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Impact of Electricity Consumption on Economic Growth in Nigeria

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Abstract:

The study investigates the impact of electricity consumption on Nigerian economy between 1986 and 2018. The data were sourced from National Bureau of Statistics, World Development indicators and The International Energy Agency. The estimation technique employed for the analysis is Autoregressive Distributed Lag Model. The variables used are Electricity consumption (ELC), Cost of fuel/gas (CFG) and Economic growth rate (GDPR). The variables were subjected to stationarity test. The result showed that GDPR and CFG were stationary at level $I(0)$ while ELC became stationary at first difference $I(1)$. The variables are also free of multicollinearity. The ARDL result confirmed that both ELC and GDPR are positively and significantly correlated in the short-run but in the long-run, ELC impacted negatively and insignificantly on economic growth in Nigeria, while CFG exerts positive but insignificant impact on economic growth. The study therefore, recommends that measures be taken towards electricity conservation to enhance efficient consumption of electricity towards increasing economic growth in Nigeria. The government should enact policies in the sector towards availability of electricity considering the negative influence that electricity consumption has on economic growth in the long-run. The cost of fuel and gas should be at a rate that will accommodate all income class in the economy in order to aid access to electricity consumption which will in turn increase economic growth.

Keywords: Electricity, consumption, economic growth

1. Introduction

One of the salient keys impeding growth in the Nigerian economy is poor amount of electricity generation, distribution and consumption in the country (Joy, 2014). The poor electricity supply is believed to force businesses to depend on expensive and highly polluting off-grid self-generation which therefore puffed-up the cost of production and led to the exit of some businesses in Nigeria. As submitted by US Congress (1991), an increase in energy services (i.e. supply and consumption) is a prerequisite for achieving the desired growth in an economy and increasing the living conditions of developing economies.

Although the statistics for Nigerian electricity generation as submitted by Energy Information Administration indicates an upward trending over the past three decades, trending from 11.4 billion kWh in 1986 to 29.4 billion kWh in 2016, its effects on the economy are relatively low due to population growth and the consumption rate of the people. The total electricity consumption rate of Nigeria as of 2016 was 24.72 billion kWh of electric energy per year which makes an average of 130 kWh per capita (World Bank, 2018).

However, Ojinnaka (2008) claimed that the amount of energy consumed in an economy determines the size of its national product. This implies that the scale of energy consumption per capital serves as a significant indicator of economic modernization. Countries with higher per capita energy consumption are ranked more developed than countries with low per capita energy consumption. The significance of energy usage in the developmental process of an economy cannot be overemphasized. Energy could serve as a medium to boost national income via the exportation of its products; it could also secure job opportunities and promote the living standard of workers by increasing their wages and salary; and cause positive changes in both socio-economic activities and the infrastructures used in the exploitation of the energy resources.

There is no doubt energy plays a crucial role in generating wealth in Nigeria by aiding and supporting the activities of sectors in the economy. There is a complement identified between energy sector products (such as petroleum and electricity) and other sectors in an economy which includes: agricultural sectors, commerce, mining, and manufacturing which adds up to form a needful output (Amusa & Leshoro, 2013). Although, Nigeria is blessed with copious energy resources, yet, the nation often crashes into an energy crisis. As stated by Auty (1993), a situation whereby an economy is rich in natural resources and also facing intense private privation is known as 'Dutch disease syndrome' or 'resource curse', which has been believed to exist in Nigeria.

According to the world development index statistics, put together by the World Bank (2011) Nigeria was ranked at 162 with a gross national income per capita of \$1,190 in 2009. So also, it's GDP per capita rises between the independence i.e. 1960 and 1969 by 132 percent and further reached its peak of 283 percent between 1970 and 1979. This however led to the economic restructuring in 1986 and the era of structural economic adjustment and liberalization between 1988 and 1997. The GDP, however, responded to the restructuring era growing positively at 4 percent. Accounting for real GDP in Nigeria, it increased by 7% and 7.87% in 2006 and 2010 respectively (NBS, 2010).

Power instability in Nigeria has been a thing of major concern despite huge investments that the past and present administration has spent in the quest for stabilization of power in the country. This instability has affected commerce and revenue generation in Nigeria. Epileptic power supply has led to closure of small and medium scale enterprises and many economic losses. Therefore, this research will explore the relationship between power consumption and the Nigerian economy. Some fundamental questions from the problem discussed were raised and they include:

- What is the long-run and short-run impact of electricity consumption on the Nigerian economy?
- What is the causal link between economic growth and electricity consumption in Nigeria?

