Export Diversification and Economic Growth in Nigeria

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Abstract
Economic literature is replete with theories and empirical studies that provide plenty evidence to support the argument that export diversification affects economic growth. The available evidence indicates that for high income countries, this relationship tends to follow an inverted U-curve pattern while for low income (developing) countries, it is mostly positive. For Nigeria, most previous studies simply made use of disaggregated sectoral exports as a measure of export diversification. More recently however, the Theil export diversification index which is a more appropriate measure of the degree of exports diversity has been developed by the IMF. This research was therefore carried out to verify the existence of a positive long-run relationship between export diversification and economic growth for the case of Nigeria, using the IMF Theil export diversification index. The study employed the Bounds Co-integration test and the Error Correction Model (ECM) under the Autoregressive Distributed Lags (ARDL) model framework and found that indeed, export diversification has positive, though insignificant effect on economic growth in Nigeria in the long and the short run. The relative insignificance is however attributed to the low level of diversity of exports at the moment; implying that greater diversity should see it have significant effects on growth. The study recommends that government's diversification efforts should be intensified and channelled towards manufacturing and service exports which have the potential to fuel growth. This would sure help in growing the GDP Per Capita of the country until such a time when diversification is no longer beneficial and it becomes necessary for the country to re-specialize.

Keywords: *Export Diversification, Economic Growth.*

1.0 Introduction

From the standpoint of international trade, diversity of exports is viewed as necessary to insulate Low Income Countries (LICs) from external shocks and enable them to record any meaningful gains from trading with other countries (Kaulich, 2012). Secondly, it is also seen as a good strategy that will enable these LICs to record greater earnings from external trade thereby advancing their economic progress (Sannassee, Seetanah&Lamport, 2014). Besides, in a bid to increase output for export, production for domestic consumption will also invariably be increased.

However, from the available empirical evidence, a key issue arises regarding the actual nature of the relationship between export diversification and economic growth. Imbs and Wacziarg (2003) found that this relationship between export diversification and economic growth followed an inverted U-curve pattern, implying that at lower levels of GDP per capita, the relationship between export diversification and economic growth is positive, while at higher levels of GDP per capita, the relationship is negative. Some other studies such as those of Kalemli-Ozcan, Sorensen and Yosha (2003), Koren and Tenreyro (2004) have confirmed the idea of an inverted U-curve relationship, while others such as that of De benedictus, Gallegati and Tamberi, (2007) have refuted the idea of the inverted U-curve; arguing instead that the relationship follows an inverted L-curve pattern.

For Low Income countries (LICs) however,Sannassee, Seetenah and Lamport (2014) suggested that the inverted U-curve relationship between export diversification and economic growth does not apply, but rather, the relationship is a positive rising curve.This implies that as far as LICs are concerned, export diversification is beneficial to economic growth and these benefits may only need to be re-evaluated when these countries transit from Low-income through Mid-income to High-income status. Meanwhile, Papageorgou and Spatafora (2012) identified the turning point of the inverted U-curve relationship (i.e. the transition point from Low-income to High-income status) to be a GDP Per Capita of around $25,000 to $30,000. But considering that Nigeria's GDP Per Capita since 1981 has never risen above $2,500, it means that the relationship between export diversification and economic growth for Nigeria would most likely be a positive one.

Besides, most previous studies on Nigeria on the subject of export diversification and economic growth such as that of Suberu, Ajala, Akande and Adeyinka (2015) have employed qualitative rather than quantitative methods. Others like that of Esu and Udonwa (2015) simply employed disaggregated sectoral exports data to capture the degree of exports diversity. More recently however, the Theil export diversification index has been developed by the International Monetary Fund (IMF). This index which is a direct measure of export diversification would better show the impact of export diversification on economic growth. Specifically, the size and sign of its coefficient can be interpreted more easily, while statistical testing of hypothesis regarding the statistical significance of export diversification can also be achieved more clearly, compared to the use of disaggregated sectoral exports where the actual impact of diversification on economic growth would have to be inferred from the contributions of the individual export sectors to growth. This study thus intends to verify the relationship between export diversification and economic growth in Nigeria using the IMF export diversification index.

