



Electricity Supply and Economic Diversification in Nigeria (1981-2016)

Akinyemi A. AJIBOLA

Muideen A. ISIAKA

Ikenna T. NNOLI

Christiana A. ABIMBOLA

*Economics, Accounting and Finance Department
Bells University of Technology, Ota, Ogun State, Nigeria
aaajibola@bellsuniversity.edu.ng*

Abstract

The study examined the impact of electricity supply on economic diversification in Nigeria, using time series data from 1981 to 2016. The study employed descriptive analysis and Autoregressive Distributed Lag (ARDL) techniques. The Augmented Dickey-Fuller unit root test showed that the variables are integrated of different orders.

The result from the Bounds co-integration test to show the presence of a long-run relationship among the variables was inconclusive. The short run (ARDL) model, however, indicated a positive insignificant relationship between electricity supply and economic diversification in Nigeria. The findings of the study revealed that the electricity supply had not played a fundamental role in enhancing economic diversification in Nigeria.

The study, therefore, recommended that for Nigeria to drive economic diversification through electricity supply, the government should fix the electricity supply problem which can be achieved by short-term action to reduce technical faults through maintenance of the transmission and distribution infrastructure or long-term interventions to expand generating capacity.

Keywords: *Electricity supply, Electricity Transmission, Electricity Distribution, Economic Diversification, Autoregressive Distributed Lagged Model*

JEL Classification: Q32, Q43, Q41, O55

1. Introduction

Nigeria is a mono-economic country as it relies deeply on oil for its foreign exchange earnings. According to Tersoo (2017), agriculture used to be the leading sector of the Nigerian economy when the country became independent from Great Britain in 1960. Before the discovery of oil in 1956, Nigeria exported cocoa, cotton, rubber, palm oil, groundnut to Britain and received different products in return during this period.

Also, many factories were built in Kano, Lagos, and other cities to hire employees and produce a big number of national products such as shoes, textiles, beverages, and other

personal and household goods. The economy grew, different regions were developed and there was no issue of negative balance of payment and unemployment problems (Tersoo, 2017). However, over the years, the agricultural sector became a grey area for the Nigerian economy. The oil boom in the 1970's changed everything and Nigeria became independent on oil and focused less on agriculture. This led to the abandonment of other sectors of the economy like exploitation of abundant solid minerals, agriculture, manufacturing industries and service industries, which could have become alternative national income for the nation (Tersoo, 2017).

According to CIA World Factbook, (2018) the Nigerian oil-based economy stumbled due to insecurity and pervasive corruption, inconsistent regulatory environment, delay in legislative reforms, inefficient property registration system, inadequate infrastructure and most of all inadequate power supply. This opened the nation to economic instability resulting from the eccentricity of international oil markets, gross unemployment, poverty, and a docile political leadership that is indifferent in articulating and embarking on viable economic policies (Anyaehe & Areji, 2015). Moreover, oil depletion presents a threat to Nigeria's economic growth and development, which has spurred on the urgent need for economic diversification to be realized in the near future. Economic diversification refers to the process of broadening the types of economic activity that a country is involved in, such that it is not dependent on a single sector or resource. Through diversification, economic activity is spread more evenly across sectors (Anyaehe & Areji, 2015 and Imbs & Wacziarg, 2003). Diversification is not a simple process, especially for resource-abundant countries that have been relying heavily on a single resource for growth, and therefore important that resource-rich countries develop policies to ensure that the depletion of the resources is offset by a compensating increase in other forms of capital (Lange & Wright, 2002). Where this does not happen, countries can find themselves caught in a trap of over-specialization, leading to resource dependence. As cited in Modunguwa, (2017), he opined that countries should ensure that the revenues from extraction are reinvested to offset depletion; and ensure that alternative investments are at least as productive as the resource assets they replace, as these principles are at the core of economic diversification theory.

