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Impact of Power Sector Expenditures on Economic Growth in Nigeria

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Abstract

This study evaluated the impact of power sector expenditures on economic growth in Nigeria using a time series research design from 1986-2021. Secondary data were used and sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin December 2021. the Autoregressive Distributed Lagged (ARDL) and the Error Correction Model (ECM) were used to determine the relationship and impact of power sector expenditures on economic growth in Nigeria. The findings found that there is a long-run, short-run and significant impact on power sector expenditure indicators especially the power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria. This depicts that power sector expenditure is advantageous to economic growth in Nigeria. In other words, the leading drivers of economic growth in Nigeria are power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria. Therefore, the study recommended that the government should increase the power capital and recurrent expenditure through the annual budget in Nigeria to improve the quality and adequate supply of electricity and the level of economic growth and development in Nigeria.

Keywords*: Power Sector, Capital, Recurrent, Growth Expenditure, Economic Growth*

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Background to the Study

Economic growth crucially depends on the long-term availability of electricity from sources that are affordable, accessible, and environmentally friendly. Security, climate change, and public health are closely interrelated with electricity (Ramchandra & Boucar 2011). Electricity is an important factor in all the sectors of any country's economy. The standard of living of a given country can be directly related to the per capita energy consumption. The recent world energy crises are due to two reasons: the rapid population growth and the increase in the living standard of whole societies. The per capita energy consumption is a measure of the per capita income as well as a measure of the prosperity of a nation (Rai, 2004).

Therefore, for meaningful economic growth to take place in an economy, there must be adequate supply and demand for energy. One of the most desired energies in this direction is electricity. Adequate generation, transmission and distribution of electricity will empower the people to work at home and in the cottage industries through large-scale industrial, commercial and services activities which in turn increase the level of growth. It constitutes the nucleus of operation and subsequently the engine of growth for all sectors of the economy (Ayodele, 2001, Ubi & Effiom, 2013). Electricity is generated from primary energy sources such as solar, water, waves, wind, oil, gas, coal, tides, etc.

Nigeria is well blessed with all these sources of energy and the country has an annual average daily sunshine of 6.25 hours, an average solar radiation of about 5.25 kilowatts/m2/day and receives about 4.851 x 1012 kilowatts (kW) of energy per day from the sun (Odetunde, 2008; Solar Energy International, 2011). Proven crude oil reserves for the country as of 2013 are 37.2 billion barrels and the proven natural gas reserve is 182 trillion cubic feet. Its coal reserve is estimated at 2 billion metric tonnes (Sambo et al, 2010); United States Energy Information Administration (USEIA), 2013). The country is bounded on the South by the Atlantic Ocean and Rivers Niger, Benue and many others traverse the country from North to South also, there are many waterfalls, abundant wind, tides and waves.

Despite the abundance of electricity generation sources and huge government power expenditure, Nigeria as reported by the CIA (2014) has one of the lowest net electricity generation per capita rates in the world. Electricity distribution networks and voltage profiles are very poor resulting in more than 50 percent of the populace living without an electricity supply (Osueke and Ezugwu, 2011). Electricity production and distribution systems are weak and susceptible to major setbacks. The weak and inefficient system results from old and decaying infrastructure which can lead to a decline in real sector productivity. Therefore, this paper is to examine the impact of power sector expenditures on economic growth in Nigeria.

Research Questions raised are:

(i) What is the impact of power sector capital expenditure on economic growth in Nigeria?

(ii) What is the impact of power sector recurrent expenditure on economic growth in Nigeria?

Research Objective

The main objective of this study is to examine the impact of power sector expenditure on economic growth in Nigeria. While, the specific objectives are to:

(i) Investigate the impact of power sector capital expenditure on economic growth in Nigeria.
(ii) Evaluate the impact of power sector recurrent expenditure on economic growth in Nigeria.