2.0 Review of Related Literature

2.1 Conceptual Framework

2.1.1 Concept of Export Diversification

Export diversification as used in this study is defined as the expansion of exports to new products or new markets (extensive margin), as well as having a balanced mix of existing products (intensive margin). This is in line with the definitions of the concept given by the IMF (2014), Amurgo-Pacheco and Pierola (2007), as well as Siope, Spence, Mevel and Karingi (2012).

Papageorgiou and Spatafora (2012) identify two types of diversification namely; *trade (export) diversification* and *domestic diversification*, which are principally interlinked. According to them, trade diversification reflects diversity in the external sector, while the latter captures diversification in the domestic production process across sectors. However, for this study, the emphasis is on trade or export diversification.

2.1.2 Measures of Diversification

Many indices exist which have been used to measure the degree of export diversification. However, two of the more commonly used indices are the Hirschman-Herfindahl index and the IMF Theil index.

i. The Hirschman-Herfindahl Index

The Hirschman-Herfindahl index is a measure of diversification across export partners that take values between 0 and 1; where a country with a perfectly diversified export portfolio will have a value of 0 while one with an absolute degree of concentration will have a value of 1. However, because the inverse of the index is usually used, higher values therefore indicate

higher degrees of diversification. Note must be taken that originally, this index was developed as a measure of the degree of concentration of investment portfolios.

ii. The IMF Theil Index

To measure the degree of trade/export diversification of countries, the International Monetary Fund (IMF, 2014) adopted a modified version of the Theil index which is a statistic primarily used to measure economic inequality; lack of diversity or compressibility. As computed by the IMF (2014), the Theil index comprises of two components; the extensive and intensive margins. According to Sannassee et. al. (2014), these Theil indices (overall, intensive (within), and extensive (between) indices) are computed following the definitions and methods used in Cadot, Carrère and Strauss-Kahn (2011). One thing to note about the Theil index is that it is a "negative entropy" in the sense that it gets smaller as the disorder gets larger, hence it is a measure of order rather than disorder. What this means is that, the smaller the value of the index, the greater the degree of diversity and vice-versa. Another point to note about the index is that it is always positive. For this study however, the inverse of the index is used such that values range from 0 (indicating absolute concentration or lack of diversity) to 1 (indicating perfect diversity in exports).

2.1.3 Concept of Economic Growth

There are as many definitions of economic growth as there are a variety of authors on the subject. But generally, economic growth refers to an increase in a country's national output over a period of time, usually one year. In other words, economic growth can be defined as the increase in the amount of goods and services produced by an economy over time. It is conventionally measured as the percentage increase in the Gross Domestic Product (GDP) of a country over a period of one year. Economic growth may be calculated in nominal terms (which includes inflation in the computation) or in real terms where adjustment is made to eliminate the distorting effects of inflation. As used in this study, economic growth is measured by using GDP Per Capita.

2.2 Empirical Review

Economic literature is replete with empirical studies on the relationship between diversification and economic growth. In this regard, Imbs and Wacziarg (2003) used domestic production and labour data to investigate the relationship between sectoral diversification and Per Capita Income patterns across various countries and found that the relationship follows an inverted U-shaped pattern. Interestingly, the work by Imbs and Wacziarg (2003) raised an important issue which is still the centre of most recent studies; and the issue pertains to non-linearity between export diversification and economic growth and the resultant question of whether export diversification is still beneficial to High Income Countries (HICs) or not.

Indeed, Klinger and Lederman (2004) in their World Bank assisted study on diversification demonstrated that the inverted U-curve relationship between export diversification and economic growth was actually true. Using disaggregated export data, the authors found that overall diversification increases at low levels of development but declines as the country matures beyond a middle-income point. In addition, Klinger and Lederman analysed the relationship between export discoveries, as measured by new export products introduced and the level of development. In that particular instance, they found that the number of new export products follows an inverted U-curve in income which indicates that, as incomes increase, economies become less concentrated and more diversified. It is only at relatively high levels of income that further growth is associated with increased specialization and less diversification.