However, Suberu, Ajala, Akande & Olure-Bank (2015) stated that diversification does not occur on its own and therefore the need to have in place an enabling environment to make it possible becomes imperative. Anyaehe & Areji (2015) mentioned that Nigerian government has tried in the diversification of the economy but the government policies have not been effective as a result of numerous challenges such as macroeconomic orientation, poor infrastructure, weak economic institutions, poor corporate governance, poor educational orientation, endemic corruption, and insecurity. One of the possible contributors to the huge productivity gap between the developed and developing countries is low-quality infrastructures of which electricity occupies the center stage (Odell, 1965). The role of the constant power supply in the development of society or an economy cannot be overemphasized. Almost all sectors in the economy rely on electricity for their day to daily administration. The availability of electricity has a very significant role in both the production and consumption of goods and services (Ferguson, Wilkinson & Hill, 2000).

Reliable and adequate electricity supply produces a multiplier effect which will go a long way in solving the problem of poverty, unemployment and a prevalent absence of technological and structural changes that are commonly seen in many developing countries like Nigeria (Ugwoke, Dike & Elekwa, 2016).

Overreliance on the oil sector as in the case of Nigeria will hinder the nation from achieving sustainable growth and development. Eluogu (2016) opined that the fundamental problem with the Nigerian economy is its failure to diversify. He stated that it has become more compelling to Nigerian policymakers and all stakeholders that diversifying the economy is not optional but mandatory with the persistent crash in oil price and consequent hardship engendered by this over-reliance on oil. Suberu, et al (2015) explained that the Government must understand that oil does not provide an endless source of revenue as it is subject to depletion. The less we depend on oil, the better for us as a nation.

With its abundance of natural resources, mineral deposits and fertile land and - substantial human resource pool (Okogba, 2017), Nigeria is better placed to develop a well-diversified economy than any other country in West Africa. However, Tersoo, (2017) noted that the country has a big issue with developing the multi-sector economy. It is obvious that the problem is not lack of resources but the development of other sectors to become revenue streams for the country.

The attainment of economic diversification remains elusive due to the devastating nature of the Nigerian infrastructure of which electricity takes a center stage. Nigeria has recorded a great history of an unstable and inadequate electric power supply (Adenikinju, 2003). According to Ologundudu & Mojeed (2014), the electricity crisis is represented by persistent electricity blackouts and reliance on self-generating electricity with an adverse effect on the cost of production. This problem became more severe in the manufacturing sector as the number of manufacturing firms leaving the country and shutting down became more pronounced. Over 800 companies including multinationals have been estimated to have relocated all or part of their manufacturing facilities outside Nigeria where they can get access to a more reliable power supply (Adenikinju, 2003). Vanguard (2016) quoted Chief Sunny Onuesoke, who argued that it will be needless for the government to diversify if there is no solution to constant electricity supply. It is in view of these problems that this study is set to examine the impact of electricity supply on diversification of the Nigerian economy.

However, there are several existing literature on the relevance of economic diversification and how it can be achieved via other sectors of the economy especially agriculture. Hence, previous studies have failed to show the role of drivers such as electricity infrastructure in economic diversification. This study distinguishes itself from the existing literature on economic diversification by filling this gap to show the theoretical and econometric relationship between electricity supply and economy diversification.

2. Literature Review

In light of the awaken recognition of the importance of economic diversification, there has been an increase in the empirical literature on the subject. However, it was noted that the various literature that exists focused more on the options available to diversify the economy of Nigeria, such as Adams (2016) who examined Diversification of Nigeria Economy through Agricultural Production; Ajani & Kalu (2017) investigated economy

diversification as a potent tool for tourism development in Nigeria; Abasilim, Ayoola & Odeyemi (2017) examined Entrepreneurship as The Tool For Economic Diversification In Nigeria. Also, Omojolaibi & Lanre (2016) carried out a study on the relationship between infrastructural development and Economic Diversification of Urban Region in Lagos State, Nigeria.

Few studies have focused on the determinants of economic diversification such as Nwosa and Ajibola (2018) who worked on monetary policy and export diversification; Shabana & Zafar (2014) analyzed trends and factors affecting export diversification in Asean and Saarc regions, while none of these studies to the best of the researchers knowledge as at the time of conducting this study has worked on the impact of electricity supply on economic diversification in Nigeria.

Shitu (2017) examined economic diversification in recession with a focus on agriculture as a Sign Post for National Development and Sustainable Growth in Nigeria. The study adopted historical, evaluative and current issues to analyze the importance of the agricultural sector to the Nigerian economy. The study concluded that increased expenditures, savings and capital investments by government and private initiatives must be sustained in the agricultural sector. This would quicken recovery and induce increased agricultural productivity in the economy thereby leading to forward and backward integration in the economy.