The hypotheses formulated are:

H_{01}: Power sector capital expenditure has no significant impact on economic growth in Nigeria

H_{02}: Power sector recurrent expenditure has no significant impact on economic growth in Nigeria

Conceptual Framework

Power Sector Capital and Recurrent Expenditure

According to Amana et al (2018), government expenditures refer to expenses incurred by the government for the maintenance of itself and the provision of public goods, services and works needed to foster or promote economic growth and improve the welfare of people in the society. Ogwuche *et al.,* (2018) opined that government expenditure is divided into two categories that are capital and recurrent expenditure; capital spending is an expenditure made by the government for the acquisition of structures for further consumption in the economy. That is money spent by the government on acquiring permanent infrastructural facilities that are essential to economic growth and development. On the other hand, recurrent expenditure refers to spending on current consumption such as salaries, wages and overhead costs. Therefore, government power expenditures are monies and spending of government for the generation, transmission and distribution of electricity in a given economy and over a period of time According to Olugbenga and Owoye (2007) government power expenditures are usually categorized into recurrent and capital expenditure.

Economic Growth

Economic growth as a concept is relative and thus scholars have viewed it from different perspectives. Todaro and Smith (2006) see economic growth as an increase in the capacity of an economy to produce goods and services compared to one period or a positive change in the level of production of goods and services by a country over a period of time also an increase in living standard, improvement in societal wellbeing. Jhingan (2007) sees economic growth as the sustained increase in the country's per capita output or income which is accompanied by the increase in the labour force, consumption, and volume of trade. He describes determinants of growth as structural and technological changes. Also, he defines growth as a gradual and steady change in the long run and a

gradual increase in the rate of savings and population. The rate of economic well-being is measured by: Gross National Product (GNP) and Gross Domestic Product (GDP). The GDP measures the monetary value of all productive activities carried out in a country. According to Dwivedi (2004), economic growth is a sustained increase in per capita national output or net national product over a long period. It implies that the rate of increase in total output must be greater than the rate of population growth.

Empirical Review

Awe *et al.,* (2022) analysed the impact of electricity infrastructure on economic growth in Nigeria using Ordinary Least Square as a method of analysis and the study revealed a positive relationship between electricity infrastructure and economic growth in Nigeria. Also, revealed that the poor state of electricity supply in Nigeria has imposed significant costs on the business sector. The bulk of these costs relates to the firm's acquisition of the very expensive backup capacity to cushion them against the even larger losses arising from frequent and long power fluctuations. Small-scale operators are more heavily affected by infrastructure failures as they are unable to finance the cost of backup power necessary to mitigate the impact of frequent outages.

Matthew, *et al.,* (2019) examined the long-run relationship between electricity consumption, government expenditure and sustainable development in Nigeria employing the Johansen co-integration, vector error correction mechanism and Granger causality estimation techniques. Secondary data were obtained from the Central Bank of Nigeria Statistical Bulletin, United Nations Conference on Trade and Development and World Development Indicators from 1980 to 2017. The results obtained from the study showed that government recurrent expenditure and gross fixed capital formation have a positive and significant relationship with the gross domestic product per capita (GDPC) in the long run. However, electricity consumption, government capital expenditure and total labour force had a negative but significant effect on GDPC in the long run.

Ojiya *et al.,* (2018) examined the impact of Power Sector Reform on the Manufacturing and Services Sector in Nigeria between 1999-2016. The methodology adopted for the study was Augmented Dickey-Fuller (ADF); a test for long-run relationships using the ARDL Bounds Testing approach with analysis of long-run and short-run dynamics in the model. A striking revelation from the study is the inverse relationship that exists between manufacturing output and electricity consumption in Nigeria within the period referenced. This negative relationship is not unconnected with widespread allegations of misappropriation of budgeted funds for the Power Sector by successive administrations in Nigeria since 1999. It must be stated in clear terms that constant and consistent electricity generation, transmission and distribution is sine-qua-none for the growth of the national economy.

Edet and Boniface (2016) examined the impact of the reforms on electricity supply growth in the country. The study adopted the contemporary econometric approach of error correction mechanism (ECM). The results revealed a speed of adjustment of 92.1 percent

between the short-run and the long-run behaviours of electricity supply with its independent variables. From the analysis, the reforms' coefficient had a positive sign but was statistically insignificant. The other variables, electricity price, government investment in the power sector annual rainfall and per capita GDP conformed to apriori expectations in terms of sign and were statistically significant. The study concluded that the present reform efforts in the power sector will bring great improvements in the power sector of the country if properly harnessed.