Cadot, Carrère and Strauss-Kahn (2011) in their study on export diversification derived and revisited a decomposition of Theil's concentration index that maps directly into the extensive and intensive (new products or new markets) margins of export diversification. In order to analyse how the two margins evolve as functions of GDP per capita, they constructed a very large database covering 156 countries (both developing and developed). And they also found a hump-shaped (inverted U-shaped) relationship between economic development and export diversification, similar to the findings of Klinger and Lederman (2004).

However, Kaulich (2012) who employed regression analysis to study diversification versus specialization as alternative strategies for economic development could not confirm the existence of the inverted U-curve relationship between export diversification and economic growth. The study which made use of data from UNIDO database on 116 countries such as the UK, the US, Germany, Nigeria, Algeria, Mali, Burundi, etc. identified a positive relationship between the diversification of an economy and its income at low levels of income per capita (diversification was measured using three indices: the Gini, Theil and Herfindhal indices), but stated that evidence was inconclusive about the occurrence of a negative relationship between the two at higher levels of income per capita. The study therefore recommended that more research should be done in this regard.

In a related vein, Sannassee et al. (2014) employed the vector co-integration method to study diversification and economic growth in Mauritius. Using the inverse of the Herfindahl index as a measure of diversification and real GDP per capita as the measure of economic growth, they found that there exists a positive relationship between export diversification and economic growth for Mauritius in both the short run and the long run. This confirms that the inverted U-curve relationship previously reported does not apply to Low Income Countries (LICs), but instead the relationship is mostly positive. In any case, the study also identified certain barriers which limit export diversification, especially in LDCs to include; low elasticity of demand, lack of finance, bureaucracy, barriers to market entry, inadequate infrastructure and lack of skilled manpower and lastly, the weakening of public institutions (which hampers private sector activities).

The reported positive relationship between export diversification and economic growth for LICs was also confirmed by Arip, Yee and Abdulkarim (2010) who studied the long – term relationship between export diversification and economic growth from 1980 – 2007 in Malaysia. The result of their study showed that export diversification had a positive effect on the economic growth of Malaysia. Furthermore, they suggested that Malaysia needed to diversify her exports in order to maintain sustainable growth.

In line with the study of Sannassee et. al. (2014), Mudenda, Choga and Chigamba (2014) examined the role of export diversification on economic growth in South Africa between 1980 and 2011. Using the Vector Error Correction (VEC) model, the study found that export diversification and trade openness are positively related to economic growth while real exchange rate, capital formation and human capital were seen to have negative long run relationships with economic growth. They thus recommended the continual implementation of trade liberalisation and also encouraged the promotion of diversified export basket through subsidisation and promotion of innovation and promotion of new products. However, while the study confirmed the assertion by Sannassee et. al. (2014) about the positive relationship between export diversification and economic growth and the absence of the inverted U-curve for low income countries, it did not employ the diversification index which is a more direct the measure of diversification of exports.

Another study that identified a positive rather than an inverted U-curve relationship between export diversification and economic growth for low income countries is that of Hodey (2013). The study adopted the system Generalized Method of Moments (GMM) technique to investigate into the subject in forty-two Sub-Saharan African (SSA) countries for the period

1995 to 2010 and found that export diversification has a positive effect on economic growth in these countries. But as earlier stated, the evidence did not support the hump shaped (inverted U- shaped) relationship. Furthermore, the study revealed that other control variables such as gross fixed capital formation, human capital and foreign direct investment had significant positive effects on growth in Sub Saharan African (SSA) countries while population growth had negative significant effect on economic growth.

Similarly, Esu and Udonwa (2015) employed the Error Correction Model (ECM) to find out the extent to which Nigeria can gain from diversifying the economy. Their findings indicated that diversification has a positive effect on the economy and that Nigeria could tap from her largely untapped trade potentials for sustained gains, both in the short run and long run. They stated that this could be achieved through conscious efforts at diversifying the economy, encouraging large-scale industrialization of the non-oil (real) sector of the economy, emphasizing deepening technology in every trade and investment discourse, sustaining the recent improvements in the agricultural sub-sector, amongst other factors. However, Esu and Udonwa again did not attempt to use the export diversification index in their analysis.

