GOVERNMENT CAPITAL EXPENDITURE IN ECONOMIC SERVICES' SECTOR AND ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

This study examined the impact of government capital expenditure in economic services' sector on Nigeria's economic growth between 1981 and 2020, using ARDL model. The data obtained were secondary sources, CBN Statistical Bulletin, National Bureau of Statistics. The dependent variable of the study is Gross Domestic Product (GDP), proxy as economic growth, while Capital Expenditure on Agriculture (AGEX), Capital Expenditure on Manufacturing, Mining and Quarrying (MGEX), were the independent variables. The results of the findings reveal that both AGEX and MGEX have positive relationship with GDP and at the 5% significant level, are statistically significant. The study therefore recommends that since spending in the areas of infrastructural facilities is a good determinant of output growth, government should ensure that basic infrastructural facilities needed in these sectors (agriculture and manufacturing, mining and quarrying) such as good roads, storage facilities stable electricity and so on, are provided.

Keywords: Capital Expenditure of Government; Economic Growth; ARDL; Nigeria.

1. INTRODUCTION

The nexus between government expenditure and economic growth has received serious attention in both developed and developing countries of the world. This is due to its importance in enhancing growth and development of any nation. The general view on government spending on infrastructures is that, it can enhance sustainable growth if effectively and efficiently utilized. Government expenditure serves as a catalyst for developing the economy as it supports the delivery of key public services through the constructions of social and economic infrastructures. It is through the spending that firms and citizens are connected to various economic opportunities in the areas of manufacturing, mining and quarrying, agriculture and so on (International Monetary Fund, 2020).

Furthermore, the link between government expenditure and economic growth can be deduced from Keynesian theory which recognizes the role of government intervention in ensuring sustainable growth. Keynes argued that expansion in government expenditure stimulates the demand for goods and services in the period of demand deficit and as well, put the unemployed back to productive activities which will support sustained inclusive growth. Economic theory asserts that public spending if properly and efficiently utilized is expected to foster economic growth and development because it will reinforce the productive base of the economy (The Economist Intelligence Unit Limited, 2020).

Globally, government expenditure is an important instrument of development. In 2016, China was ranked the 27th among 160 countries, owing to her commitment to developing infrastructural facilities that translated into growth. Between 1978 and 2008, China's capital expenditure grew by 12.3% while the real gross domestic product (GDP) grew by 9.5% per year. This remarkable achievement in infrastructure made a significant contribution to the growth of China's economy (Luo & Xu, 2017). More so, most countries in Africa strive harder to allocate more funds to public spending on yearly basis so as to enhance the economic growth. In many developing countries of the world, public spending accounts for a large proportion of total expenditure, reflecting the role of government in providing infrastructure (IMF, 2020). However, the efficiency of public investment depends on how it is managed. The recent study by IMF (2020) shows that 30 percent of the potential benefits of public spending are lost due to inefficiency. In Africa, for example, public expenditure is characterized by inefficient projects and flaws in the planning, allocation and execution stages (IMF, 2020).

In Nigeria, however, the trend of government capital expenditures on economic services shows that allocation to the sectors recorded the lowest among all the sectors of the economy (Central Bank of Nigeria, 2019). Basically, the capital expenditure on agriculture increased from 1.25 percent in 2015 to 1.82 percent in 2016. It also increased by 2.23 percent in 2018 but declined by 1.56 percent and 1.3 percent in 2019 and 2020 respectively. The government expenditure on manufacturing, mining and quarrying in 1989, 1999, 2010 and 2020 was recorded at N834.7 million, N9,923.8 million, N20.6 billion and N2,380,478.134 million respectively (Budgit, 2020). Nigeria has huge infrastructural deficit. Most of the developed infrastructures are concentrated in the urban areas. The required infrastructures needed in the agriculture and manufacturing, mining and quarrying sectors are either non-existent or not up to the standard required to attract investments in the agriculture and for mining operations.