2. Literature Review

The effort of the colonial master to create electric power services within the territory of Lagos initiated the installation of electricity small generating sets in 1886. Later on, the quest to extend electric power supply to every part of the economy birthed the establishment of Electricity Corporation of Nigeria (ECN) and Niger Dams Authority (NDA) in 1951 and 1962 respectively. However, the lapses observed in the operation of the two bodies further resulted to their union in 1972 as the National Electric Power Authority (NEPA). The primary role of NEPA was to serve as the major seller of electricity in the country (Ogbonna, Idenyi & Attamah, 2016).

In 2005, Act reform for electricity sector was enacted to ensure an efficient, reliable and cost-effective electricity supply throughout the country. The Act reform, however, bring about the transferring of public monopoly power of NEPA to the PHCN (i.e. Power Holding Company of Nigeria) (Bolanle, 2011). This reform further brings about the privatization of the power generation and distribution segment in 2013, while the government only controlled the transmission segment of the power sector.

However, concerning the figures obtained from the Nigeria Bureau of Statistics, about 25% of the 12,522MW installed capacity gets to the end-users as a result of operational inefficiency and other systemic challenges. Presently, about 4,022.42MW of electricity is generated out of over 12,000MW installation capacity of our generation stations. The energy source for rural areas of the country is majorly constituted by the usage of solid biomass, such as fuelwood (NBS, 2019). The manufacture and the utilization of renewable energy in the Nigeria market persist to be inadequate.

Generally, the major sources of electricity generation include Wind, Solar generating stations, Thermal, and Hydro. The electricity generation method varies based on the type of energy to be used. For instance, the generation of electricity via combustion demands the use of coal and natural gas utilization. So also, the renewable energies such as rotation energy by wind, sunlight, and rotating water wheel by running water are directly converted into electricity (Halkos and Tzeremes, 2013). In Nigeria, steam gas turbines and hydro plants are the two major energy mix for generating electricity at different ports such as Shiroro, Sapele, Kainji, Jebba, etc (Amotsuka, 2008).

2.1. Electricity Consumption in Nigeria

Electricity consumption simply means total electricity used by the economic agents of an economy at a particular time (Akinlo, 2009). However, according to USAID (2019), the rate of electricity accessibility in Nigeria is about 45%, of which electricity supplies and consumption are largely dominated by the urban region of the country. The 80% of the total electricity demand in Nigeria is made up of electricity consumption from commercial sectors and the residential of the economy, while electricity consumption from industrial, special tariff sectors and street lighting covered the remaining 20% of the total electricity demand in Nigeria (PHCN report, 2009).

The table below explains the recent consumption rate of Nigerians in the last quarter of 2018 as obtained from the National Bureau of Statistics Power Sector report.

Load Participants	OCT, 2018	NOV, 2018	DEC, 2018	Quarterly Total
	Energy (kWh)	Energy (kWh)	Energy (kWh)	
Abuja Disco	306,907,851.00	319,949,303.00	328,367,824.33	955,224,978.33
Benin Disco	199,598,668.00	207,226,121.00	224,257,074.05	631,081,863.05
Eko Disco	269,037,751.00	286,945,683.00	300,245,506.00	856,228,940.00
Enugu Disco	186,796,920.00	188,485,706.00	211,841,718.00	587,124,344.00
Ibadan Disco	265,583,021.00	282,467,845.00	312,265,565.00	860,316,431.00
Ikeja Disco	304,098,242.00	310,214,398.00	327,943,538.48	942,256,178.48
Jos Disco	97,949,514.00	105,422,357.00	121,122,280.00	324,494,151.00
Kaduna Disco	192,893,076.00	202,653,525.00	199,369,310.00	594,915,911.00
Kano Disco	165,931,051.00	175,897,932.00	184,196,883.00	526,025,866.00
P/Harcourt Disco	157,547,046.00	166,198,588.00	180,544,149.48	504,289,783.48
Yola Disco	88,864,563.00	96,693,413.00	94,796,887.00	280,354,863.00
	2,235,207,703.00	2,342,154,871.00	2,484,950,735.34	7,062,313,309.34

Table 1: Actual Electricity Consumption of Nigerians in the Last Quarter of 2018

Source: National Bureau of Statistics

However, Nigeria is considered as a storehouse that accommodates primary energy resources such as crude oil, wood fuel, biogas, biomass, solar, etc (Ogunjobi, 2015). Regardless of the various primary energy resources available in Nigeria, the country electric energy use is characterized by the use of hydro, crude oil, coal and natural gas in their processed forms, and solar and wood fuel in their raw forms (Ayodele, 2000). The electricity generated and distributed in Nigeria is insufficient despite the efforts put in place to avoid shortcomings. As stated by World Bank (2017), the Nigeria economy is going electricity supply crisis, which deprive the socio-economic development and the industrial growth to meet-up with the economy's potential.