Suberu, Ajala, Akande & Olure-Bank (2015) examined the diversification of Nigeria towards sustainable growth and economic development. The study made use of descriptive method of analysis and observed that considering the achievement of Nigerian economy before the oil boom, for Nigeria to break loose from the problems inherent in a mono-economy, especially one which is highly dominated by oil, and is subject to depletion, international price shocks, and unfavorable quota arrangement, there is a need for diversification. The agricultural sector is suggested as possible options for diversifying the Nigerian economy.

Nwosa & Ajibola (2018) examined the extent to which monetary policy has influenced export diversification in Nigeria for the period 1962 to 2014. The study made use of descriptive and OLS estimation techniques which revealed that monetary policy was insignificant in influencing export diversification in Nigeria. The study, however, concluded that monetary policy has not played a fundamental role in driving export diversification in Nigeria and recommended that monetary policy should be purpose driven towards the achievement of export diversification. This can be achieved by employing selective-sectorial monetary policy measures which will accelerate investment in various non-oil sectors of the economy such as the mining, manufacturing and tourism sectors.

Abasilim, et al (2017) employed descriptive analysis to examine entrepreneurship as the tool for economic diversification in Nigeria. The study concluded that poor entrepreneurship development is a major factor militating against economic diversification drive in Nigeria. The study, therefore, recommended that the government should encourage entrepreneurship development through the provision of basic social amenities and economic infrastructure that will enable the necessary productive activities. Entrepreneurs and innovators should also be encouraged through the grant of a soft loan and tax holidays.

Dimnwobi, Nwokoye, Ekesiobi and Igbanugo (2017) investigated the empirical link between transportation infrastructure and diversification of the economy in Nigeria. Descriptive demonstrations were adopted to provide a situational focus to the study, while a generalized method of moment (GMM) model was specified and estimated. However, the study revealed that economic diversification was negatively related to transportation concentration ratio. Similarly, the result suggests that transportation infrastructure is a significant factor in diversifying the sectorial output share of the country and the export base of the economy from the oil sector to the non-oil sector. The study, therefore, recommended policy to enhance the effectiveness and efficiency of the transportation infrastructure geared for rapid diversification of the economy.

Ogbonna (2017) empirically examined the relationship between private sector development and economic diversification from 1999 to 2016 using quarterly data. It employed ARDL bound testing approach in the estimation and the findings show that the level of private sector investment is a significant determinant of economic diversification both in the short- and long-run. It also shows that equally the quality of infrastructure, violent conflicts, quality of governance, and openness to market are necessary determinants of economic diversification in the short- and long-run.

Uzonwanne (2015) examined the diversification of Nigeria's economy in the face of the dwindling oil revenue. The study employed time series data on the percentage contribution of agriculture to GDP in Nigeria before it was abandoned. The information provided depicted that Nigeria's over-reliance on oil has contributed to the poor management of human capital/resources which has, in turn, resulted to the migration of many talented citizens of the country to other countries in search of better life. Furthermore, the result showed that the neglect of agriculture has led to the continuous depreciation in GDP of the country which calls for urgent diversification of the Nigerian economy. The study focused on agriculture and highlighted some recommendations in its favor which include Government should make agriculture attractive by creating a special grant solely for genuine farmers, put in place policies that will favor subsidy for agriculture, and grant scholarships to all individuals who are interested in studying agriculture in order to promote human capital amongst others.

Esu & Udonwa (2015) examined Economic Diversification and Economic Growth using Evidence from Nigeria. The researcher made use of time series data for the period of 1980 to 2011. Using the error correction mechanism (ECM), the result depicts the fact that, Nigeria could make use of her largely untapped trade potentials for sustained gains, both in the short run and long run by diversifying the economy, encouraging large-scale industrialization of the real sector of the economy, emphasizing deepening technology in every trade and investment discourse, as well as in the agricultural sector.

