means there exist long-run relationship among the variables. In this case, Vector Error Correction Model is adopted.

**Vector Error Correction Model (VECM)**

The study adopts the VECM model following the research of Okoro (2013). The reason for applying the VECM is to explain the speed of adjustment. The VECM has co-integration relation built into the model so that it restricts the long term behaviour of the endogenous variables to converge to their co-integrating relationship while allowing for short term dynamics adjustments.

The conditional VECM can be specified as follows:

$$\Delta \ln GDP_t = a_1 + \Delta \ln GDP_{t-1} + \Delta \ln EDU_{t-1} + \Delta \ln AGR_{t-1} + \Delta \ln TRA_{t-1} + \Delta \ln DEF_{t-1} + \lambda_1 ECM_{t-1} + \mu_1 t \dots \dots \dots (2)$$

Where:

$\Delta$ = Difference operator

$a_1$ = constant or the intercept

$\lambda$ = speed of adjustment with a negative sign.

$\mu_t$ = residuals (stochastic error term)

ln= Natural logarithm (LOG)

**Unit Root Test / Stationarity Test**

The first step in this section is to test whether the time series data are stationary. Augmented Dickey-Fuller (ADF) test was used to find the order of integration. These tests showed how many times a variable need to be differenced to become stationary (Table 1).



**Table 1** Unit root test results from Augmented Dickey Fuller Test at first difference

Variables	ADF at 1 <sup>st</sup> Difference	Critical value at 5%	Order of integration
Ln GDP	-4.151350	-3.562882	I(1)
Ln EDU	-6.938197	-2.967767	I(1)
Ln AGR	-7.841066	-3.568379	I(1)
Ln TRA	-3.586302	-3.580623	I(1)
Ln DEF	-7.962054	-3.568379	I(1)

Source: Authors’ computation using Eviews 9

Decision rule:

If  $t^* > \text{ADF critical value}$  = do not reject null hypothesis, i.e., unit root exists.

If  $t^* < \text{ADF critical value}$  = reject null hypothesis, i.e., unit root does not exist.

This outcome suggests the need for co-integrated test to know whether there exist long - run relationships among the variables. But before the co-integration test, Lag length selection is conducted to verify the number of lags that should be optimally selected for the Co-integration test.

Test Result for Co-integration ranks

After finding out that all the variables are stationary and integrated of the same order, co-integration became necessary. Unrestricted Co-integrated Rank Test (Trace) shows that there are three co-integrated equations (Table 2a &b). This means that economic growth (GDP), Capital expenditure on agriculture, defense, education, and transportation, have long-run equilibrium relationship.

**Table 2(a) Unrestricted Co-integration Rank Test (Trace Statistics)**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.573248	73.55765	69.81889	0.0244
At most 1*	0.471772	48.01111	47.85613	0.0483
At most 2	0.441276	28.86431	29.79707	0.0638
At most 3	0.199314	11.40131	15.49471	0.1880
At most 4*	0.145943	4.732726	3.841466	0.0296

**Table 2(b) Unrestricted Co-integration Rank Test (Maximum Eigenvalue)**

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.573248	25.54654	33.87687	0.3490
At most 1	0.471772	19.14680	27.58434	0.4032
At most 2	0.441276	17.46300	21.13162	0.1513
At most 3	0.199314	6.668586	14.26460	0.5290
At most 4*	0.145943	4.732726	3.841466	0.0296

Source: Authors' Computation from eviews 9

**Vector error correction model result**

Having established the long run relationship between GDP (economic growth), capital expenditure on agriculture, capital expenditure on defence, capital expenditure on education and capital expenditure on transportation, the next step is to establish the short-run and long-run relationship dynamics using the Vector Error Correction Model. The estimated long run co-integration vector with GDP as dependent variable is presented in Table 3.

**Table 3: The estimated long run co-integration vector with GDP as dependent variable**

Variable	Coefficients	T- statistics
LnAGR	0.164070	0.41241
LnDEf	-2.511099	-6.48945
LnEDU	1.179576	4.58102
LnTRA	0.950712	2.26679

Source: Authors' Computation using Eviews 9

The estimated long run co-integration vector is reported in Table 3. It reveals that capital expenditure on defence, education and transportation are significant while capital expenditure on agriculture is insignificant. Furthermore, Capital expenditure on defence is negative while capital expenditure of the other sectors is positive. From the Table 3, capital expenditure on agriculture is positive and statistically insignificant. It shows that a percentage increase on capital expenditure on agriculture increases economic growth by about 0.16 %. In the contrary, capital expenditure on defence is negative and statistically significant. It reveals that a percentage increase on capital expenditure on defence decreases economic growth by about 2.51 %. However, this is contrary to the expectation. Looking at capital expenditure on education, it is positive and statistically significant. It

shows that a percentage increase on capital expenditure on education increases economic growth by about 1.17%. This is in line with the Keynesian theory of expenditure that capital expenditure has positive and significant impact on economic growth. In addition, capital expenditure on transportation is positive and statistically significant. It reveals that a percentage increase on capital expenditure on transportation increases economic growth by about 0.95%. This as expected going by the Keynesian theory that capital expenditure on transportation should have positive and significant effect on economic growth. However, easy access to road networks, railways and airways create employment, increase income, reduce poverty, increase standard of living, and reduce the gap between the rich and the poor which will in turn increase economic growth for the overall benefit of the country at large.

