

Impact of Export Diversification on Economic Growth in Nigeria

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Abstract

The main objective of this study is to examine the impact of export diversification on economic growth in Nigeria. Annual time series data on GDP per capita, Theil export diversification index, gross fixed capital formation (for domestic investment), exchange rate and openness of the economy were the variables collected for the analysis for the period 1980-2017. Dummy variable for democracy was also constructed to test for the impact of governance on economic growth in Nigeria. To estimate the data, Autoregressive Distributed lag model, applying bounds test was adopted. The empirical results show that export diversification has positive but insignificant impact on economic growth in Nigeria both in the short run and long run. Similarly, domestic investment has positive impact on economic growth both in the short run and long run. However, its impact is significant only in the short run. Exchange rate has negative impact on economic growth in the short run but its impact in the long run is positive, showing instability in the exchange rate movements in Nigeria. Openness of the economy has negative impact on economic growth both in the short run and long run. However, its impact is significant only in the long run. Democracy dummy has positive but insignificant impact on economic growth both in the short run and long run. Based on the findings, it is recommended that the earnings from the oil sector should be channeled to the development of non-oil sectors such as agriculture and manufacturing in order to diversify the export base of the economy.

Key words: GDP per capita, Export diversification, openness of the economy, Domestic investment, ARDL.

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1. INTRODUCTION

In the early 1950s, before the discovery of oil in commercial quantities, agriculture was the mainstay of the Nigerian economy, contributing more than 70 per cent of the country's export earnings. With the discovery of oil in commercial quantities in 1956 and the subsequent commencement of its production in 1958, the emphasis shifted from agricultural sector to the oil sector for the foreign exchange earnings. The country's excessive reliance on earnings from the oil sector and the failed attempts to achieve any meaningful economic diversification led to poor economic performance of the country (Suberu, Ajala, Akande & Adeyinka, 2015). However, the decline in the earnings from the oil exports in the 1980s and the loss of market share in the non-oil trade globally saw the need for promotion of the non-oil export sector of the economy.

Hence, since the beginning of trade liberalisation in 1980s, Nigeria has continued to

promote export growth strategy in order to prevent deterioration of the economic performance of the country. This is because export of goods and services represent one of the most important sources of foreign exchange earnings that can ease the pressure on balance of payments and invariably create employment opportunities in the country. For instance, in 1982, Nigeria under the civilian regime in power implemented restrictive trade policy when the Economic stabilization Act was introduced. This policy resulted to increases in tariffs on certain commodities and more stringent foreign exchange regulations. With the introduction of structural adjustment programme (SAP) in 1986, efforts were geared towards shifting away from total dependence on oil sector to the diversification of non-oil sector of the economy. This policy is being sustained by the current democratic government in Nigeria, which was ushered in since 1999 to date.

Export diversification is seen as a good strategy that will enable low income countries (which

Nigeria is among) to record greater earnings from external trade, thereby advancing their economic progress (Sannasee, Seetanah & Lamport. 2014). It is against this background that this study is being carried out.

The study seeks to provide answers to the following research questions

- i. What is the impact of export diversification on economic growth in Nigeria?
- ii. How has the democratic governance in Nigeria influenced export diversification towards achieving economic growth in Nigeria?

To provide answers to the above research questions, the objectives of the study include:

- i. To analyse the impact of export diversification on economic growth in Nigeria; and
- ii. Examine how democratic governance, which Nigeria is operating since 1999 to date has influenced export diversification towards achieving economic growth in the country,

This study is divided into five sections. Section one is the introductory section. Section two focuses on the literature review, which includes the theoretical issues and empirical literature. Section three presents the methodology while section four is on the presentation and discussion of the results, section five, which is the last section, presents the summary of the findings, conclusion and the recommendations.

The period of study is 1981 – 2017. The choice of the period is guided by data availability on IMF export diversification index for Nigeria.

1.1 LITERATURE REVIEW

1.1.1 Conceptual Issues

1.1.2 Concept of export diversification

Doki and Tykokohol (2019) define export diversification as the expansion of exports to new products or new markets (extension margin), as well as having balanced mix of existing products (intensive margin). This definition is in line with the various definitions given by IMF (2014), Siope, Spence, Mevel and Karingi (2012) and Amurgo-Pacheco and Pierolu (2007).