2.2. Evidence from Developed Countries on Electricity Consumption and Economic Growth

Stern, Burke and Bruns (2017) obtained panel data from 136 countries. The variables gathered were analyzed using cross-sectional regression analysis. The study noted a strong impact of electricity consumption on the development of the countries studied. Therefore, steady supply of electricity is a necessary factor for growth and development in the countries. In Poland between 2000 and 2012, Kasperowicz (2014) noted using Granger Causality test that a bidirectional nexus runs from electricity consumption and economic growth. The study, however, concluded that electricity consumed is a significant factor of economic growth in Poland. Zaghdoudi (2017) gathered a dataset of 31 developed economies spanning between 1990 and 2015 and make use of Dynamic Ordinary Least Squares (DOLS) method and panel Auto-Regressive Distributed Lag (ARDL). It was ascertained from the result that positive significant short-run and long-run effects of economic growth on electric power consumption.

Faisal, Tursoy, Resatoglu and Berk (2018) on the economy of Iceland using various econometric approaches confirmed positive influence of economic growth on electricity consumption in the short-run and long-run. The study also showed an absence of granger causality nexus electricity use and economic growth. The study, however, concluded that the implementation of energy conservative policy does not exert negative impact on economic growth. Simionescu et al. (2019) employed panel data models (which include: panel causality test and cluster analysis) in European Union. The study verifies that electricity from renewables exerts positive but low impact on GDP per capita. In addendum, the study affirmed the absent of the causal link between electricity from renewables and per capita GDP. Using Granger Causality econometric technique, Alp (2016) argued for 23 OECD countries that a positive nexus exist between use of energy and economic growth. The study further confirms no causal link between energy consumption and economic growth. To (2013) in Australia used ARDL bound test and multivariate granger causality test and attest to absence of causal relationship between economic growth and energy use. The study further argued that energy use does not exert a significant effect on economic growth.

In five (5) IEA countries: United State, Spain, Belgium, United Kingdom, and Turkey, Pata and Yurtkuran (2017) confirmed using Error Correction Model and ARDL bound test approach that a positive significant unidirectional causality runs from electricity consumption to economic growth in the long-run and short-run for all the 5 member states of IEFA. Halkos and Tzeremes (2013) gathered macroeconomic data from 36 countries spanning from 1990 to 2011 and analyzed using a Local Linear Least Squares Cross-Validation technique. The study discovered a positive impact of electricity usage from renewable sources on the growth of the developed nations' economy.

2.3. Evidence from Emerging Economies and Nigeria on Electricity Consumption and Economic Growth

Mawejje and Mawejje (2016) used VECM granger causality approach in Uganda. The study found the existence of one-way nexus moving from electricity use to GDP in the long-run. However, the study suggested that the Uganda economic growth can be promoted by electricity conservation policies. Javid, Javid and Zahid (2012) obtained macroeconomic data for Pakistan economy spanning between 1971 and 2008 and analyzing the variables using VECM granger causality approach. The study submitted an equilibrium nexus between the two variables (i.e. GDP and electricity utilization) in the long-term. In India, Shereef (2017) findings from the granger causality analyzes revealed a one-way nexus running from GDP to electricity utilization. It is however concluded that the demand for electricity consumption is majorly determined by economic growth. Using panel analysis of co-integration test, dynamic ordinary least square and granger causality for the study in Taiwan, Lu (2017) discovered equilibrium nexus among the two variables in the long-term. So also, the study found two-way nexus among the two variables. Evidence from Sri Lanka, Morimoto and Hope (2001) submitted from their granger causality analysis that the changes in the real GDP is caused by the past and present changes in the electricity production. So also, it is observed that there exist a bi-variate nexus among the two variables.