**Analyses of post estimation test/ Diagnostic tests results**

To check if the model used in this study is in agreement with the data, some diagnostic tests were performed and which include serial correlation LM test, Arch heteroskedasticity, and normality test. Conducting diagnostic tests is very crucial in the analysis since it reveals whether there exists a problem in the estimation of a model or not. For this study, the diagnostic tests carried out showed the following results as indicated in Table 4.

**Table 4: Post Estimation / Diagnostic test result**

TEST	NULL HYPOTHESES	CALCULATED LM	VALUE OF CHI-SQUARE	REMARKS
Serial Correlation LM Test	No Serial Correlation	0.3070	0.1881	Accept null hypotheses
Arch Heteroskedasticity	No Heteroskedasticity	0.4330	0.4148	Accept null hypotheses
Normality Test	Residuals are multivariate normal	<b>J.B:</b> 4.358712	<b>P-value</b> 0.113114	Accept null hypotheses

Source: Authors' Computation using Eviews 9

The Table 4 has shown the absence of Serial Correlation and heteroskedasticity, which means the data, is good and the results from the data can be taken seriously for policy recommendation. In addition, the normality test shows that the residuals are normally distributed. Therefore, the results from the data used can be used for policy recommendation.

## **Discussion of findings**

From the results presented, the study examines the impact of government capital expenditure on economic growth in Nigeria from 1986 to 2018. To answer the first research question of the study and achieve the first objective of the study, the long run co-integrated vector of VECM was employed. The study finds positive but insignificant impact of government capital expenditure on agriculture and economic growth. This is similar to the works of Lhoungu and Mishra (2016). This is good and commendable. The Keynesian theory is of the notion that it will be positive and statistically significant. Agricultural sector remains the source of economic vibrancy in Nigeria despite it neglect. Agriculture was the main source of revenue for Nigeria before the recovery of oil. Therefore, the study sees capital expenditure on agriculture as a sector to improve the income of the citizens, improve life and standard of living of the nation's population. In addition, capital expenditure on agriculture increases economic growth, through improving the supply of raw materials for the agro-based industries, contributing to capital formation and helpful to reduce inequality between the rich and the poor.

From the results so far presented, capital expenditure on defence has negative and significant impact on economic growth. This is in agreement with the study conducted by Dinca and Dinca (2013). However, Mose (2014) finds capital expenditure on defence to have significant and positive effect on economic growth. This also is in line with the study conducted by Maingi (2017). Going by the Keynesian theory of expenditure; capital expenditure on defence is expected to have significant effect on economic growth. Because, capital expenditure on defence creates job opportunities, increase income and standard of living of individuals involve in carrying out projects in the sector. But this is not the case in Nigerian situation. The negative impact may be due to the sector not becoming productive. Huge amount of money is being spent to tackle insurgency like Boko-Haram, kidnapping and banditry, and other security problems. The sector is consuming more from GDP rather than contributing. Looking at capital expenditure on education, the study finds it having positive and significant impact on economic growth. This is similar to the works conducted by Lahirushan and Gunashekara (2013).

However, this is contrary to the work conducted by Mose (2013). The study also finds positive and significant impact of government capital expenditure on transportation and economic growth. However, this is as expected because easy access to road networks eases the movement of goods and services which will in turn create employment, which will increase income and standard of living, which will in turn increase the GDP of the country. Base on the findings discussed, the first research question of no significant impact of

government capital expenditure on economic growth has been answered and the first objective has been achieved. The study employed Johansen co-integration to answer the second research question and to achieve the second objective of the study. The result of the Johansen co-integration reveals that long-run relationship exists between capital expenditure (on agriculture, defence, education and transportation) and economic growth. This is in line with the works of Chandio, Jiang, Rehman and Jingdong (2016), and Mallick, Das and Pradhan (2016). However, the works of Iheanacho (2016), and Nwadiwu and Onuka (2015), contradict these findings. This is as expected, that the capital expenditure on agriculture, defence, education, transportation and economic growth have long run equilibrium relationship. This answers the second question of the study. Also, the second objective has been achieved. The second null hypothesis of the study of no long run relationship between government capital expenditure on agriculture, defence, education, transportation and economic growth has been rejected.

### **Conclusion**

The study has examined the impact of government capital expenditure and economic growth in Nigeria from 1986 to 2018. The findings from the estimated long run co-integration vector show that capital expenditure on defence, education and transportation are significant while capital expenditure on agriculture is insignificant. Furthermore, Capital expenditure on defence is negative while capital expenditure of the other sectors (agriculture, education and transportation) is positive. However, the Johansen co-integration test reveals long run equilibrium relationship among the variables. Therefore, the study concludes that capital expenditure on agriculture, capital expenditure on education, and capital expenditure on transportation, have positive impact on economic growth, while capital expenditure on defence has negative impact on economic growth. The research also concludes that there exist long run equilibrium relationships among the variables.

### **Recommendations**

Based on the findings of the study, the following recommendations were suggested:

- i) Capital Expenditure on Education should be increased as it leads to economic growth. This could be done through building of more universities, educational research institutes and study centers.
- ii) Also, capital expenditure on transportation should be encouraged and improved. This could be done through the strengthening of the transportation sector, building of road

and rail networks, execution of capital projects in the sector and giving the sector much attention it needs.

- iii) Due to positive impact of government capital expenditure on agriculture and economic growth, government should intensify expenditure on the sector as it leads to economic growth. This could be done through building of Silos, Agricultural research institutes and farm houses. Moreover, Agricultural villages should be built.
- iv) Anti- Corruption agencies should be strengthened to fight mismanagement and corruption in the public sector (especially in the defense sector).

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