Jaunky (2016) examines the income elasticity of electric power consumption power (YEEPC) in 16 African countries in a panel dimension over the period 1981 – 2012. The study finds the existence of a bi-directional causality and all tests support a long run relationship between the two variables. The long run elasticity is found to be below unity. Also, Chen *et al.,* (2016) estimate the relationship between GDP and electricity consumption in 10 newly industrializing and developing Asian countries using both time series data sets for each countries and panel data procedures. The empirical results from the time series data set indicate that the directions of causality in the 10 Asian countries are mixed. When the panel data procedure is applied to the data series, the results show a unidirectional short-run causality running from economic growth to electricity consumption and a bi-directional long-run causality between electricity consumption and economic growth.

While, Altinay and Karagol (2015) investigated the causal relationship between electricity consumption and real GDP in Turkey during the period of 1980 to 2010. Both of the series were found to be a stationary process around a structural break by the Zivot and Andrews test. They employed two different methodologies to test the Granger non-causality: The Dolado– Lutkepohl test using the VARs in levels, and the standard Granger causality test using the de-trended data. Both tests yielded strong evidence for unidirectional causality running from the electricity consumption to the real GDP. Also, Wang, Tian, and Jin (2015) examined the causal relationship between electricity consumption and economic growth in China during 1990-2013. Their results indicate that real GDP and electricity consumption in China are co-integrated and there is unidirectional Granger causality running from electricity consumption to real GDP but not vice versa. Finally, Ogunjobi (2015) studied the effects of electricity consumption on industrial growth in Nigeria. It was found that there exists a co-integration relationship between electricity consumption and industrial growth in Nigeria. The study further established a positive relationship between industrial growth and labour employment, electricity generation, electricity consumption and foreign exchange rate in the long run while it had a negative relationship with capital input.

Theoretical Framework

The theoretical framework of this study is the theory of government expenditure called the Law of Increasing State Activity was propounded by Adolf Wagner (1883) German Economist to explain the growth of the share of public expenditures in GNP. He divided government expenditures into three categories, namely, administration and defence;

cultural and welfare, and provision of direct services by the government in case of market failure. It is well known that rather than allow for a monopoly to emerge, the government usually creates Statutory Corporations such as Hospitals, Schools, telecommunications, Post Offices, Water Boards, and Power Holding companies to cater for the welfare of the people.

Wagner's Law states that as per-capita income increases, the relative size of the public sector will grow. According to Wagner as the economy becomes industrialized, the population tends to concentrate in the urban areas. This in turn leads to externalities (market failure) and congestion which require government intervention and regulations. Legal authorities and the police emerge to address problems of law and order, peace and security. Banking services by the State arise to link surplus funds with those who have investment opportunities. The increase in public expenditures on education, recreation, health, and welfare services is explained in terms of the high population in urban centres. Wagner argued that as real income increases, public expenditures on education, health etc. would increase more than the increase in real income.

This explains the increasing ratio of government expenditure to Gross National Product (GNP). Bakare (2012), Aigbedion and Anyanwu (2015) and Aigbedion *et al.,* (2017) studies show that the Law of increasing State activity by Adolf Wagner (1883) is suitable to examine the functional relationship between government expenditure, especially power expenditure on economic growth. Therefore, the study of functional relationships took its root in the Law of Increasing State Activity by Adolf Wagner (1883).

Methodology

To estimate and impact of independent variables on the dependent variable, the *Ex Post Facto* Design was used to investigate the potential impact of power sector expenditures on economic growth in Nigeria. Secondary data were used and sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin December 2021. Based on the hypotheses of the study, the Autoregressive Distributed Lagged (ARDL) and the Error Correction Model (ECM) were used to determine the relationship and impact of power sector expenditures on economic growth in Nigeria. Thus, the Autoregressive Distributed Lagged (ARDL) was used to determine the long-run impact of the study while the Error Correction Model (ECM) was used to test the short-run dynamic impact of power sector expenditures on economic growth in Nigeria.