Anyahie & Areji (2015) also examined the impact of Economic Diversification for Sustainable Development in Nigeria from 1960 to 2009. The study employed descriptive analysis to show that Nigerian government has made so many attempts to achieve diversification of the economy but government policies have not been effective as a result of numerous difficulties which include: macroeconomic orientation, poor infrastructure, weak economic institutions, poor corporate governance, poor educational orientation, endemic corruption, and insecurity. It concluded that to achieve diversification, Nigeria has to surmount challenges that prevent her economic diversification to reposition her on the path of increased output potential.

3. Theoretical Framework and Model Specification

Economic diversification is an all-encompassing term that can materialize in two forms; export diversification or product diversification. Export diversification refers to diversification in the external sector (Papageorgiou & Spatafora, 2012). On the other hand, product diversification consists of changes in the structure of production of domestic goods and services. Another form of diversification to be considered is product-quality upgrading. As the name suggests, this involves making improvements on existing products towards increased diversification (Papageorgiou & Spatafora, 2012).

According to the United Nations (2016), there is neither a common definition of diversification nor metrics to measure it. Majority of the theories used to measure the level of economic diversification connects it to levels of employment, exports or income. Economic diversification can be measured as the share of sectors in GDP, the share of sectors in exports (export concentration), the dependence of a country on the export of a good or commodity, and the employment share of sectors. The measurement of export concentration is however considered to be a reliable proxy to measure economic diversification (United Nations 2016).

This study relied on the hypothesis of Prebisch (1950) and Singer (1950) as amended in Nwosa and Ajibola (2018). The hypothesis stressed that developing countries should increase in the variety of their exporting products because the income elasticity of demand for the primary products is low and through economic diversification, developing countries can reduce the risk of commodity shocks, the term of trade and price instabilities. Scholars such as Cooper and Brainard (1968), Carrere, Strauss-Kahn and Cadot (2007), Hesse (2008) and Nwosa and Ajibola (2018) have also laid credence to the Prebisch-Singer hypothesis, stressing that economic diversification from primary products is desirable for developing countries; and that currently diversification is a significant target for economic policy (Shabana & Zafar, 2014)

Determining the true factors of export diversification is difficult as there is no available extensive theoretical or empirical structure to catch all potential factors in the whole. To examine the relationship between electricity supply and diversification in Nigeria, the study adapted a model by Nwosa and Ajibola (2018). The model is stated as:

$$DIV = f(EG, FDI, XPT, CPS, EXT, MON) \text{-----}(1)$$

Where,

DIV = Economic Diversification index (proxy by Export diversification index)

EG = Economic growth (proxy by growth rate of real gross domestic product, RGDP)

FDI = Foreign direct investment (proxy by total FDI inflow)

XPT = Non-oil export

CPS = Credit to the private sector

EXT = Exchange rate

MON = Monetary policy rate

The econometric form of Equation (1) is stated as:

$$DIV_t = \beta_0 + \beta_1 EG_t + \beta_2 FDI_t + \beta_3 XPT_t + \beta_4 CPS_t + \beta_5 EXT + \beta_6 MON_t + \mu_t \text{-----}(2)$$

For the purpose of this study the modified model to show the relationship between electricity supply and economic diversification is stated as:

$$DIV = f(EG, FDI, XPT, CPS, INF, ER, ES) \text{-----}(3)$$

where,

INF = Inflation Rate

ER = Exchange rate

ES = Electricity Supply and other variables are as previously defined

The econometric form of Equation (3) is:

$$DIV_t = \beta_0 + \beta_1 EG_T + \beta_2 FDI_t + \beta_3 XPT_t + \beta_4 CPS_t + \beta_5 ER_t + \beta_6 INF_t + \beta_7 ES_t + \mu_t \quad (4)$$

μ_t is the stochastic error term

3.1 Methodology

The study employed descriptive analysis and Autoregressive Distributed Lag (ARDL) techniques using annual data between 1981 and 2016. This gives room for large observations required for the model estimation.