In agricultural sector, there are problems of storage facilities, lack of industries to process agricultural output, lack of good roads to mention but a few. According to Food and Agricultural Organization (2019), about 30 to 40 percent farm produce were wasted due to lack of industries to process the produce since most agriculture produces are easily perishable. The challenges of manufacturing sector include, epileptic power supply which adds to the costs of production, physical infrastructural deficiencies, multiple tax, high cost of imported raw materials and skilled labour. While that of mining and quarrying are low government participation, ineffective or little robust policy guidelines around mining activities, security situations around mining sites, illegal mining operations and community challenges, low funding and the attraction of new investments (African Development Bank Group, 2020). Inadequate capital spending in the mining and quarrying sector has however, given room for illegal mining and insecurity in the mining locations. The issue of insecurity has discouraged foreign investors to invest so as to boost the nation's output through the mining and quarrying sector and also to generate employment opportunities to make lives of the citizens better-off. The fact that minerals are found in remote locations, demand for substantial infrastructure costs.

As part of the strategy to revive these sectors, the government has initiated various policy reforms aimed at attracting investments both locally and internationally. Some of these policies include; Green Revolution Programmed, Directorate of Food, Road and Rural Infrastructure, National Economic Empowerment and Development Strategy, Agricultural Promotion Policy, Agricultural Transformation Agenda, were established for agricultural development and also to ensure food security in Nigeria.

In the same vein, National Minerals and Metals Policy was put in place to promote a new legislative framework that encourages private sector led growth and development of the mining and quarrying sub-sector. The extractive industries transparency initiative of 2003 was also formulated to promote prudent management of revenues from its abundant natural resources so as to reduce poverty and ensure sustainable development (United Nations Conference on Trade and Development, 2020). Owing to poor implementation of these policies, lack of continuity and lack of appropriate funding, attempts by governments in terms of policy formulation and programmes to boost the agriculture, manufacturing, mining and quarrying sectors have not yielded any meaningful results.

At this critical time, when many businesses are folding up and unemployment is increasing, investment in the public sector is necessary so as to foster inclusive growth and development. It is against this backdrop that this study seeks to examine the impact of government capital expenditure in economic services' sector on economic growth in Nigeria. The study is structured into five sections. Section one provides the introduction to the study. Section two expresses the review of literature, while section three discusses the data and methodology adopted for the study. The findings of the study are expressed in section four while the conclusion and recommendations for the study are discussed in section five.

2. LITERATURE REVIEW

2.1. Conceptual Issues

CBN (2019) also defines government capital expenditure as the payment for non-financial assets. Having reviewed the concept of government expenditure by different authors, this study therefore defines government capital expenditure as all expenses incurred by government on long-term projects, which are capable of providing enabling environment for investments to thrive well such as electricity, good roads and so on.
IMF (2012) refers to economic growth as the increase in the market value of goods and services produced in an economy over a period of time. Conventionally, it is measured as a percent rate of increase in real GDP. According to CBN (2020), economic services' sector is defined as the sector which is made up of agriculture, manufacturing, mining and quarrying, road and construction, transport and communication and others.

2.2. Theoretical Framework

2.2.1. Musgrave Theory of Public Expenditure

The Theory is proposed by Richard Abel Musgrave in his book on public finance theory and practice in the year 1997. He asserts that the effectiveness of government spending is what matters. He showed from his theory that the ineffectiveness of government expenditure can have hazardous effect on the growth of the economy. The theory applied the analytical tools of price theory and Keynesian macroeconomics of achieving full employment to the issues of incidence, that is, who bears the losses caused by distorting effect of taxes. He divided the public finance into three branches as follow: The problem of achieving full employment. He advocates tax reductions and increased government spending in order to increase aggregate demand, which will bring about full employment level; efficiency in implementing the allocated revenue to economic and social activities; and issues of redistribution of income to ensure equality (Musgrave, 1997). Thus, if government expenditure is properly and efficiently utilized, there would be enhancement in the growth and development of the economy as a whole. The relevance of the theory to this study is based on Musgrave's emphasis on efficiency on the implementation of public spending in promoting growth. As it is in Nigeria, the problem of inefficient

implementation of public funds needs to be tackled in order to restore growth in the economy. This study is therefore premised on the Musgrave theory of public expenditure.

2.3. Empirical Literature

A lot of research works have been carried out on the impact of government expenditure and economic growth in Nigeria. Some of these empirical studies are discussed in this section.