In trade literature, two types of diversification that are common include horizontal and vertical diversifications. Horizontal diversification entails alteration of primary export mix in order to neutralize the volatility of global commodity price. Vertical diversification, on the other hand, entails contriving further uses for existing and new innovative commodities by means of value-added ventures such as processing and marketing.

According to Prebisch – Singer (1950) thesis, vertical diversification can reduce declining terms of trade for commodity-dependent countries. It is expected that vertical diversification can augment market prospects for raw materials that may complement economic growth. This, in turn, will lead to further stability as the processed commodities tend to have stable prices than raw materials.

Nigeria, which depends on export of primary commodities, suffers from export instability arising from inelastic and unstable global demand. This makes export diversification for the country necessary since according to Ghosh and Ostry (1994), Bleaney and Greenaway (2001), diversification of export can help to stabilize export earnings in the long run.

1.1.3 Common measures of export diversification

Although there are many indices that are used to measure the degree of export diversification, this study discusses the two indices that are commonly used namely, Hirschman-Herfindahl index and IMF Theil index. The Hirschman-Herfindahl index is a measure of export diversification which takes values between 0 and 1. In this measure, a country with a perfectly diversified export portfolio will have a value of 0 while a country with an absolute degree of concentration will have a value of 1. Since the inverse of the index is usually used, higher values indicate higher degrees of diversification and vice versa.

International Monetary Fund (IMF, 2014) adopted a modified version of Theil index to measure the degree of trade/export diversification of countries. The IMF Theil index is composed of two components namely: the extensive and intensive margins. This index is “negative entropy” in the sense that it gets smaller as the disorder gets larger. Hence, it is a measure of order rather than disorder. This implies that the smaller the value of the index, the greater the degree of diversification and vice versa. This index is always positive. This study uses this index in the measurement of export diversification.

1.2 Theoretical Literature

Yokoyama and Alemu (2009) view export diversification as a means of widening a country's comparative advantage. In this regard, three main theoretical arguments in explaining the possible reasons why export diversification may positively affect economic growth are presented. They are the traditional argument, the endogenous growth theory and the structural model of economic development.

The traditional argument holds that Less Developed Countries (LDCs) are exporters of limited number of primary products which are highly vulnerable to international market demand. This leads to instability in export earnings. Therefore export diversification can help to stabilize export earnings in

the longer run (Ghosh & Ostry, 1994; Bleaney & Greenaway, 2001).

Endogenous growth model such as Matsuyama (1992) emphasizes the importance of learning-by-doing in the manufacturing sector for sustained growth. In this vein, there could be knowledge spillover from new techniques of production, new management, or marketing practices, potentially benefitting other industries. From the perspective of endogenous growth theory, export diversification is considered to widen the comparative advantage of developing countries from a few primary production sectors to a higher value production sectors. This may obviously result in better allocation of productive resources. The argument in this regard is that through backward and forward linkages, new industries will be created through diversification of the production structure. In a related argument, Agosin (2007) developed a model of export diversification and growth where countries below the technological frontier widen their comparative advantage by imitating and adapting existing products.

The structural model of economic development argues that in order to attain meaningful sustainable growth, export diversification policies should be targeted at moving away from primary commodities towards manufactured goods. This, according to Chenery (1979) and Syrquin (1989), is likely to generate backward and forward linkages which are capable of creating new industries and expanding existing ones. According to this model, vertical export diversification possesses greater ability to impact on growth as compared to horizontal export diversification. Therefore, the model suggests that the content rather than the number of products in a country's export basket is very essential to its economic growth.

Although various arguments and theories through which export diversification stimulates economic growth have been presented, the impact of export diversification on economic growth remains an empirical issue.

2.3 Empirical Literature

Many empirical works involving cross country and country-specific studies have been conducted at both international and national levels. Al-Marhubi (2000), in a cross country study, includes various measures of export concentration to the basic growth equation. The finding shows that export diversification promotes economic growth.

In a cross country study on stages of diversification, Imbs and Wacziarg (2003) used production and labour data to investigate the relationship between sectoral diversification and per capita income pattern across various countries. The empirical result reveals that the relationship follows an inverted U-Curve pattern. The important issue raised by

the study arises from non-linearity between export diversification and economic growth and the question whether export diversification is still beneficial to High Income Countries (HICs) or not.