Ogundipe, Akinyemi and Ogundipe (2016) submitted from the VECM analysis that the economic development is negatively affected by electricity use. So also, the study found a causality nexus among the two variables in the short-run. Okorie and Manu (2016) obtained macroeconomic data spanning between 1980 and 2014 and analyzed the variables observed in the study using Johansen co-integration and VAR-based techniques. The study noticed that the economic growth is significantly affected by electricity use in the short-term and long-term. Employing VECM approach, Ogunjobi (2015) discovered a long-term positive and strong nexus between industrial growth, electricity generation and electricity consumption. Okoligwe and Ihugba (2014) employed VECM granger causality approach and validated the existence of one-way causality nexus trending from electricity utilization to GDP in Nigeria. Using VECM granger causality test approach, Ogbonna et al. (2016) submitted a long-run nexus between the two variables (i.e. real GDP and power generation capacity). The study, however, concluded the absent of causal nexus among the two variables in Nigeria.

Masuduzzaman (2012) observed from the use of granger causality test and co-integration analysis in Bangladesh that economic growth is affected by electricity use in the long-run. While in the short-run, one-way causality nexus is discovered to exist between electricity use and economic growth. In evidence from Botswana using co-integration analysis,

Amusa and Leshoro (2013) found that the two key variables (i.e. GDP and electricity use) are co-integrated in long-run and short-run.

In Ghana, Enu and Havi (2014) submitted based on the result obtained from VECM granger causality test and co-integration that economic growth is affected by the electricity use in the long-run, in which a GDP per capita is expected to rise by 0.5201% when there is 1% rises in the electricity use. The study further established a unidirectional causality nexus among the two variables. Obtaining macroeconomic data from four developing countries (which include India, Bangladesh, Sri Lanka and Pakistan) spanning between 1981 and 2015 and analyzing the data using random effect approach and robust OLS estimation techniques, Tariq, Javaid and Haris (2018) observed that the two variables (GDP and energy use) are positively correlated.

Bayar (2014) employed granger causality and co-integration test for the purpose of emerging economies. The result indicates that electricity use positively affects economic growth in the whole panel. The study further claimed a two-way causality nexus among the two variables. Similarly, Twerefou, Iddrisu and Twum (2018) used both granger causality and panel co-integration techniques for the West-Africa sub-region. The study noticed that the economic growth is statistically and significantly affected by electricity utilization in the long-run. So also, the study verified a one-way causality nexus moving from GDP to electricity utilization.

Gathering macroeconomic data spanning between 1990 and 2012 from 5 developing countries, and testing the variables using random generalized least square (GLS) method, Abbas et al. (2015) found that the economic growth is positively affected by electricity use. So therefore, government should use their land and resources for electricity generation to stimulate electricity use. In Pakistan, Atif and Siddiqi (2010) submitted from the result obtained from Engle and Granger cointegration that the economic growth is affected by electricity use in the short-run. The study also noted a one-way causal nexus among the two variables. Using cointegration and Wald test in Sudan, Awad and Yossof (2016) realized a two-way causality nexus between GDP and electricity generation.

Akinlo (2009) used granger causality approach and demonstrated a uni-directional nexus trending from electricity use to GDP in Nigeria. Therefore, energy conservative policies negatively affect economic growth. Ogundipe (2013) submitted from the result obtained from VECM granger causality approach economic growth is significantly impacted by electricity utilization. The study further demonstrated two-way causal nexus running between the two variables.

3. Methodology

Due to the secondary nature of the data employed in this study, quantitative techniques were adopted to analyze the data. The technique employed in this study is designed in line with the literature that proposed them. The methodology therefore adopted in this study are; Autoregressive Distributed Lag (ARDL) and Granger Causality Test. The first objective of the study is to analyze using ARDL approach, while the second objective of the study is to analyze using granger causality test.

3.1. Model Specification

Objective One: To analyze the long-term and short-term effect of electricity utilization on economic growth in Nigeria.

The model for objective one is expressed as:

$$GDPR = f(ELC, CFG) \dots \dots \dots 3.1$$

The stochastic form of the above model is

$$GDPR_t = \beta_0 + \beta_1 ELC + \beta_2 CFG + e \dots \dots \dots 3.2$$

Where; 'GDPR' connotes economy growth rate, 'ELC' denotes electricity consumed, 'CFG' serves as total cost of fuel/gas, ' β_0 ' represent the constant, ' β_1 - β_2 ' signifies the independent variables analyzing the electricity price and consumed, and 'e' is the error term.