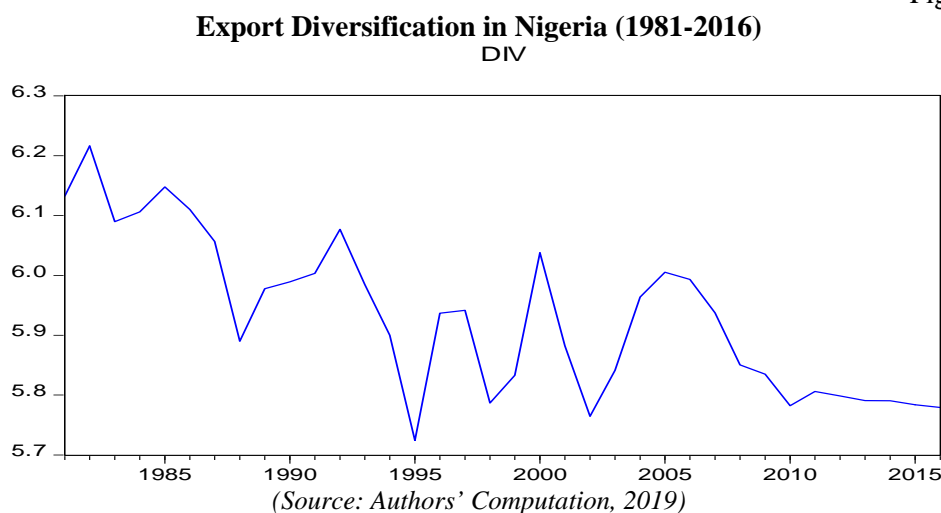
3.2 Sources of Data

Export diversification index from 1981 to 2010 is sourced from the International Monetary Fund (IMF) database while data from 2011 to 2016 was obtained using linear regression forecasting method. Also, data on electricity consumption (ES) from 1981 to 2014 is sourced from World Bank (WDI) while data from 2015 to 2016 was obtained using linear regression forecasting method. Data on non-oil export (XPT) is sourced from the National Bureau of Statistics. Data on other variables: economic growth (EG); foreign direct investment (FDI); credit to the private sector (CPS); exchange rate (ER) and inflation (INF) are sourced from the World Bank (WDI) database.

4. Results and Discussion

Trend Analysis of Export Diversification Index in Nigeria (1981-2016) Figure 1 below; present the export diversification index for Nigeria for the period 1981 to 2017. It is observed that the export diversification declined from 6.15207 in 1980 to 5.88982 in 1988 and rose to 6.07703 in 1992. Afterward, the export diversification index declined to 5.98492 and further to 5.78685 in 1993 and 1998 respectively. In 2000, the export diversification index rose at 6.0379 but decline to 5.96388 in 2004. The index for export diversification rose to 6.00521 in 2005 before declining marginally to 5.779292 in 2016.

Figure 1.



4.1 Unit Root Estimate

The unit root was conducted using the Augmented Dickey-Fuller (ADF) test and the result presented in table 2. The P-values show that the variables were integrated of different orders, that is a combination of both level- and first- difference level of stationarity.

Table 2.

Unit Root Test

AUGMENTED DICKEY-FULLER (ADF) TEST					
VARIABLES	LEVEL		FIRST DIFFERENCE		STATUS
	Stat.	Prob.	Stat.	Prob.	
DIV	-2.385693	0.1529	-6.970874	0.0000	I(1)
EG	-3.956034	0.0044	-9.540092	0.0000	I(0)
XPT	-4.522179	0.0011	-3.834455	0.0071	I(0)
ER	-1.964398	0.3005	-4.038607	0.0036	I(1)
FDI	-3.487412	0.0143	-8.126102	0.0000	I(0)
CPS	-2.724355	0.0801	-5.338533	0.0001	I(1)
INF	-13.15639	0.0000	-15.45022	0.0000	I(0)
ES	-2.316222	0.1727	-6.565333	0.0000	I(1)

(Source: Authors' Computation, 2019)

Consequently, the study proceeds to estimate the ARDL-Bounds co-integration test among the variables in equation (4) to establish a long-run relationship as proposed by Pesaran, Shin, and Smith (2001).

4.2 Bounds Cointegration Estimate

The study employed the Bounds Cointegration Test to estimate co-integration among the variables. The result of the Bounds Cointegration estimate is presented in table 3. The result shows that the F-statistics value of 3.04% is greater than all the critical value of the lower bounds, indicating cointegration. At a 10% level of significance, the F-statistics value 3.04% is greater than the critical value of the upper bounds 2.89%, which also implies cointegration. However, the F-statistics value 3.04% is lesser than the critical value of the upper bounds 3.9% at 1% level of significance and 3.21% at 5% level of significance, which indicates no cointegration. This study, therefore, concludes that the test for the long-run relationship among the variables is inconclusive according to Pesaran, Shin, and Smith (2001). The study consequently proceeds to estimate the Short-run Model, which is the Autoregressive Distributed Lag (ARDL) model.