In line with the finding by Imbs and Wacziarg (2003), Kelinger and Lederman (2004), using disaggregated export data, found that overall diversification increases at low level of development but declines as the country matures beyond a middle-income point. Hence the study confirms that the inverted U-curve relationship between export diversification and economic growth is actually true.

Another study that confirms inverted U-Curve relationship between export diversification and economic growth was carried out by Cadot, Carrere and Strauss-Kahn (2011). In their study, they derived and revisited a decomposition of Theil's concentration index into the extensive and intensive (new products or new markets) margins of export diversification. To analyze how the two margins evolve as a function of GDP per capita, they constructed a data base covering 156 countries (both developed and developing). Their empirical result also confirms hump-shaped (inverted U-Curve) relationship between economic development and export diversification.

Contrary to the above findings, some studies could not confirm the existence of the inverted U-Curve relationship between export diversification and economic growth. For instance, Kaulich (2012) using data from UNIDO data base on 116 countries which include the UK, US, Germany, Nigeria, Algeria, Mali, Burundi, etc find, from the regression analysis a positive relationship between export diversification and economic growth. The study reveals that the evidence about the occurrence of a negative relationship between export diversification and economic growth at higher level of income per capita was inconclusive.

Besides the cross country studies reviewed above, country specific studies that contradict the inverted U-Curve relationship between export diversification and economic growth have equally been conducted. For instance, Arip, Yee and Abudulkarim (2010) analysed the long-term relationship between export diversification and economic growth in Malaysia for the period 1980 – 2007. The empirical result of the study shows that export diversification has a positive effect on economic growth of Malaysia.

In another study with similar outcome, Sannasee, Seetanah and Lamport (2014) employed the vector cointegration method to analyse exports diversification and economic growth in Mauritius. Adopting the inverse of Herfindahl index as a measure of diversification and real GDP per capita as the measure of economic growth, they found that a positive

relationship between export diversification and economic growth exists.

In line with the above finding of Sinnassee *et al.* (2014), Mudenda, Choga and Chigamba (2014) analysed the role of export diversification on economic growth in South Africa for the period 1980 – 2011. Applying the Vector Error Correction (VEC) model in the estimation of the data, the results show that export diversification and trade openness have positive relationship with economic growth. On the other hand, real exchange rate, capital formation and human capital variables have negative long run relationship with economic growth. However, the study did not use diversification index which is a more direct measure of export diversification.

In a similar study, Esu and Udonwa (2015) examined economic diversification and economic growth in Nigeria. The study employed Error Correction Model (ECM) to find out the extent to which Nigeria could gain from diversifying the economy. The empirical result indicates that diversification has a positive effect on the economy.

Doki and Tyokohol (2019) examined the relationship between export diversification and economic growth in Nigeria for the period 1981 – 2016. The study used Theil export diversification index and GDP per capita (as a measure of economic growth). Applying the technique of Autoregressive Distributed Lag (ARDL) bounds testing procedure in the estimation, the empirical result shows that export diversification has positive, though insignificant, effect on economic growth in Nigeria both in the short run and long run.

Another recent study which confirms positive relationship between export diversification and economic growth was conducted by Amoro (2020). In the study, Amoro (2020) analysed the relationship between export diversification and economic growth for 15 countries of EOWAS states for the period 2005 – 2015. Using the dynamic panel data estimation method, the result show that export diversification has positive impact on economic growth in ECOWAS states sampled. However, the link between export diversification and economic growth is non-monotonic, which implies that countries in ECOWAS can intensify export diversification in certain point at critical concentration export value of 0.52 level. At this level, income starts to fall with export diversification portfolio.

2.4 GAP IN LITERATURE

The empirical studies on the nexus between export diversification and economic growth reviewed above present mixed results. Some studies indicate that the relationship follows a U-Curve pattern (Imbs & Wacziarg, 2003; Klinger & Lederman 2004; Cadot *et*

al., 2011). Other studies, on the other hand, indicate that a positive relationship between export diversification and economic growth exists (Kaulich, 2012; Arip *et al.*, 2010; Sinnassee *et al.*, 2014; Mudenda *et al.*, 2014; Doki & Tyokohol, 2019; Amoro, 2020).

This study includes democracy dummy in the export diversification – growth equation. This is to find out the impact of democratic governance which Nigeria is running from 1999 to date on export diversification towards achieving growth of the economy.