Model Specification

The study adopted and modified the model of Matthew, *et al.,* (2019) examined the long-run relationship between electricity consumption, government expenditure and sustainable development in Nigeria and with a functional model stated below:

$$EGRN = f(\text{PSCEX}, \text{PSREX}) \quad (1)$$

Where: EGRN is the economic growth rate in Nigeria, PSCEX is the Power Sector Capital Expenditures in Nigeria and PSREX is the Power Sector Recurrent Expenditures in

Nigeria. However, the Autoregressive Distributed Lagged (ARDL) model that was to examine the impact of power sector expenditures on economic growth in Nigeria is specified as follows:

$$\text{EGRN} = \alpha_0 + \sum_{g=1}^{m} \alpha_{1i}\, \Delta EGRN_{t-1} + \sum_{h=1}^{m} \alpha_{2i}\, \Delta PSCEX_{t-i} + \sum_{i=1}^{m} \alpha_{3i}\, \Delta PSREX_{t-i} \alpha_4 \Delta EGRN_{t-i} + \alpha_5 \Delta PSCEX_{t-i} + \alpha_6 \Delta PSREX_{t-i} + \varepsilon_t \quad (2)$$

Therefore, equation (2) was used to estimate and analysis the long-run impact of power sector expenditures on economic growth in Nigeria. From equation (2), Economic Growth Rate in Nigeria (EGRN) is the dependent variable while the following are the independent variables: Power Sector Capital Expenditures in Nigeria (PSCEX) and Power Sector Recurrent Expenditures in Nigeria (PSREX). To formulate an Error Correction Model (ECM) will begin with the Ordinary Least Squares (OLS), the Ordinary Least Squares for multiple models are formulated as follows:

$$EGRN_t = \alpha_0 + \alpha_1 PSCEX_t + \alpha_2 PSREX_t + \mu \quad (3)$$

The Error Correction Model (ECM) that was used to examine the impact of power sector expenditures on economic growth in Nigeria is specified as follows:

$$\Delta\text{EGRN} = \alpha_0 + \sum_{g=1}^{l} \alpha_{1i}\, \Delta \text{EGRN}_{t-i} + \sum_{h=1}^{m} \alpha_{2i}\, \Delta PSCEX_{t-i} + \sum_{i=1}^{n} \alpha_{3i}\, \Delta PSREX_{t-i} + ECM_{t-1} + \varepsilon_t \quad (4)$$

Therefore, equation (4) was used to estimate and analyse the short-run impact of power sector expenditures on economic growth in Nigeria.

Data Presentation and Discussion

The data used in this study are the Economic Growth in Nigeria (EGRN) as the dependent variable. Power Sector Capital Expenditure in Nigeria (PSCEX) and Power Sector Recurrent Expenditure in Nigeria (PSREX) are the independent variables measuring power sector expenditure in Nigeria and control variables.

Descriptive Analysis and Summary Statistic of the Variables

Table 1: Descriptive Analysis and Summary Statistic of the Variables

	RGDP	PSCEX	PSREX
Mean	36582.67	70.63171	100.0246
Median	28957.71	53.34000	13.20000
Maximum	71387.83	264.6900	412.3700
Minimum	69.00000	0.620000	0.030000
Std. Dev.	20739.94	72.72632	134.9296
Skewness	0.422840	0.858455	1.002264
Kurtosis	1.809778	2.739258	2.532737
Jarque-Bera	3.108878	4.397997	6.178181
Probability	0.211308	0.110914	0.045543
Sum	1280394.	2472.110	3500.860
Sum Sq. Dev.	1.460010	179830.0	619004.3
Observations	36	36	36

Source: Author's Computation, using E- views 10, 2022

Table 1 shows the summary statistics or the descriptive statistics of the variables used in the study. From the table, there are 36 observations. While the highest value for the real gross domestic product in Nigeria during the period of study is 71387.83 billion Naira as shown in the maximum values in Table 1. while the peak value of power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria is 264.69 billion and 412.37 billion respectively. However, the lowest value for the real gross domestic product in Nigeria during the period of study is 69.00 billion Naira. While the lowest value for power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria is 0.62 billion and 0.03 billion respectively. On average the value of the real gross domestic product in Nigeria is 36582.67 billion Naira while the power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria is 70.63 billion and 100.02 billion respectively.

The Table also revealed that all variables are platykurtic given that their kurtosis values are less than three (3). The probability of the Jarque-Bera shows that real gross domestic product in Nigeria, power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria are normally distributed at 1%, 5%, and 10%.