Ugochukwu and Oruka (2021) examined the impact of government capital expenditure on economic growth in Nigeria from 1981 to 2020. The study used error correction model to examine the impact and it was revealed that government capital expenditure on agriculture has positive but insignificant impact on economic growth in Nigeria. Mohammed, Idris and Shehu (2021) employed Smooth Transition Regression Model to examine the impact of public expenditure on economic growth in Nigeria between 1981 and 2017. The study found that public expenditure has positive as well as significant impact in Nigeria. Oriakhi (2021) also examined the impact of poverty reduction, government expenditure and economic growth in Nigeria. The study used a time series data from 1981 to 2021 and employed vector error correction mechanism. It was found that government expenditure if directed towards the right project will enhance economic growth in Nigeria. A study by Barlas (2020) studied the impact of government capital expenditure in Afghanistan from 2004 to 2019. ARDL Model and Johansen co-integration test were used and the results revealed that government expenditures on economic services, education, security and defence are positive and significant to economic growth in Afghanistan. This study is criticized based on the fact that it is not done in Nigeria. So what is obtainable in Afghanistan might not be in Nigeria. Duruibe et al (2020) evaluated the effect of public expenditure on economic growth in Nigeria from 1986 to 2016 and vector error correction model was utilized. The findings revealed that all the variables (economic services, social community services, transfers) are positively significant to economic growth, except expenditure on transfers which is positive but insignificant to economic growth in Nigeria. The study is criticized based on time frame because a lot of events that need attention have overtaken it. Babatunde (2018) researched on the impact of government spending on infrastructure on economic growth in Nigeria from the period of 1980 to 2016. The method of analysis employed was vector error correction model and it was found that government capital spending on agriculture and mineral resources was negative but statistically significant to economic growth in Nigeria. Iheanacho (2017) studied the impact of government capital expenditure on economic growth in Nigeria from 1981 to 2014, using error correction model and granger causality test. From the findings, it was revealed that government agricultural expenditure has negative but significant impact on economic growth in Nigeria for the period under study. The result of granger causality test carried out also showed a unidirectional relationship running from government expenditure on agriculture and economic growth in Nigeria. Monogbe and Okah (2017) found out from their research on government expenditure on economic growth between 1970 and 2015, that expenditure on economic services has positive and significant impact on economic growth. Likewise, Ifarajimi and Ola (2017) used dynamic OLS to crosscheck the impact of government expenditure on economic growth in Nigeria from 1981 to 2015. The study found that government expenditure on economic services, administration, and nominal exchange rate exerts a positive as well as significant impact on economic growth in Nigeria. The studies of Monogbe and Okah (2017) and Ifarajimi and Ola (2017) are criticized based on their scope. A lot of socio-economic events have taken place after the period their research covered.

Another study by Ebong et al (2016) on government capital expenditure and economic growth in Nigeria between 1970 and 2012, using multiple regression model, Johansen co-

integration and error correction model to capture the long-run and short-run effects of government capital expenditure on agriculture, education, health on economic growth. The study revealed that agriculture and health expenditures were negative and insignificant to economic growth. While expenditure on education was positive and significant, they all have both short-run and long-run impacts on economic growth in Nigeria. The study is criticized based on its scope because the period it covered is far long and a lot of things which need to be examined have happened and still happening. Agunuwa (2016) investigated the effect of government sectoral expenditure on the growth of the Nigerian economy between 1980 and 2016. The study used error correction model and the result revealed that government capital expenditure on solid minerals which was proxied by mining and quarrying was positive and statistically significant to economic growth in Nigeria.

In a similar vein, Yusuf et al (2015) researched on government expenditure and economic growth in Nigeria from 1984 to 2013. The study utilized ARDL technique of analysis. The outcome of the research indicates that government capital expenditure on agriculture and manufacturing, mining and quarrying have a positive and long-run relationship on economic growth in Nigeria. Ayunku and Etale (2015) carried out a research on the effect of agriculture spending on economic growth in Nigeria between 1977 and 2010. The study utilized error correction model as the method of analysis. The results showed that government capital expenditure on agriculture has positive but insignificant impact on economic growth in Nigeria. Kareem et al (2014) also examined the impact of public spending on economic growth in Nigeria between 1960 and 2010. The study employed OLS model of data analysis and the results conclude that agriculture capital expenditure, social community services and health all have statistical impact on economic growth, while expenditure on economic services exerts negative impact. The study covered the period to 2010 which is far long and because socio-economic events during that period cannot be compared to what is happening now.

In the study of Ideba et al (2014) on the impact of agricultural public capital expenditure on economic growth in Nigeria between 1961 and 2010 using error correction model. It was found that agricultural capital expenditure has a positive impact on economic growth in Nigeria. Ebere and Osundina (2014) studied on government expenditure on agriculture and economic growth in Nigeria from 1980 to 2012. Ordinary Least Square model was employed and the findings show that government expenditure on agriculture is positively related to gross domestic product GDP. The weakness in the methodology is that it failed to test for unit root. So, the result of the study may be misleading.