2. METHODOLOGY

This study adopted Autoregressive Distributed Lag (ARDL) model, applying bounds test in estimating the data set. The choice of this model is guided by the fact it is applied when the variables have mixed order of integration, that is, I(0) and I(1) (Pesaran, Shin & Smith, 2001). Most importantly, the model has the advantage of generating the short run and long run results simultaneously.

2.1 Theoretical Framework

This study adopted the Prebisch-Singer (1950) thesis as theoretical framework. They argue that the traditional view of specialization in exportation of products would do little to raise the prospects of developing economies. According to them, if developing countries specialize in exporting raw materials and importing manufactured products from developed countries, it mainly raises their dependence on consumer and manufactured commodities from developed countries. Since the demand for primary products from developing countries is income elastic, diversifying their export will therefore reduce the risk of commodity price shocks, instability and terms of trade.

The Prebisch (1950) and Singer (1950) thesis has continued to be relevant to the developing countries in general and Nigeria in particular (Iyoboyi, 2019).

2.2 Model Specification

This study adopted the model by Doki and Tyokohol (2019) in a study on export diversification and economic growth in Nigeria with modification. The present model includes dummy variable for democracy which Nigeria is operating since 1999.

The long run relationship between GDP per capita (the dependent variable) and the independence variables is specified below

$$LGDPC_t = \beta_0 + \beta_1 EXDI_t + \beta_2 LGFCF_t + \beta_3 EXCR_t + \beta_4 OPEN_t + \beta_5 DEMO_t + \mu_t \quad (1)$$

GDP and GFCF are in logarithm (L) to ensure uniformity of measurement

2.3 Variable description and sources

Table-1: List of variables, their definitions and sources

Variable	Definition	Sources
GDPC	Gross Domestic Product Per Capita	World Development Indicator (WDI)
EXDI	Export Diversification Index (Expressed in Inverse form)	WDI
GFCF	Gross Fixed Capital Formation (Proxy for domestic Investment)	Central Bank of Nigeria (CBN) Statistical Bulletin
EXCR	Naira per Dollar(₦/\$) exchange rate	CBN Statistical Bulletin
OPEN	Degree of openness (Export + Import/GDP)	CBN Statistical Bulletin
DEMO	Democracy which measures institution or governance. Demo = 0 from 1981 – 1998 and = 1 from 1999 - 2017	Constructed by the author

From equation (1) above, β_0 is the constant intercept, $\beta_1 - \beta_5$ are the coefficients of the variables respectively, μ is the error term and t is the period.

2.4 Economic a Priori of the Variables

The coefficients of all the variables ($\beta_1 - \beta_5$) are expected to be positive. That is, GDP per capita, export diversification index, domestic investment, exchange rate as well as democracy dummy are expected to have positive impact on GDP per capita.

2.5 Estimation Techniques

To avoid the problem of superior regression that is associated with time series data, Augmented Dickey and Fuller (1979) and Philips and Perron (1988) unit root tests were conducted. These tests were conducted before the application of ARDL approach to cointegration. This is to ensure that none of the variables is integrated into order two, $I(2)$, which is the condition for the application of ARDL model.

Following Pesaran *et al.* (2001), the ARDL format of equation (1) becomes:

$$\text{LGDP}C_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta \text{LGDP}C_{t-i} + \sum_{i=1}^p \beta_2 \text{CEXDI}_{t-i} + \sum_{i=1}^p \beta_3 \Delta \text{LGFCF}_{t-i} + \sum_{i=1}^p \beta_4 \Delta \text{EXCR}_{t-i} + \sum_{i=1}^p \beta_5 \Delta \text{OPEN}_{t-i} + \sum_{i=1}^p \beta_6 \Delta \text{DEMO}_{t-i} + \lambda_1 \text{LGDP}C_t + \lambda_2 \text{EXDI}_t + \lambda_3 \text{LGFCF}_t + \lambda_4 \text{EXCR}_t + \lambda_5 \text{OPEN}_t + \lambda_6 \text{DEMO}_t + \epsilon_t \quad (2)$$

Where t is the period, Δ is the first difference operator, β_0 is the constant, $\beta_1 - \beta_6$, with summation signs (\sum s), represent the short term coefficients, $\lambda_1 - \lambda_6$ represent the long term coefficients respectively. P_s are the optimum lags order selected by Akaike information criteria, ϵ is the error term that satisfies the stochastic assumptions of OLS.