Table 3.

Summary of the Co-Integration Estimate

F-Bounds Test				
Null Hypothesis: No Levels Relationship				
Test Statistics	Value	Signif.	I(0)	I(1)
F-statistics	3.035555	10%	1.92	2.89
K	7	5%	2.17	3.21
		1%	2.73	3.9

(Source: Authors' Computation, 2019)

4.3 Autoregressive Distributed Lag (ARDL) Model

The result of the Autoregressive Distributed Lag (ARDL) estimate is presented in table 4 below. The estimate showed a negative but significant relationship between diversification (LDIV) and Non-oil Export (LXPT). It also showed a negative insignificant relationship between Diversification (LDIV) and Electricity Supply (LES). Diversification (LDIV) has a negative insignificant relationship with Economic Growth (LEG), Exchange rate (LER), Foreign Direct Investment (LFDI), Credit to the private sector (LCPS), and inflation (LINF). However, a positive but insignificant relationship exists between diversification (LDIV) and Electricity Supply (LES).

The coefficient of determination (R^2) of the model is 59.58% indicating that independent variables explained about 60% of total variation in economic diversification in Nigeria. The Probability of F-statistic (0.000282; $P < 0.05$) showed that the whole model is well specified.

Table 4.

Autoregressive Distributed Lag (ARDL) Estimate

Dependent Variable	Regressors	Estimated coefficients	Standard Error	t-Statistics	Prob.
Div	C	4.295821	0.938948	4.575144	0.0001
	Les	0.002216	0.001106	2.003041	0.0566
	Leg	-0.001107	0.003790	-0.292129	0.7727
	Lxpt	-0.000287	9.13E-05	-3.140028	0.0044
	Ler	-2.25E-06	0.000176	-0.012820	0.9899
	Lfdi	-0.000336	0.007968	-0.042172	0.9667
	Lcps	-0.001546	0.002497	-0.619104	0.5417
	Linf	-0.001165	0.001426	-0.816587	0.4222
$R^2 = 0.595774$ F-Stat (Prob.) = 0.000282 Adjusted $R^2 = 0.494717$					

(Source: Authors' Computation, 2019)

4.4 Serial Correlation Test

The result of the serial correlation test is presented in table 5 below. The F value for serial correlation test is 73% > 5% level of significance. This implies that the model is void of serial correlation.

Table 5.

Serial Correlation Test	
Breusch-Godfrey Serial Correlation LM Test: Null Hypothesis: No serial Correlation at up to 1 lag	
F-statistic 0.113863	Prob. F(1,27) 0.7388
Obs *R-squared 0.172417	Prob. Chi-Square(1) 0.6780

(Source: Authors' Computation, 2019)

4.5 Stability Test

Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMsq) were conducted to evaluate the robustness of the ARDL Model.

The stability tests showed that the model is adequately specified and that the parameters of the models did not suffer from any structural instability over the period of study. This is because the plots of both the CUSUM and CUSUMSQ are within the bounded line of five percent significant level as seen on figures 2 and 3.

Figure 2.