Lastly, Suberu, Ajala, Akande and Adeyinka (2015), who set out to examine how diversification of the Nigerian Economy could lead to sustainable growth and sustainable development using descriptive statistical methods, found that diversification to agriculture has a positive effect on economic growth and thus recommended that the sector must not be sustained by foreign technology; but rather through domestic innovation and technology. However, the study also did not attempt to use the diversification index (which is a direct measure of the extent of diversification of exports of a country).

2.3 Theoretical Framework

This research is based on well-known theories of diversification for economic growth. Consequently, Mun's and Davenant's Ideologies as well as the Prebisch-Singer Hypothesis which argue for export diversification away from primary exports form the core theoretical foundation for the study.

2.3.1 Mun's and Davenant's Ideologies

The ideologies of Mun (1664) and Davenant (1699) as contained in their respective essays on international trade highlighted the problem of weak industrial base, which resulted in exporting most of the outputs in their primary states. They argued that gold was not the only source of wealth that can be available to any nation, but that a nation could create baskets of wealth, through diversification. As explained by Oser and Blanchfield (1975), Davenant believed that eclectic approach to trade, which should include agricultural production and industrial revolution, could create more wealth, as these increase export, with finished and semi-finished goods as the major content. He believed that this approach to trade creates a more sustained wealth than a mono (gold) economy.

Ekpo and Umoh (2014) assert that Nigeria tried Davenant's approach and it worked (though with some institutional defects) in the pre-oil era. According to them, raw materials, comprising agricultural produce and minerals were exported to the industrialised nations. The industrial sector continued on the pioneer industries schemes of the 1950s as Import Substitution Industrialisation (ISI) strategy was adopted. Consequently, various consumer items, which were hitherto imported, were produced domestically. Protective measures like tariffs, quotas, etc. were in place to ensure that domestic industries were allowed to grow. In the short run, jobs were created… It is important to mention that, though Mun was not a core bullionist, according to Oser and Blanchfield (1975), he aligned with Davenant on the issue of

industrialisation, which agrees with Ekpo and Umoh (2014) above, hence the interest in his contributions as it relates to the argument.

2.3.2 The Prebisch and Singer Hypothesis

Prebisch and Singer (1950) further elaborated the argument of the importance of diversification for economic growth in their famous Prebisch-Singer hypothesis (PSH), which asserts that economic growth cannot be based on the export of primary products, because world prices for primary exports relative to manufactured exports decline over time. The Prebisch-Singer Hypothesis has been widely discussed in economic literature, with conclusions being drawn both for and against its validity (Kaulich, 2012). According to her, while overall, the Graham paradox and the Prebisch-Singer Hypothesis do not provide arguments in favour of diversification per se, they in fact explain the disadvantage of being specialized in the "wrong" sector, namely, primary production, as opposed to being specialized in manufacturing. In principle, these arguments can therefore serve as a rationale for changing the respective sector in which a country specializes or as justification for overall export diversification.

3.0 Data and Methodology

3.1 Data

The data used for this research are time series annual data obtained from secondary sources such as the Central Bank of Nigeria (CBN) statistical bulletin, the National Bureau of Statistics, as well as the International Monetary Fund (IMF) export diversification and quality databases (2014), via the African Development Bank Group and the World Bank Database (2017).

3.2 Methodology

The Augmented Dickey-Fuller unit root test has been employed as a diagnostic tool to test the variables of this study for non-stationarity. The ARDL Bounds co-integration test has also been employed to test for the existence of long-run equilibrium relationships between the variables of both models, while Error Correction Model (ECM) under the Autoregressive Distributed Lags (ARDL) Model framework was employed to analyse the short run and long run dynamics of the model.