When cointegration between the dependent variable and the independent variables exists, the error correction model (ECM), which measures the short term dynamics or adjustment of cointegrated variables towards their equilibrium values is estimated. The general error correction representation of equation (2) becomes:

$$\text{LGDP}C_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta \text{LGDP}C_{t-i} + \sum_{i=1}^p \beta_2 \Delta \text{EXDI}_{t-i} + \sum_{i=1}^p \beta_3 \Delta \text{LGFCF}_{t-i} + \sum_{i=1}^p \beta_4 \Delta \text{EXCR}_{t-i} + \sum_{i=1}^p \beta_5 \Delta \text{OPEN}_{t-i} + \sum_{i=1}^p \beta_6 \Delta \text{DEMO}_{t-i} + \theta \text{ECM}_{t-1} + \epsilon_t \quad (3)$$

For a stable system, the coefficient of ECM (θ) is expected to be fractional, negative and significant.

To test for the existence of cointegration among the variables, the null hypothesis of no cointegration among the variables defined by:

Ho: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = 0$ is tested against the alternative

Hi: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 \neq 0$

The F statistic used for the bounds test has two sets of critical values; one set assumes that all variables are of order $I(0)$ while the other set assumes that they are $I(1)$. If the computed F-statistic falls above the upper critical values, which corresponds to $I(1)$, the null hypothesis of no cointegration is rejected. If it falls below the lower bound, which corresponds to $I(0)$, the null hypothesis is not rejected. If it falls between the two bounds, the result is inconclusive.

The order of lag was selected by Akaike information criteria.

2.6 Post Estimation Tests

The post estimation tests conducted for the robustness of the model include, Jarque –Bera for normality test, Breusch-Godfrey LM test for serial correlation, Breusch-Pagan-Godfrey test for heteroscedasticity and Ramsey Reset test for model specification.

4. PRESENTATION AND DISCUSSION OF RESULTS

In this section, the empirical results of descriptive statistics, unit root tests, ARDL bounds test and ARDL short run and long run results are presented and discussed.

4.1. Descriptive Statistics

Table 2 below presents the result of descriptive statistics

Table-2: Result of descriptive statistics

Variables	Mean	Median	Standard deviation	Skewness	Kurtosis	observation
LGDP	7.435	7.323	0.235	0.590	1.771	37
EXDI	0.169	0.168	0.011	-2.504	15.949	37
LGFCF	5.832	5.493	2.504	0.142	1.750	37
EXCR	82.786	92.693	80.406	0.714	2.868	37
OPEN	30.318	31.810	12.777	-0.063	2.321	37
DEMO	0.514	1.000	0.507	-0.054	1.003	37

Source: Author's computation from E-view 9.

The result of descriptive statistics shows that exchange rate (EXCR) has the highest mean of 82.786. This is followed by openness of the economy (OPEN), which has the mean of 30.318, GDP per capita (LGDP) with the mean of 7.435 and domestic investment (LGFCF), which has the mean of 5.832. Export diversification index has the least mean of 0.169. With respect to the standard deviation, which measures the dispersion of the variables from the mean, exchange rate is more variable with the standard deviation of 80.406. This shows instability in Naira (₦) per Dollar (\$) exchange rate over the period covered by the study. Export diversification again has the least standard deviation of 0.011 and hence, less variable than all other variables. In terms of the skewness,

export diversification, openness and democracy dummy are negatively-skewed. This implies that they are falling more than other variables used in the estimation. On the other hand, other variables (GDP per capita, gross domestic investment and exchange rate) are positively-skewed.

4.2. Unite Root Tests

To avoid the problem of spurious regression result, which is associated with time series data, unit root tests were conducted. Augmented Dickey and Fuller (ADF, 1979) and Phillips and Perron (PP, 1988) were adopted for these tests. The results of ADF and PP unit root tests are presented in Tables 3 and 4 below.

Table-3: Result of ADF and PP unit root tests @ level

Variables	ADF @ level		PP @ level	
	Intercept	With trend	Intercept	With trend
LGDP	-0.854396(0.7903)	-1.492537(0.8125)	-0.914951(0.9302)	-3.149389(0.1108)
EXDI	-4.220942(0.0021)*	-4.667717(0.0033)*	-4.222014(0.0021)*	-4.665352(0.0034)*
LGFCF	0.565851(0.9867)	-3.646705(0.0397)**	0.481975(0.9837)	-3.646705(0.0397)**
EXCR	2.238119(0.9999)	-1.213744(0.8920)	1.834026(0.9996)	-0.182718(0.9910)
OPEN	-2.327740(0.1691)	-2.189409(0.4808)	-2.121828(0.2377)	-2.007236(0.5778)

Source: Author's computation from E-view 9.