3. DATA AND METHODOLOGY

3.1. Model Specification

The model for this study is specified to measure the impact of government capital expenditure on economic growth in Nigeria. It follows the work of Yusuf et al (2015) by including Government Capital Expenditure on agriculture (AGCEX) and Government Capital Expenditure on Manufacturing, Mining and Quarrying (MGCEX). The study of Yusuf et al (2015) adopted the Solow's version of Neo classical model due to its core factors in influencing economic growth. The Solow model takes this form;

$$Q^g = A^g + b_1k^g + b_2L^g \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.1$$

Where, Q^g = Rate of aggregate output, A^g = Total factor productivity, k^g = Capital, L^g = Labour, b_1 and b_2 are the elasticities of output with the respect to inputs.

The production function in equation 3.1 becomes;

$$Q_t = K_t^{\beta} + GeE_t^{\delta} + GeA_t^{\theta} + GeD_t^{\alpha} + GeTC_t^{\lambda} \quad 3.2$$

Where, K_t is capital at period t proxy by gross capital formation, GeE_t is government expenditure on education., GeA_t is government expenditure on agriculture, GeD_t is government expenditure on defense and security, $GeTC_t$ is government expenditure on transport and communication. The model for this study is therefore extended to incorporate the government expenditure on critical sectors as they affect economic growth in Nigeria. Thus, the production function in equation 3.2 becomes;

$$GDP_t = \beta_0 + \beta_1 GDP_{t-1} + \beta_2 AGCEX_{t-1} + \beta_3 MGCEX_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.3$$

Where, GDP is gross domestic product, proxy for economic growth, AGCEX is agricultural capital expenditure, MGCEX is manufacturing, mining and quarrying capital expenditure, t-1 is the lagged value of the variables, μ is the stochastic error term which explains other variables that cannot be captured in the model, β_0, β_1, β_2, β_3 are the slopes of the coefficients.

Long Run Elasticities based ARDL-ECM Equation

$$\Delta GDP_t = \beta_0 + \beta_1 GDP_{t-1} + \beta_2 AGCEX_{t-1} + \beta_3 MGCEX_{t-1} + \sum_{i=1}^{q} \gamma_1 \Delta GDP_{t-1}$$

$$+ \sum_{i=1}^{q} \gamma_2 \Delta AGCEX_{t-2} + \sum_{i=1}^{q} \gamma_3 \Delta MGCEX_{t-1} + \emptyset ECM_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots 3.4$$

3.2. Description and Measurement of Variables

i. **Gross Domestic Product:** It is the overall production made within the boundaries of Nigeria either by citizens of the country or foreigners. GDP in this study was measured by real GDP at 2010 constant basic prices
ii. **Government Expenditure on agriculture:** This includes all the capital expenditures made by Nigerian government in agricultural sector. Positive impact on economic growth is expected from this variable and it was measured in billion naira

Government expenditure on manufacturing, mining and quarrying: This is the expenditure made by government on manufacturing, mining and quarrying over the period under study. It is expected to yield positive result and it was measured in billion naira.

3.3. Data Source and Techniques of Estimation

This study examined the impact of government capital expenditure in economic services' sector on economic growth in Nigeria from 1981 to 2020. The data used for this study were sourced from Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, and data were collected on Gross Domestic Product (GDP), capital expenditure on agriculture (AGCEX) and capital expenditure on manufacturing, mining and quarrying (MGCEX). GDP which is the proxy for economic growth is the dependent variable while AGCEX and MGCEX are the explanatory variables. To estimate the data collected, the study employed Augmented Dickey-Fuller unit root test, Auto Regressive Distributed Lag Bounds test for cointegration and ARDL-ECM model. ADF is a test of stationarity that can be used to check for spurious regression in a model. It is imperative to test for unit root so as to ensure that the variables are stationary. This is because unrelated time series may exhibit strong trends (sustained upward or downward movements), which can

make it look as if they are related. Augmented Dickey-Fuller test is therefore chosen because it can handle bigger and more complex time series models.
Furthermore, the ARDL bound test for co-integration is a test used to analyze the long-run relationships and short-run dynamics interaction between dependent and independent variables. This cointegration approach is unique and different from other approach in that it does not require that all the variables be integrated of the same order. The approach also provides consistent results for small samples (Pesaran and Shin, 1998). The decision rule is that if the value of computed F-statistic is greater than upper bound, there is cointegration and the appropriate model to use is ARDL-ECM Model. In the same vein, if the value of computed F-statistics is lower than the lower bound, hence, short-run ARDL model is appropriate. In order to further test the reliability of the results, heteroscedasticity and stability tests were conducted.