3.2.1 Model Specification

The implicit form of the model for this study which is adopted from the study of Sannassee et al. (2014) is specified below:

*ln*PCGDP = f (EXDIV, DOP, DIN, *ln*EXC, FDI,) ……..……..…..….. (1)

Where:

*ln*PCGDP = Logarithm of Nigeria's Gross Domestic Product Per Capita
EXDIV = IMF Export Diversification Index for Nigeria (expressed in inverse form)
DOP = Degree of Trade Openness
DIN = Domestic Investment (proxied by gross fixed capital formation)
*ln*EXC = Logarithm of Exchange Rates
FDI = Foreign Direct Investment (The ratio of investment capital from abroad to GDP)

The natural logarithms of some of the variables in equation (1) were taken to enable uniformity of measurement. Specifying the ARDL model, the explicit form is given as;

$$\Delta lnPCGDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta lnPCGDP_{t-i} + \sum_{i=0}^{n} \delta_1 \Delta EXDIV_{t-i} + \sum_{i=0}^{n} \delta_2 \Delta DOP_{t-i} + \sum_{i=0}^{n} \delta_3 \Delta DIN_{t-i} + \sum_{i=0}^{n} \delta_4 \Delta lnEXC_{t-i} + \sum_{i=0}^{n} \delta_5 FDI_{t-i} + \varphi_1 lnPCGDP_{t-1} + \varphi_2 EXDIV_{t-1} + \varphi_3 DOP_{t-1} + \varphi_4 DIN_{t-1} + \varphi_5 lnEXC_{t-1} + \varphi_6 FDI_{t-1} + \mu_t \quad \ldots\ldots (2)$$

Where:

$\beta_0, \beta_1, \delta_1 - \delta_5$ = Short-run coefficients;
Δ = denotes first difference;
φ_1 to φ_6 = Long-run coefficients;
μ_t = the error term with the usual properties.

3.2.2 A priori Expectations

The a priori expectations are that all the β_is,δ_is and φ_is > 0. That is, lagged values of GDP Per Capita, Export Diversification, Trade Openness, Domestic Investment, Exchange Rates, and Foreign Direct Investment in the short run as well as estimated values of the same variables in the long run are expected to have positive effects on GDP per capita.

4.0 Results

4.1 Stationarity Tests

Table 4.1: Augmented Dickey Fuller Unit Root Test Results

Variables	ADF Statistics at Levels	t-statistic at 5%	ADF Statistics at 1st Difference	t-statistic at 5%	Order of Integration
LNPCGDP	-1.621722	-3.544284	-5.448752	-3.548490	I(1)
EXDIV	-3.518576	-3.544284	-6.546475	-3.552973	I(1)
DOP	1.708970	-3.544284	-8.396741	-3.548490	I(1)
DIN	-3.758169	-3.544284			I(0)
FDI	-3.464595	-3.544284	-8.108316	-3.548490	I(1)
LNEXC	-1.214729	-3.544284	-5.368283	-3.548490	I(1)

The Augmented Dickey Fuller (ADF) results in table 4.1 indicate that at 5% level of significance, domestic investment (DIN) is stationary at levels, while LNPCGDP, EXDIV, DOP, FDI and LNEXC are all stationary at first difference as indicated by their ADF statistics. This therefore means that the variables of the model exhibit a mixed order of integration.

4.2 Optimal Lag Selection

The result in table 4.2 indicates that the optimal lag based on the SC and all the other criteria is one (1).

Table 4.2: Optimal Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-24.91106	NA	0.362096	1.818298	2.087655	1.910156
1	14.85345	63.15539*	0.037110*	-0.461967*	-0.147717*	-0.354799*
2	14.87418	0.031709	0.039429	-0.404363	-0.045220	-0.281885

* indicates lag order selected by the criterion

Source: *Extracted from Eviews 10 result output*

4.3 Co-integration Analysis (Model 1)

Having established that the order of integration of the variables is mixed; i.e. both I(1) and I(0), the Johansen co-integration test is no longer appropriate for testing the existence of a long-run relationship among the variables. Instead, the ARDL Bounds co-integration test proposed by Pesaran, Shin and Smith (2001) is employed. The results of the ARDL Bounds Co-integration test are hereby presented.