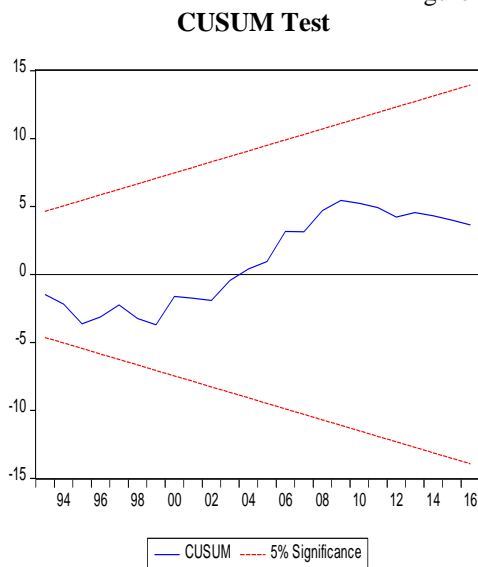
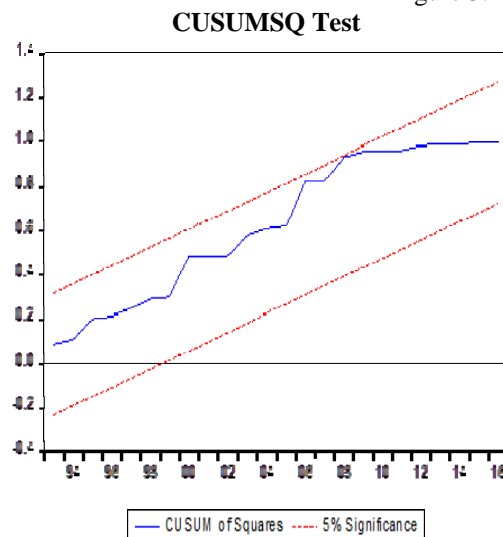


Figure 3.



(Source: Authors' Computation, 2019)

5. Conclusion and recommendations

The current macroeconomic problems facing the Nigerian economy which is caused mainly by the international decline in oil price has prompted the need to diversify the economy. Therefore, this study empirically examined the impact of electricity supply on economic diversification in Nigeria for the period 1981 to 2016. Time series data were presented and analyzed through the Augmented Dickey-Fuller (ADF) unit root test, ARDL-Bounds co-integration test, and its implied Regression estimate.

The ARDL-Bounds co-integration estimate depicted that there is no long-run relationship among the variables. From the regression estimate, the study concluded that

electricity supply has not played a direct fundamental role in enhancing export diversification in Nigeria and without fixing the problems associated with the supply and distribution of electricity in Nigeria; driving the economy from a mono-economy to a multi-economy through economic diversification may not be achieved to a desired threshold.

5.1 Policy recommendations

There have been various attempts to rectify the poor state of electricity in the Nigerian economy but unfortunately, such attempts are not bringing what is expected. This study, however, recommends that the state of electricity production and level of economic activities need urgent attention in the country at the moment. As a way of facilitating the economic diversification, it is recommended that issues relating to electricity supply and economic diversification should be given serious attention especially in the budget scheme and as a result of this; electricity sector should be allocated a huge amount of resources such that the state of electricity sector would be fixed permanently in a good shape in other for it to drive compound diversification of the economy and take Nigeria to the promised land. The best area for action is to improve supply and distribution of electricity, which needs to be measured and monitored continuously in other to determine its productivity and guide policymakers in making decisions regarding the supply and distribution of electricity across the country.

This, however, may need short-term action to reduce technical faults, for example, through maintenance of the transmission and distribution infrastructure, or it may require longer-term interventions to expand generating capacity. In addition, the federal government should review and also support the initiative of the independent power project, as proposed by some states in Nigeria.

Reference

- Abasilim, A. N., Ayoola, A. O., Odeyemi, O. A. (2017) “*Entrepreneurship: The Tool for Economic Diversification in Nigeria*”. FUTA Journal of Management and Technology, vol 2, no. 1: p. 104-112.
- Adams, O.K. (2016) “*Diversification of Nigeria Economy through Agricultural Production*”. Journal of Economics and Finance, vol. 7, no. 6: p. 104-107.
- Adenikinju, A. F. (2003) “*Electric infrastructure failures in Nigeria: a survey-based analysis of the costs and adjustment responses*”. Journal of Energy Policy, vol. 31, no. 14, p. 1519–1530.
- Ajani, F., Kalu, J. E. (2017) “*Economy Diversification: A Potent Tool for Tourism Development in Nigeria*”. International Journal of Science and Technology, vol. 6, no. 2: p. 94-114
- Anyaehe, M. C., Areji, A. C. (2015) “*Economic Diversification for Sustainable Development in Nigeria*”. Open Journal of Political Science, vol. 5, no. 1: p. 87-94.
- CIA World Factbook (2018) Retrieved from <http://www.cia.gov/library/publications/the-world-factbook/fields/2116.html>.
- Dimnwobi, S.K., Nwokoye, E.S., Ekesiobi, C.S., Igbanugo C.I. (2018) “*Transportation Infrastructure and Diversification of Nigeria’s Economy: Implications for the*