The Unit Root Test Result

Table 2: Unit Root Test Result

Variable	Augmented Dickey-Fuller (ADF) Test		
	@ Level	@ 1st Diff.	Status
RGDP	-5.405154**	-	I(0)
PHCEX	-	-5.816263**	I(1)
PHREX	-	-6.065782**	I(1)
Asymptotic Critical Values			
1%	-4.252879	-4.262735	
5%	-3.548490	-3.552973	
10%	-3.207094	-3.209642	
** implies significance at 1% level, **implies significance at 5% level and *** implies significance at 10%*			

Source: Author's Computation, using E- views 10, 2022

From the result presented in Table 2, ADF tests results revealed that only real gross domestic product in Nigeria stationary at a level which means that they are integrated of order zero I(0) at a 5% level of significance, while power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria were not stationary at the level until they were differenced once and they were said to be integrated of order one I(1). Given the mix result, as shown by ADF tests as well as the order of integration of the variables, the long-run relationship among the variables will be tested using the ARDL model which can capture the characteristics of a mixture of I(0) and I(1) of the variables as postulated by Pesaran, *et al*. (2001)

Lag Selection Criteria

The Akaike Information Criteria (AIC) was applied in determining the optimum lags of each variable in the ARDL model. Subsequently, various specifications of the model were estimated at varying maximum lags, and in each case, each model was tested for serial correlation, heteroskedasticity, and normality in their residual. The study found the ARDL (2, 4, 4, 3, 3, 4) to have the best fit in describing the relationship between real gross domestic product and power sector expenditure indicators used in the study.

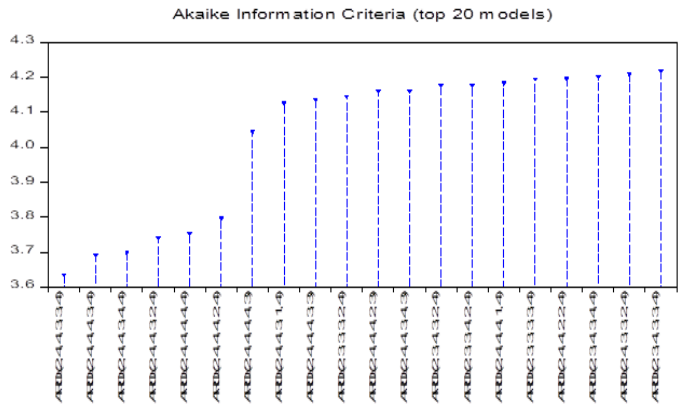

Figure 1: The Akaike Information Criteria (AIC)

The Bounds Co-Integration Test Result

Table 3: Result of Bounds Co-Integration Test

F-statistic	30.96103	
K	2	
Critical Values		
Significance levels	I0 Bound	I1 Bound
10%	2.63	3.35
5%	3.10	3.87
2.5%	3.55	4.38
1%	4.13	5.00

Source: Author's Computation, 2022

The result of the Bounds co-integration test is reported in Table 3. Since the F-statistic is greater than the I1 critical bound at a 10% level of significance, the null hypothesis of no co-integration is rejected. The conclusion can therefore be made that there exists a long-run relationship between economic growth in Nigeria and power sector expenditure indicators in Nigeria which are power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria.

The Regression Results

Table 4: ARDL Estimates of Financial Sector Development in Nigeria

Short-run estimates	
Dependent variable	$\Delta RGDP_t$
ECM_{t-1}	-0.45*(0.0000)
$\Delta RGDP(-1)$	0.47**(0.0010)
$\Delta PSCEX$	4.72**(0.9123)
$\Delta PSREX$	-145.4*(0.0015)
Long-run estimates	
Dependent variable	HCD_t
$PSCEX$	425.88**(0.000)
$PSREX$	12.33**(0.1596)
C	18869.65**(0.0000)
R^2	0.943
F-stat	32.648 [0.001]
Note: ****, **, * indicate the statistical significance of coefficients at 1%, 5%, and 10% respectively, and the values in parentheses and block brackets are the probabilities*	

Source: Author's Computation, 2022

The Error Correction Model (ECM) in Table 4 shows the short-run relationships between the dependent and the independent variables. It is expected that the Error Correction Term (ECT) must be negative and less than 1 and should be statistically significant. From Table 4, the value of F-statistics of 32.648, indicates that there is a short-run relationship between the dependent and the independent variables. The R-square value of 0.94 revealed that power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria jointly accounted for about 94 percent of the variation in economic growth in Nigeria during the period under review; while the remaining 6 percent are

accounted for by other factors outside the model. The ECT shows the 1-period lag Error Correction Term. Its value of -0.449 indicates that it is negative, less than 1, and statistically significant. This means that the average speed of adjustment from the short run to the long run should there be any disequilibrium is 45%. This means that it will take a 45% speed of adjustment for the model to adjust within a year from the short run to the long run and this adjustment rate is averagely good.