Note: The figures in parentheses are the probability values of the variables respectively.

*and ** imply significant @ 1% and 5% respectively.

The results of both ADF and PP unit root tests in Table 3 above show that export diversification index and domestic investment are stationary at level. In other words, they are I(0) process, which implies that they do not contain unit root. On the other hand, GDP per

capital (which measures economic growth), exchange rate and openness of the economy are not stationary at level. This implies that they contain unit root. Hence, they were differenced in order to achieve stationarity as presented in Table 4.

Table-4: Results of ADF and PP unit root tests @ first difference.

Variables	ADF @ First Difference		PP @ First Difference	
	Intercept	With trend	Intercept	With trend
LGDP	-3.766282(0.0071)*	-3.680175(0.0372)**	-3.766282(0.0071)*	-3.680175(0.0372)**
EXCR	-3.303326(0.0223)**	-3.803112(0.0283)**	-3.303326(0.0223)**	-3.797297(0.0286)**
OPEN	-7.907521(0.0000)*	-5.482671(0.0005)*	-8.578337(0.0000)*	-17.63941(0.0000)*

Source: Authors computation from E-view 9.

Note: The figures in parentheses are the probability values of the variables respectively.

*and ** imply significant @ 1% and 5% respectively.

The results of unit root tests at level in Table 4 above show that GDP per capita, exchange rate and openness of the economy are stationary at first difference. This means that they are I (1) process, implying that they contain unit root. The presence of unit root in some of the variables necessitates further investigation on the nature of the long run relationship among the variables. Therefore, the next step is to test for cointegration among the variables.

4.3. Cointegration Test

The unit root tests conducted above show that the variables have mixed order of integration; some are I (0), while others are I (1)]. In this case, Autoregressive Distributed lag (ARDL) model, applying bounds tests, was adopted to test for cointegration between the dependent variable (GDP per capita) and independent variables (Export diversification index, domestic investment, exchange rate, openness of the economy and democracy). The result of ARDL bounds test is presented in Table 5.

Table-5: Result of ARDL bounds test.

ARDL Bounds Test		
Date: 07/31/21 Time: 21:56		
Sample: 1983 2017		
Included observations: 35		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	4.355474	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Author's computation from E-view 9.

To conduct the bounds test, optimal lag length based on Akaike information criteria was selected. The optimal lag order selected is 2 and the selected model is ARDL (1, 0, 1, 2, 2, and 0). The result of the bounds test shows that the value of F statistic is 4.355474. Since this value is higher than the upper bound, I (1) at 5 per cent level of significance, which is 3.79, the null hypothesis of no cointegration is rejected. This means that there is long run relationship between economic

growth and independent variables. The existence of cointegration necessitates further tests for the short run and long run impact of export diversification and other independent variables on economic growth in Nigeria for the period 1981-2017 (covered by the study).

4.4. Presentation of ARDL short run and long run results

Table-6: ARDL short run and long run results.

ARDL Cointegrating And Long Run Form				
Dependent Variable: LGDPC				
Selected Model: ARDL(1, 0, 1, 2, 2, 0)				
Date: 07/31/21 Time: 21:59				
Sample: 1981 2017				
Included observations: 35				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXDI)	0.819991	0.669693	1.224429	0.2332
D(LGFCF)	0.080732	0.024964	3.233983	0.0037
D(EXCR)	-0.000638	0.000412	-1.547421	0.1354
D(EXCR(-1))	-0.001254	0.000506	-2.479622	0.0209
D(OPEN)	-0.000740	0.000788	-0.938777	0.3576
D(OPEN(-1))	0.001551	0.000834	1.860117	0.0757
D(DEMO)	0.051469	0.030140	1.707638	0.1012
CointEq(-1)	-0.280259	0.114487	-2.447952	0.0224
Cointeq = LGDPC - (2.9258*EXDI + 0.0657*LGFCF + 0.0011*EXCR -0.0065				
*OPEN + 0.1836*DEMO + 6.6038)				
Long Run Coefficients				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXDI	2.925838	2.989759	0.978620	0.3379
LGFCF	0.065730	0.046239	1.421519	0.1686
EXCR	0.001055	0.001556	0.677824	0.5046
OPEN	-0.006461	0.003098	-2.085439	0.0483
DEMO	0.183647	0.145021	1.266345	0.2181
C	6.603761	0.462276	14.285312	0.0000

Source: Author's computation from E-view 9.