4. Data Analysis and Interpretation of Findings

4.1. Test of Stationarity

This subsection deals with the test of unit root. Since time series data usually exhibit unit root, ADF unit root test was employed to test for stationarity. The result is thus presented in table 1.

Table 1: Summary of the ADF Unit Root Test

Variables	ADF Statistics	Critical Value @5%	Order of Integration	P-Value @5%	Remarks
GDP	-5.743005	-2.941145	I(1)	0.0000	Stationary
AGCEX	-8.708356	-2.943427	I(1)	0.0000	Stationary
MGCEX	-6.297782	-2.938987	I(0)	0.0000	Stationary

Source: Researcher's Computation Using Eviews 10.

From table 1, the result of ADF unit root test shows that ADF t-statistics, in absolute terms, are greater than the critical values at 5 percent level of significance. This implies that all the variables are stationary. However, gross domestic product (GDP) and capital expenditure on agriculture (AGCEX) were stationary at first differencing while capital expenditure on manufacturing, mining and quarrying (MGCEX) was stationary at level. This means that GDP and AGCEX are integrated of order one l(1) while MGCEX is integrated of order zero l(0). Due to this mixed order of integration, the ARDL Bounds test for cointegration was conducted. Based on the decision rule, the null hypothesis of no cointegration was rejected.

4.2. ARDL Bounds Test for Cointegration

The result of the ARDL bounds test for cointegration is presented in table 2. It helps to know the cointegration status of the variables after ensuring that the variables are stationary.

Table 2: Summary of ARDL Bounds Test for Cointegration

ARDL Bounds Testing for Cointegration Analysis
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	15.47616	2

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	3.17	4.14
5%	3.79	4.85
2.5%	4.41	5.52
1%	5.15	6.36

Source: Researchers' Computation Using Eviews 10.

Since, there was mixed order of integration, ARDL Bounds test was conducted to check the long run relationships among the variables. From the result of the ARDL Bounds test presented in table 2, it is evident that F-Statistics is greater than the lower and upper bounds at 5 percent level of significance. This implies that there is long run relationship among the variables. Hence, the null hypothesis of no cointegration was rejected. Due to the long run relationship that exists among the variables, the study conducted long run elasticities based ARDL-ECM Model to check the speed of adjustment.

4.3. Long run Elasticities Based ARDL-ECM Model

The result of the ARDL-ECM Model is resented in table 3. This Model helps to check the speed of adjustment of the variables from the short run disequilibrium to the long run equilibrium state.

Table 3: Summary of Long run Elasticities Based ARDL-ECM Model

Dependent Variable: D(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.013441	0.098322	-0.136699	0.8921
D(GDP(-1))	0.284553	0.420064	0.677403	0.0029
D(MGCEX(-1))	0.376571	0.220123	1.710729	0.2618
D(AGCEX(-1))	0.239387	0.115195	2.078107	0.0456
ECM(-1)	-0.876391	0.477142	-1.836750	0.0253

R-squared	0.753128	Mean dependent var	0.092079
Adjusted R-squared	0.662599	S.D. dependent var	0.319270
S.E. of regression	0.292163	Akaike info criterion	0.499071
Sum squared resid	2.816858	Schwarz criterion	0.714543
Log likelihood	-4.482345	Hannan-Quinn criter.	0.575734
F-statistic	2.796075	Durbin-Watson stat	1.917498
Prob(F-statistic)	0.041938		

Source: Researchers' Computation Using Eviews 10.

Having confirmed the cointegration status of the variables, the ARDL-ECM model was conducted. The result of the ARDL-ECM approach was presented in table 3 since the null hypothesis of no cointegration was rejected. From the result, the coefficient of the intercept is -0.013441. It is negative and statistically insignificant since the p value (0.8921) is greater than critical level at 5 percent. This implies that when all the explanatory variables, that is, capital expenditure on agriculture (AGCEX (-1)), capital expenditure on manufacturing, mining and quarrying (MGCEX (-1)) and lagged value of gross domestic product (GDP(-1)) are held constant, the current value of gross domestic product (GDP) will be valued at -0.013441. Thus, the a priori expectation is that the intercept could be positive or negative. So, it conforms to the a priori expectation.