Table 4.3: ARDL Bounds Co-integration Results (Model 1)

Test Statistic	Value	Significance Level	Lower Bound I(0)	Upper Bound I(1)
F-Statistic	8.133834	10%	2.331	3.417
		5%	2.804	4.013
		1%	3.9	5.419

Source: *Extracted from Eviews 10 result output*

From the ARDL bounds co-integration test in Table 4.3, it can be seen that the calculated F-statistic (8.133834) is greater than the tabulated upper bound value (4.013) at 5% level of significance. This implies that there is co-integration between LNPCGDP, EXDIV, DOP, DIN, FDI and LNEXC. In other words, there is evidence of the existence of a long run equilibrium relationship between the variables. The long-run form of the ARDL model and the error correction model are thus presented.

4.4 ARDL Long Run Coefficients

Table 4.4: Long-run Parameters of the ARDL Model

Variable	Coefficient	Standard Error	t-statistic	Probability Value
EXDIV	101.6254	63.85962	1.591387	0.1246
DOP	-0.023399	0.010589	-2.209843	0.0369
DIN	0.030636	0.033847	0.905148	0.3744
LNEXC	1.095616	0.131716	8.318036	0.0000
FDI	0.091076	0.100494	0.906288	0.3738
C	-9.377866	10.51053	-0.892236	0.3811

Source:*ExtractedfromEviews 10 Output*

The results from Table 4.4 indicate that as expected, Export Diversification (EXDIV), Domestic Investment (DIN), Foreign Direct Investment (FDI) and Exchange Rate (LNEXC) all have positive effects on Per Capita GDP in the long-run. Degree of Trade Openness (DOP) however is shown to have negative effect on Per Capita GDP against a priori expectations and this could possibly be due to the nature of Nigeria's export commodities being majorly primary exports (Recall that the Prebisch-Singer hypothesis argue that this could happen if a country specializes in mainly primary product exports due to deteriorating terms of trade).

The results also indicate that while the coefficients of LNEXC and DOP are statistically significant at 5%, those of EXDIV, DIN and FDI are not significant at 5% as shown by their t-statistics and probability values. The possible reasons are that the levels of export diversification over the years have been rather low; gross fixed capital formation which is the proxy for domestic investment has declined persistently, and also investment capital from abroad as ratio of GDP has also been low due perhaps to the harsh business climate in Nigeria.

4.5 ARDL Short Run Coefficients and Error Correction Model (Model 1)

Table 4.5: ARDL Short-run Coefficients and the ECM

Variable	Coefficient	Standard Error	t-statistic	Probability Value
D(EXDIV)	4.907551	9.020250	0.544059	0.5914
D(DOP)	-0.001784	0.002017	-0.884455	0.3852
D(FDI)	-0.010552	0.010919	-0.966411	0.3435
D(LNEXC)	0.060540	0.077361	0.782565	0.4415
ECT	-0.215821	0.025582	-8.436292	0.0000
Adjusted R^2 = 0.452509				

Source:*ExtractedfromEviews 10 Results*

The Error Correction Model results in Table 4.5 show that similar to the long-run model; the Degree of Trade Openness (DOP) and Foreign Direct Investment (FDI) have negative effects on current values of Per Capita GDP in the short-run against a priori expectations. On the other hand, Export Diversification, (EXDIV) and Exchange Rate (LNEXC) have positive effects on current values of Per Capita GDP in the short run. It is also observable that none of the coefficients is statistically significant in the short run, though as seen earlier, some of them are actually significant in the long run.

The Table 4.5 also indicates that the Error Correction Term (ECT) which measures the speed of adjustment toward long-run equilibrium is negative and statistically significant as expected. It's value of -0.215821 indicates that in case of initial distortions, there is convergence towards long run equilibrium (though at a low level) by 21.6% yearly.

4.6 Diagnostic Tests

4.6.1 The Model Stability Test

To test the stability of the ARDL estimates Model, the CUSUM test and CUSUM of Squares tests were carried out.