The results of ARDL presented in Tables 6 shows that export diversification index has positive impact on economic growth in Nigeria both in the short run and long run. This conforms to a priori expectation since export diversification is expected to increase economic growth. This finding is in line with Tyokohol (2019), Sannasse *et al.* (2014), Arip, Yee and Abdulkarim (2010) and Heiko (2008). These studies contradict inverted u-curve relationship between export diversification and economic growth, particularly for low income countries of which Nigeria is among. However, the impact of export diversification on economic growth in Nigeria is insignificant. This is because the probability values, both in the short run and in the long run are 0.2332 and 0.3379, which are higher than 0.05 respectively.

The empirical results also indicate that domestic investment has positive and significant impact on economic growth in the short run with the probability value of 0.0037. In the long run, its impact is still positive but insignificant with the probability value of 0.1686, which is greater than 0.05. The positive impact of domestic investment on economic growth conforms to the empirical findings of Amoro (2020), Doki and Tyokohol (2019).

The empirical results also show that in the short run, exchange rate has negative and insignificant impact on economic growth in the current period, with the probability value of 0.1354. However, in the immediate past period, it still appears negative but significant, with the probability value of 0.0209. In the long run, exchange rate has positive but insignificant impact on economic growth in Nigeria. This finding is in line with the empirical finding of Doki and Tyokohol (2019) for Nigeria. The change in sign of exchange rate, from negative in the short run to positive in the long run, shows an instability in Naira (₦) per Dollar (\$) exchange rate movement in Nigeria.

With respect to openness of the economy, its impact on economic growth is negative both in the short run and long run. This is a deviation in the expectation. This negative impact of openness of the economy on economic growth is in line with the empirical finding of Doki and Tyokohol (2019) for Nigeria. In the short run, the impact of openness on economic growth is significant while in the long run, it is insignificant. This implies that Nigeria trade relations with other countries do not favour Nigeria because the country exports mainly primary products.

The empirical results also show that democracy (as control variable), which Nigeria is running from 1999 to date, has positive impact on economic growth both in the short run and long run. This conforms to expectation because democratic stability in a country increases economic growth. However, the impact of democracy on economic growth is insignificant both in the short run and long run, with the probability values of 0.1012 and 0.2181 respectively. This implies that the dividends of democracy are not sufficient enough to boost growth in Nigeria.

The error correction term, which measures the speed by which short term deviations in economic growth converges back to or diverse from its long run equilibrium is -0.280259. It is correctly signed (negative), fractional and significant, with the probability value of 0.0224. This shows that the short term deviations converge to long run equilibrium at an annual speed rate of 28.03 per cent. This shows a low speed of adjustment to equilibrium after a shock.

4.4. Post Estimation Tests

The post estimation tests conducted for the robustness of the model include, Jarque-Bera for normality, Breusch-Godfrey LM for serial correlation, Breusch-Pagan-Godfrey for heteroscedasticity and Ramsey Reset for model specification.

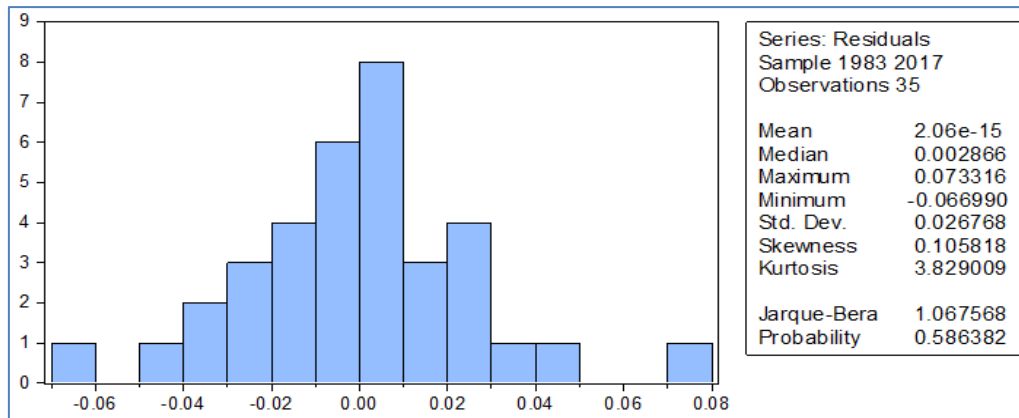


Fig-1: Jarque-Bera normality histogram
Source: Author's computation from E-view 9.