Objective Two: To capture the causal link between electricity utilization and economic growth in Nigeria.

This study employed pairwise granger causality test to estimate this objective because of its easiness to implement.

$$GDPR_t = \beta_0 + \sum_{q=1}^p \beta_1 InGDPR_{t-i} + \sum_{q=1}^{j_1} \beta_2 InELC_{t-j} + \sum_{q=1}^{j_2} \alpha_3 InCFG_{t-j} + \varepsilon_t \dots \dots \dots 3.3$$

Where: ε_t is the noise series, β_1 - β_2 are the variable multipliers, j_1 - j_2 also remain the optimal lag length of each of the variables, *InGDPR* represent log of gross domestic product, *InELC* is the log of electricity consumed, and *InGREX* connotes log of total cost of fuel/gas.

4. Results and Discussion

4.1. Descriptive Statistics

	CFG	ELC	GDPR
Mean	156.9429	14.44633	4.300000
Median	154.3475	15.26800	4.900000
Maximum	201.1762	25.13952	14.60000
Minimum	98.14376	3.345000	-10.8
Std. Dev.	23.07814	6.783257	5.299941
Skewness	-0.14111	0.203408	-0.768532
Kurtosis	3.149865	1.556517	4.317015
Jarque-Bera	0.140398	3.092572	5.633510
Probability	0.932208	0.213038	0.059800
Sum	5179.117	476.7290	141.9000
Sum Sq. Dev.	17043.22	1472.402	898.8600
Observations	33	33	33

Table 2: Descriptive Statistics
Source: Author's Compilation (2019)

The descriptive statistics majorly measures the behavioural trend of the variables used in the study. The study makes use of the following statistical methods: Mean, Median, Maximum, Minimum, Standard Deviation, Skewness, Kurtosis, and Jarque-Bera. From the result presented in table 1, it was confirmed that the mean values of the variables ranges within their maximum and minimum values. The implication of this is that, none of the variables deviates outrageously to unexpected shocks within the period studied. The Jarque-bera statistics result confirms that the variables (CFG, ELC and GDPR) are normally distributed as they have probability values approximately greater than 5% significance level. Of great note is that the descriptive statistics reported the results based on 33 number of observations (33years).

4.2. Correlation Test

	GDPR	ELC	CFG
GDPR	1		

ELC	0.225	1	
	(-0.207)	-----	
CFG	0.219	-0.093	1
	(-0.221)	(-0.605)	-----

Table 3: Correlation Result
The parenthesis () are the probability values
Source: Author's Compilation (2019)

The correlation test checks if there is multicollinearity problem among the variables. It also checks the nature of linear association among the variables in the study. From the result showed that a positive insignificant linear association exists between electricity consumption and economic growth rate and total cost of fuel and gas and economic growth rate. This implies that there is no multicollinearity problem among the variables as none of the values are 1.

4.3. Unit Root Test

Variable	ADF Statistics				Remark
	Level		First Difference		
	t-Statistic	Prob.	t-Statistic	Prob.	
GDPR	-3.6	0.05**	-	-	I(0)
ELC	-	-	-7.37	0.00**	I(1)
CFG	-	-	-5.02	0.00**	I(1)

Table 4: Unit Root Test Results
Source: Author's Compilation (2019)

The result of the stationarity test is shown in the table above. The three variables (GDPR, ELC and CFG) were tested for stationarity with the aid of Augmented Dickey-Fuller (ADF) test. As is the case most times, only GDPR was stationary at levels I(0) while other variables (ELC and CFG) were stationary at first difference I(1). The test also confirms that the variables are mean reverting in the long-run given their stationarity status at levels. Therefore, we move to estimate the parameters using the ARDL method.

4.4. ARDL Estimation

Dependent Variable: GDPR Optimal Lag: ARDL (1,3,0)				
Short-run Result				
	Coefficient	Std. Error	t-Statistic	Prob.
GDPR _t	0.269	0.145	1.853	0.078
ELC _{t-1}	0.625	0.36	1.739	0.097
ELC _{t-2}	-1.646	0.399	-4.127	0.001
ELC _{t-3}	0.887	0.336	2.644	0.015
CFG _t	0.015	0.023	0.635	0.532
ECM _{t-1}	0.258	0.255	1.013	0.323
	-0.314	0.181	-1.74	0.097
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ELC	-1.097	1.498	-0.732	0.472
CFG	0.047	0.077	0.612	0.547
C	-2.976	13.743	-0.217	0.831
TREND	0.822	1.086	0.757	0.458