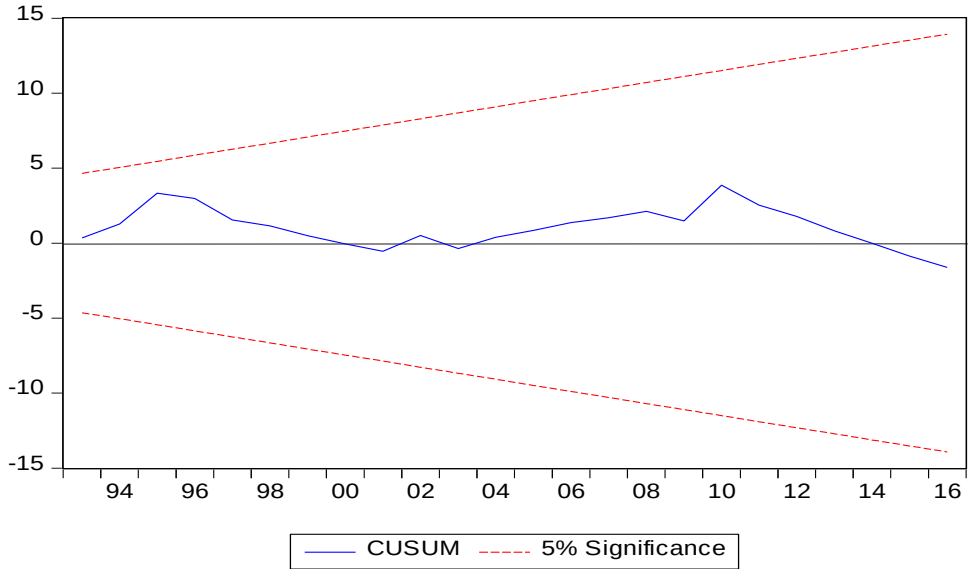

Figure 4.1a: The CUSUM Test (Model 1)

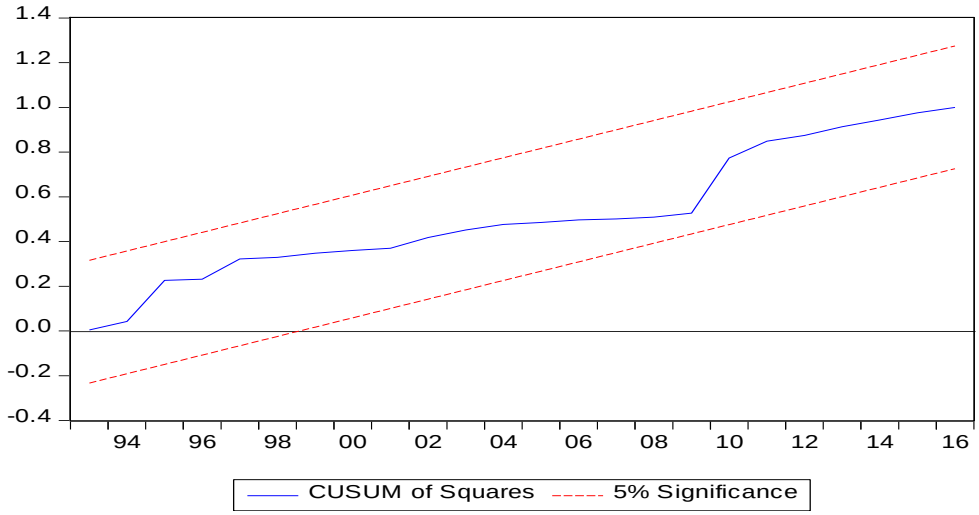

Figure 4.1b: The CUSUM of Squares Test (Model 1)

As shown in Figures 4.1a and 4.1b, the ARDL model is stable at 5% as indicated by the Wald test.

4.6.2 The Residual Serial Correlation Test

In order to test for serial correlation among the residuals of the ARDL model, the Residual Serial Correlation LM test is conducted.

Table 4.6: ARDL Residual Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 1 lag

F-statistic	1.418028	Prob. F(1,23)	0.2459
Obs*R-squared	2.032555	Prob. Chi-Square(1)	0.1540

Source:*Eviews 10 extract*

The result shows that there is absence of autocorrelation among the residuals since the null hypothesis of no autocorrelation cannot be rejected. This is because the probability value of the F-statistic is greater than 0.05.

4.6.3 The Residual Heteroskedasticity Test

The heteroskedasticity test is shown in Table 4.7. The result indicates that there are equal variances among the residuals of the ARDL model given that the null hypothesis of homoskedasticity cannot be rejected at the 5% significance level.