The coefficient of the past value of GDP is 0.28 which shows that 1 percent increase in the lagged value of GDP (-1) will increase the current value of GDP by 28 percent. The p value of the lagged value of GDP is 0.0029. This reveals that the variable is statistically significant at 5 percent level.

The coefficient of the past value of AGCEX of 0.02 with the p value of 0.04 shows that 1 percent increase in the lagged value of AGCEX will increase the current value of GDP by 2 percent. The variable (AGCEX) is also statistically significant with economic growth which is proxied by GDP since the p value is lower than 0.05 percent level of significance. The implication of this is that increase in government capital expenditure on agriculture will help to increase the GDP as well. Going by this result, the null hypothesis which states that government capital expenditure on agriculture does not have significant impact on economic growth is rejected. The result is however in conformity with the a priori expectation because it is expected that government capital expenditure on agriculture should have positive impact on economic growth in Nigeria. Also, the findings from the study corroborate the findings of Ayunku and Etale (2015); Ugochukwu and Oruka (2021); Ideba et al (2014); Ebere and Osundina (2014) who found that government agricultural expenditure has positive impact on economic growth for the period under study. The findings is however contrary to the findings of Babatunde (2018) and Iheanacho (2017) who revealed in their studies that government capital expenditure on agriculture has negative impact on economic growth in Nigeria for the period under review.

Similarly, the coefficient of the lagged value of MGCEX stands at 0.376571. This shows positive relationship and it implies that one percent increase in the past values of MGCEX will increase the current value of GDP by 0.37 percent. However, the p value of MGCEX which is 0.26 is greater than 0.05. This implies that the variable is statistically insignificant at 5 percent level of significance. Thus, this study fails to reject the null hypothesis that government capital expenditure on manufacturing, mining and quarrying does not have significant impact on economic growth in Nigeria. The positive impact of this variable simply means that government capital expenditure on manufacturing, mining and quarrying is a good determinant of economic growth but the effect is not felt due to the fact that infrastructural facilities needed to attract investment in this sector are not adequately provided, thereby, making it easy for illegal miners to operate. This finding agrees with earlier researchers like Agunuwa (2016); Monogbe and Okah (2017) and disagrees with the findings of Babatunde (2018) who found a negative impact on economic growth. The outcome of the result also conforms to the a priori expectation. The coefficient of ECM which stood at -0.88 was negative as expected and also statistically significant at 5 percent level of significance. This implies that any deviations from the long run equilibrium will be corrected within one year at the speed of about 88 percent.

Furthermore, the R^2 of 0.75 which is the coefficient of determination shows that 75 percent variations in the GDP are explained by the lagged values of GDP, MGCEX and AGCEX while the remaining 25 percent is attributed to other factors which are not explicitly captured in the model but also influence economic growth. The F-Statistic of 2.796075 indicates that the variables are jointly statistically significant at 5 percent level of significance, since the F-calculated is greater than F-tabulated. Looking at the Durbin-Watson statistic which is 1.92, it shows that the model is free from autocorrelation.

4.4. Post-Estimation Diagnostic Tests

This subsection deals with some diagnostic tests required to check for the reliability and robustness of the data. The tests include; heteroscedasticity and stability tests.

Table 4: Heteroscedasticity Test:Breusch-Pagan-Godfrey

F-statistic	1.002601	Prob. F(3,35)	0.4032
Obs*R-squared	3.086323	Prob. Chi-Square(3)	0.3785

Source: Researchers' Computation Using Eviews 10

It is necessary for the time series data to pass through heteroscedasticity test so as to ensure that the mean and variance are constant over time. In this study, Breusch-Pagan-Godfrey was used. From the result of the heteroscedasticity test in table 4, the F-Statistics and Obs*R-squared values of 1.0026 and 3.086 with p values of 0.403 and 0.379 respectively, indicates that the model is free from heteroscedaticity, meaning that the residuals are homoscedastic, because the F-Statistics and Obs*R-squared with their p values are greater than the critical values at 5 percent level of significance. The null hypothesis is therefore accepted.

4.4.1. Stability Test

To determine the stability of the model and the estimated parameters, cumulative sum of Residual Test (CUSUM) was conducted on the model. The result of the CUSUM test is thus reported in Figure 1.