- Developmental State*". The Nigerian Journal of Economic and Social Studies, vol. 59, no. 3: p. 309-330.
- Eluogu, O. (2016). Diversifying the Nigerian economy. Retrieved from <https://www.thecable.ng/diversifying-nigerian-economy>
- Esu, G.E., Udonwa, U. (2015) "*Economic diversification and economic growth: Evidence from Nigeria*". Journal of Economic and Sustainable Development, vol. 6, no. 16: p. 56-63
- Ferguson, R. Wilkinson, W., Hill, R. (2000) "*Electricity use and economic development*". Journal of Energy Policy, vol. 28, no. 13: p. 923-934.
- Imbs, J., Wacziarg, R. (2003) "*Stages of Diversification*". American Economic Association, vol. 93, no. 1: p. 63 – 86.
- Nwosa P.I., Ajibola A. A. (2018) "*Monetary Policy and Export Diversification in Nigeria*". Valahian Journal of Economic Studies, vol. 9, no. 1: p. 17-28. DOI 10.2478/vjes-2018-0002
- Odell P.R. (1965) "*The demand for energy in a developing region. A case study of the upper Anca valley in Columbia*", Journal of Developing studies, vol. 4, no. 1: p. 115-138.
- Ogbonna. N. (2017) "Economic diversification: Understanding it within the Nigerian context- Part 1. Retrieved from <https://ogbonnanwamaka.com/2017/03/20/economic-diversification-understanding-it-within-the-nigerian-context-part-1/>
- Okogba E. (2017) *Economic diversification and entrepreneurial revolution*. Accessed at <https://www.vanguardngr.com/2017/07/economic-diversification-entrepreneurial-revolution-6/>
- Ologundudu M. M. (2014) "*The Epileptic Nature of Electricity Supply and its Consequences on Industrial and Economic Performance in Nigeria*". Journal of General Engineering, vol. 14, no. 4: p. 26-39
- Omojolaibi, J.A, Lanre, I.R. (2016). "*Infrastructure Development and Economic Diversification of Urban Region: Policy Implications from Lagos State*". Conference of the Nigerian Economic Society (NES) on Developmental State and Diversification of the Nigerian Economy. NICON Luxury Hotel, ABUJA, September 26th - 29th, 2016.
- Papageorgiou, C., Spatafora, N. (2012) "*Economic Diversification in LICs: Stylized Facts and Macroeconomic Implications*". International Monetary Fund (IMF) Staff Discussion Note SND/12/13.
- Presbish, R. (1950) "*The Economic Development of Latin America and its Principal Problems*". United Nations, New-York.
- Shabana, N., Zafar, M. (2014) "*Trends and Factors Affecting Export Diversification In Asean And Saarc Regions: An Empirical Analysis*". S3H Working Paper Series.
- Singer, H.W. (1950) "*The distribution of Trade between Investing and Borrowing Countries*". American Economic Review, vol. 40, p. 531- 548
- Suberu O. J., Ajala O. A., Akande M. O., Olure-Bank A. (2015) "*Diversification of the Nigerian Economy towards a Sustainable Growth and Economic Development*". International Journal of Economics, Finance and Management Sciences, vol. 3, no. (2): p. 107-114.

- Tersoo, A. (2018): The need for diversification of the Nigerian economy. <https://www.naija.ng/1144815-the-diversification-nigerianeconomy.html#1144815>
- Ugwoke, T., Dike, C., Elekwa, P (2016) “*Electricity Consumption and Industrial Production in Nigeria*”. *Journal of Policy and Development Studies*, vol. 10, no. 2:
- UNITED NATIONS (2016) “*The concept of economic diversification in the context of response measures*”. Framework Convention on Climate Change.
- Uzonwanne, M.C. (2015) “*Economic diversification in Nigeria in the face of dwindling oil revenue*” *Journal of Economics and Sustainable Development*, vol. 6, no 4
- Vanguard News (2017) “*Regular power supply; panacea to economic diversification*”. By Onuesoke. Retrieved from <https://www.vanguardngr.com/2016/12/regular-power-supply-panacea-economic-diversification-onuesoke/amp/>