The short-run result shows that power sector capital expenditure in Nigeria has a positive impact on economic growth in Nigeria and based on the probability value of 0.91, the economic growth in Nigeria has an insignificant impact on economic growth in Nigeria and this implies a unit change in power sector capital expenditure in Nigeria will lead to 4.723 change in economic growth in Nigeria. On the other hand, power sector recurrent expenditure in Nigeria has a positive impact on economic growth in Nigeria and based on the probability value of 0.0015, the power sector recurrent expenditure in Nigeria has a significant impact on economic growth in Nigeria and this implies a unit change in power sector recurrent expenditure in Nigeria will lead to a 145.4 change in economic growth in Nigeria.

The long-run result shows that power sector capital expenditure in Nigeria has a positive impact on economic growth in Nigeria and based on the probability value of 0.000, the economic growth in Nigeria has a significant impact on economic growth in Nigeria and this implies a unit change in power sector capital expenditure in Nigeria will lead to 425.88 change in economic growth in Nigeria. On the other hand, power sector recurrent expenditure in Nigeria has a positive impact on economic growth in Nigeria and based on the probability value of 0.1596, the power sector recurrent expenditure in Nigeria has an insignificant impact on economic growth in Nigeria this implies a unit change in power sector recurrent expenditure in Nigeria will lead to a 12.331 change in economic growth in Nigeria.

Normality Test

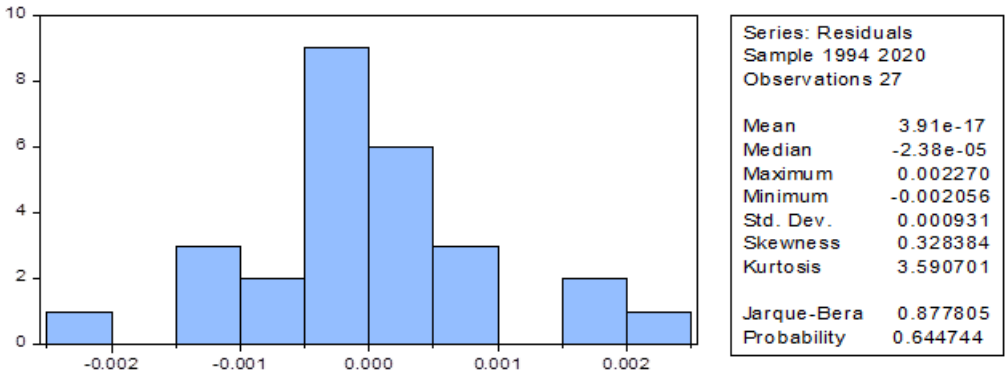

Figure 2: Normality chart

The normality test is conducted to ensure that the data employed in this study are normally distributed. Observing from the normality diagram in Figure 2 as well as the Jarque-Bera value of 0.877805 and its corresponding p-value of 67 % which is greater than a 5 % significant level, confirms that the data are normally distributed.

Test for Heteroskedasticity

Table 5: Test for Heteroskedasticity

F-statistic	2.119737	Prob. F(2,32)	0.1366
Obs*R-squared	4.094473	Prob. Chi-Square(2)	0.1291
Scaled explained SS	23.36817	Prob. Chi-Square(2)	1.0000

Source: Author's Computation, 2021

Table 5 shows the test for Heteroskedasticity. It indicates that the variables are free from the problem of Heteroskedasticity since the p-values of F-stat. and Obs*R-squared of 0.1366 and 0.1291 respectively are greater than the 5% significance level. This outcome is further strengthened by the p-value of 1.0000 for the Scaled explained SS which also suggests the absence of Heteroskedasticity.