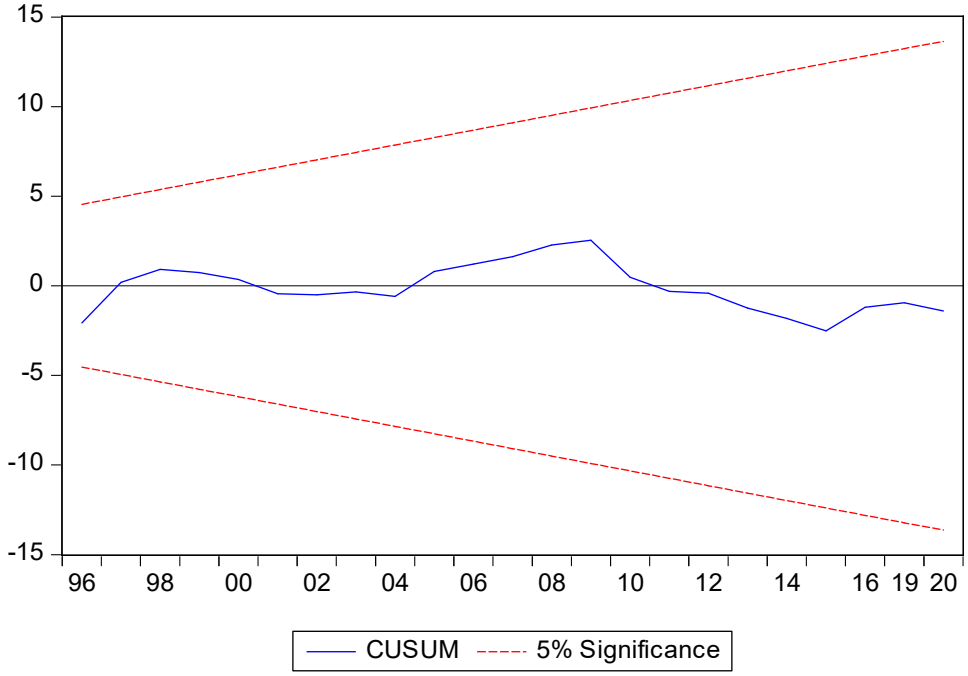

Figure 1: CUSUM Test
Source: Researcher's Computation Using Eviews 10.

Figure 1 shows that the model and the estimated parameters are stable given that the graph moves within the 0.05 critical values.

5. Conclusion and Recommendations

This study examines the relationship between government capital expenditure in economic services' sector and economic growth in Nigeria between 1981 and 2020. It specifically focuses on agriculture and manufacturing, mining and quarrying subsectors. The study employs ARDL-ECM approach to investigate the presence of long and short run relationships among the variables.

From the result, the coefficients of the lagged values of AGCEX and MGCEX are all positive and jointly statistically significant. The findings show that government capital expenditure on agriculture and government capital expenditure on manufacturing, mining and quarrying are good predictors of economic growth in Nigeria. This indicates that increase in government capital spending will lead to increase in gross domestic product in Nigeria. The positive impact may be due to government's commitment in ensuring growth in these subsectors, which is evident from different incentives and policies implemented to attract investors so as to enhance output growth. Since government has discovered that diversifying the economy would help the economy to grow, efforts have been put in place to resuscitate the agriculture and manufacturing, mining and quarrying sectors. Some of these efforts include reduction in the royalty payment by companies that ventured into the exploration of mining and quarrying, provision of technical assistance to government bodies overseeing the industry, subsidization of farm inputs and facilities, improved seedlings, borrowing from external sources to finance capital projects, among others.

In spite of the incentives, policies implemented, borrowed funds as well as the budgetary allocations to these subsectors by the Federal Government of Nigeria to ensure the provisions of adequate infrastructural facilities, much has not been realized in the areas of agriculture and manufacturing, mining and quarrying subsectors which have the capacity

to put the economy on the path of development due to the presence of abundant natural resources in these sectors.

Based on these findings, the following recommendations are made.

1. Government should ensure that government spending in these sectors is properly monitored for efficient and effective implementation. This could be done by setting up monitoring committee that will oversee projects execution and ensure that strict measures are put in place for compliance.

2. Government should provide basic infrastructural facilities needed in these sectors since they are good determinants of output growth in Nigeria.

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