Table 5: ARDL Estimation Result
Source: Author's Compilation (2019)

From the ARDL Bounds test result, the optimal lag model selected is (1, 3, 0). In the short-run, the result reveals that electricity consumption has a positive significant impact on economic growth in Nigeria. This implies that, a unit change in electricity consumption causes about 88.7unit changes in GDPR. Total cost of fuel and Gas (CFG) also had a positive insignificant impact on GDPR in the short-run. The implication of this is that, as CFG increases by 1 unit, GDPR increases by 1.5units. Also, the Error Correction Model (ECM) is rightly signed and significant. The result shows that about 31.4% deviation in GDPR in the short-run is corrected by the independent variables in the long-run.

In the long-run, electricity consumption impacted on GDPR negatively and insignificant. The impact in the long-run reduces GDPR by 1.097units as ELC increases by 1unit. It also implies that consumption of electricity in the long-run has not been tailored towards growth as many misuse the electricity domestically. CFG impact positively and insignificantly on GDPR. 1unit increase in CFG in the long-run, results in 4.7unit increase in GDPR in the long-run. the implication of this is that, despite variations in the price of fuel and gas and considering the nature of the product, users still consider the product, therefore increasing growth in the long-run.

4.5. Granger Causality Test

Pairwise Granger Causality Tests			
Null Hypothesis:	Obs	F-Statistic	Prob.
ELC does not Granger Cause GDPR	31	3.821	0.035
GDPR does not Granger Cause ELC		4.044	0.03
CFG does not Granger Cause GDPR	31	0.29	0.751
GDPR does not Granger Cause CFG		0.168	0.846
CFG does not Granger Cause ELC	31	0.269	0.767
ELC does not Granger Cause CFG		0.493	0.616

Table 6: Granger Causality Test Result
Source: Author's Compilation (2019)

The granger causality test is used to answer research question 2. It examines how well the independent variables cause or influences the dependent variables. From the result, it was observed that a bi-directional relationship exist between electricity consumption (ELC) and economic growth (GDPR) at 5% significance level. There is no direction of causality between total cost of fuel and gas (CFG) and economic growth (GDPR).

From the ARDL result, it was confirmed that in the short run, there is positive significant relationship between electricity consumption and economic growth, while a positive insignificant impact exists between total cost of fuel and gas. This implies that in the short run, a unit change in electricity consumption will result in about 88.7unit changes in the

Economic growth rate (GDPR) but as Cost of Fuel and Gas increases by 1-unit, Economic growth rate (GDPR) increases by 1.5units. In the long-run however, electricity consumption impacted on Economic growth rate (GDPR) negatively and insignificantly. This impact means that any reduction in Economic growth rate by 1.097units will result in increase of Electricity Consumption by 1unit. It therefore implies that consumption of electricity in the long-run has not been productively used which could be as a result of sensitive businesses depending solely on off-grid polluting alternatives like generators for steady supply of electricity since they cannot depend on the epileptic power supply for use. Also, the findings show that a unit increase in Cost of fuel and gas in the long-run, results in 4.7unit increase in Economic growth rate (GDPR). The implication of this is that, despite variations in the price of fuel and gas and considering the nature of the product, consumers still consider the product, thereby increasing growth in the long-run.

5. Conclusion and Recommendations

From the empirical analysis, it will be wrong to conclude that there is no relationship between electricity consumption and economic growth in Nigeria. The empirical evidence confirms that considering the necessity nature of electricity to everyday activities, it significantly contributes to the growth of Nigerian economy. However, weak policies in the sector could cause its retarding influence on economic growth in the long-run. The cost at which the fuel and gas are been sold marks a notable impact in determining the growth of the Nigerian economy via electricity consumed. From the findings in this study, the following recommendations are suggested for the improvement of the Nigerian economic growth via electricity consumption, fuel and gas cost:

- Considering the retarding influence that electricity consumption has on economic growth in the long-run, weak policies could have caused that and therefore, I recommend that the government strengthens all policies that relates to making electricity available.
- There should be electricity conservation measures to enhance efficient consumption of electricity consumption increasing growth in Nigeria.
- The cost of fuel and gas should be maintained in such a way that it accommodates all income class in the economy in order to aid their access to electricity for consumption which will in reverse increase economic growth rate.

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