The probability value of Jarque-Bera is 0.586382. Since this value is greater than 0.05, the residuals follow a normal distribution.

Table-7: Results of other diagnostic tests.

Ramsey RESET Test			
Equation: UNTITLED			
Specification: LGDPC LGDPC(-1) EXDI LGFCF LGFCF(-1) EXCR EXCR(-1) EXCR(-2) OPEN OPEN(-1) OPEN(-2) DEMO C			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	1.582884	22	0.1277
F-statistic	2.505522	(1, 22)	0.1277
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.002491	1	0.002491
Restricted SSR	0.024362	23	0.001059
Unrestricted SSR	0.021871	22	0.000994

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.397949	Prob. F(2,21)	0.6767
Obs*R-squared	1.278060	Prob. Chi-Square(2)	0.5278

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.591600	Prob. F(11,23)	0.8163
Obs*R-squared	7.718893	Prob. Chi-Square(11)	0.7382
Scaled explained SS	4.714971	Prob. Chi-Square(11)	0.9442

Source: Author's computation from E-view 9.

From Table 7 above, the probability values of Breusch-Godfrey serial correlation test, Breusch-Pagan-Godfrey heteroscedasticity test and Ramsey Reset test, are greater than 0.05 respectively. This implies that there is no serial correlation problem, the residuals are homoscedastic and that the functional form of the model is well specified.

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary and Conclusion

The empirical results discussed above show that export diversification have positive but insignificant impact on economic growth both in the

short run and in the long run. This implies that the degree of export diversification is low to influence significant impact on economic growth in Nigeria.

The Empirical results also indicate that domestic investment has positive impact on economic growth both in the short run and in the long run. However, its impact is significant in the short run but insignificant in the long run. This shows that domestic investment in Nigeria has continued to decline persistently over the years.

It is also found that exchange rate has negative impact on economic growth in the short run. However,

in the long run, its impact appears positive. This shows instability in the exchange rate movement in Nigeria over the period covered by the study.

Openness of the economy has negative and insignificant impact on economic growth in the short run. In the long run, it has negative but significant impact on economic growth. This result is due to the nature of Nigeria's primary products with the attendant deteriorating terms of trade associated with them.

It is also found that democracy dummy (the control variable), which measures governance, has the expected positive sign both in the short run and in the long run. However, its impact on economic growth is insignificant. Thus, the dividends of democracy are not sufficient enough to increase growth in per capita GDP in Nigeria during the period covered by the study.

The Conclusion drawn from the above preceding is that although export diversification policy in Nigeria increases economic growth, its impact is insignificant. This is attributed to low level of diversification as a result of the nature of the country's export of primary products which have deteriorating terms of trade.

5.2 RECOMMENDATIONS

Based on the findings, the following recommendations are made. The insignificant of export diversification on economic growth is as a result of the Nigeria's over reliance on oil export and limited range of unprocessed primary products. It is therefore recommended that the earnings from the oil revenue should be channeled to the development of non oil sectors such manufacturing and agriculture. This will help to diversify the export base of the economy.

Since the impact of domestic investment on economic growth is significant only in the short run, the government should increase the provision of fixed capital, especially in the area of good transport network as well as increase in capital expenditure in this area.

Exchange rate in Nigeria is highly unstable. Therefore, the exchange rate regime that promotes competition should be adopted. This will help to strengthen the real sector of the economy with emphasis on non-oil sectors.

Trade openness in Nigeria tends to promote export concentration, particularly crude oil export. This should be discouraged by banning importation of those commodities that are produced locally so as to develop local industries.

The dividend of democracy should be made accessible to people for its impact on growth to be significant.

5.3 Indication for further Research

This research is not exhaustive. From the findings, presented above, there is the need for further study on the impact of export diversification on export earnings in Nigeria.

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