Stability Diagnostic Test

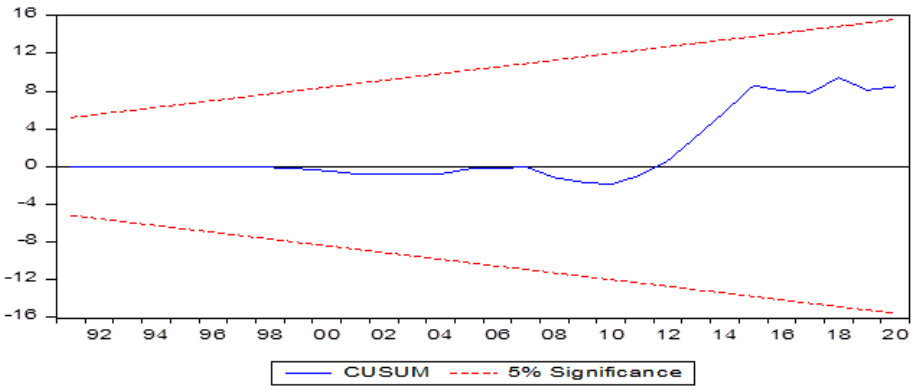

Figure 3: The CUSUM Chart

From Figure 3, it could be seen that the CUSUM series lies between the upper and the lower critical boundaries of 5%. This is an indication that the estimated model is stable. So, it can be concluded that the model is stable and the estimated results are reliable, and can therefore be used for further analysis and prediction.

Conclusion and Recommendations

This study has examined the impact of power sector expenditures on economic growth in Nigeria from 1986-2021 using the framework of a co-integrating autoregressive distributed lag (ARDL) model. From the empirical analysis, the study concludes that there is a long-run and significant impact of power sector expenditure indicators

especially the power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria. This depicts that power sector expenditure is advantageous to economic growth in Nigeria. In other words, the leading drivers of economic growth in Nigeria are power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria.

The findings of the study agreed with the work of Awe *et al.,* (2022) who analysed the impact of electricity infrastructure on economic growth in Nigeria using Ordinary Least Square as a method of analysis and the study revealed a positive relationship between electricity infrastructure and economic growth in Nigeria. The result of this study also shows that power sector capital expenditure in Nigeria and power sector recurrent expenditure in Nigeria are key drivers of economic growth in Nigeria. Also, the study shows that the average speed of adjustment from the short run to the long run should there be any disequilibrium is 69%. This means that it will take a 69% speed of adjustment for the model to adjust within a year from the short run to the long run and this adjustment rate is averagely good.

Based on these findings, the following recommendations were suggested:

i. The government should increase the power sector capital expenditure through the annual budget in Nigeria to improve the quality and adequate power supply and the level of economic growth and development in Nigeria.
ii. Government should increase the mechanism to check and control the allocation and implementation of power sector expenditures that is recurrent and capital expenditures to increase the significant impact on economic growth and development in Nigeria.

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APPENDIX I

Data for Regression

YEAR	EGRN	PSCEX	PSREX
1986	0.06	0.66	0.07
1987	3.2	0.62	0.03
1988	7.33	1.73	0.23
1989	1.92	1.84	0.64
1990	11.78	2.10	0.49
1991	0.36	1.49	0.80
1992	4.63	2.13	0.89
1993	-2.04	3.58	1.91
1994	-1.81	4.99	0.61
1995	-0.07	9.22	0.75
1996	4.2	8.66	2.84
1997	2.94	6.90	3.32
1998	2.58	23.37	3.11
1999	0.58	17.25	11.12
2000	5.02	27.97	11.61
2001	5.92	53.34	15.23
2002	15.33	32.47	31.03
2003	7.35	55.74	4.56
2004	9.25	30.03	23.70
2005	6.44	71.36	13.20
2006	6.06	78.68	12.90
2007	6.59	150.90	23.99
2008	6.76	152.17	70.73
2009	8.04	144.93	126.87
2010	8.01	151.77	281.00
2011	5.31	92.85	217.84
2012	4.23	97.40	243.76
2013	6.67	154.71	273.70
2014	6.31	111.29	235.03
2015	2.65	82.98	224.70
2016	-1.62	68.80	235.45
2017	0.81	167.66	282.53
2018	1.92	203.42	321.99
2019	2.27	264.69	411.86
2020	-1.79	194.41	412.37
2021	2.26	194.33	411.32

Source: Central Bank of Nigeria Statistical Bulletin December 2021.