Table 4.7: ARDL Residual Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.189798	Prob. F(10,24)	0.3451
Obs*R-squared	11.60036	Prob. Chi-Square(10)	0.3127
Scaled explained SS	12.56776	Prob. Chi-Square(10)	0.2489

Source:*Eviews 10 extract*

5.0 Conclusion and Recommendations

This study aimed at investigating into the effect of export diversification on economic growth in Nigeria between 1981 and 2016. Using the Error Correction Model under the ARDL framework, the study found that that indeed, export diversification has positive, though insignificant effect on GDP per capita in Nigeria. The statistical insignificance of export diversification is attributed to perhaps the little attention given to export diversification in Nigeria over the years, implying that if greater attention is given to export diversification, it would have significant effect on economic growth. It is therefore the recommendation of this study that the government should vigorously pursue the diversification of Nigeria's exports away from oil in other to sustain gains from trading with other countries. Areas that may be considered for intensification of diversification efforts could include manufactured exports and service exports.

References

Amurgo-Pacheco, A. &Pierola, D. (2007). *Patterns of export diversification in developing countries: intensive and extensive margins.* Mimeo; GIIS, Geneva.

Arip, M. A., Yee, L. S., & Karim, B. A. (2010). *Export diversification and economic growth in Malaysia.* MPRA paper No.20588

Cadot, O., Carrère, C. & Strauss-Kahn, V. (2011). *Export diversification: What's behind the hump?* The Review of Economics and Statistics 93(2): 590-605

Davenant, C. (1699). *An essay on the probable means of making the people gainers in the balance of trade.* Available at https://books.google.com

De Benedictus, L., Gallegati, M. &Tamberi, M. (2006). Overall specialization and development: Countries diversify! CIDEI Working Paper 73. *The Review of World Economics* (2009), Vol. 145 No. 1

Ekpo, A. H. &Umoh, O. J. (2014). *An overview of the Nigerian economic growth and development.* Available at: www.nigerianonline.com

Esu, G. E. &Udonwa, U. (2015). Economic diversification and economic growth: Evidence from Nigeria. *Journal of Economic and Sustainable Development:* Vol. 6. No. 16

Hodey, L. S. (2013). *Export diversification and economic growth in sub-Saharan Africa.* University of Ghana: Unpublished Thesis.

Imbs, J. &Wacziarg, R. (2003). *Stages of diversification.* American Economic Review. Vol. 93, No. 1, pp. 63-86.

Kalemli-Ozcan, S., Sorensen, B. &Yosha, O. (2003). *Risk sharing and industrial specialization: Regional and international evidence.* American Economic Review. Vol. 93, No. 3, pp. 903-918.

Kaulich, F. (2012). *Diversification vs. specialization as alternative strategies for economic development: Can we settle a debate by looking at the empirical evidence?* Vienna: (UNIDO).

Klinger, B. & Lederman, D. (2004). *Discovery and development: An empirical exploration of 'new' products".* World Bank Policy Research Working Paper Series: No. 3450.

Koren, M. &Tenreyro, S. (2004). *Diversification and development*. Federal Reserve Bank of Boston Working Paper Series. Available at SSRN: https://ssrn.com/abstract=556369

Mudenda, C., Choga, I. &Chigamba, C. (2014). The role of export diversification and economic growth in South Africa. *Mediterranean Journal of Social Sciences.* Vol. 5, No. 9.

Mun, T. (1664). *England's Treasure by foreign trade.* Available at: www.thelatinlibrary.com

Oser, J. &Blanchfield, W. C. (1975). *The History of Economic Thought.* Harcourt Brace: Jovanovich Publishers Inc. USA.

Papageorgiou, C. &Spatafora, N. (2012). *Economic diversification in LICs: Stylized facts and*

macroeconomic implications. IMF Staff Discussion Notes. SDN/12/13

Prebisch, R. (1950). *The economic development of Latin America and its principal problems.* Economic Commission for Latin America; Lake Success, NY: United Nations Department of Economic Affairs.

Sannassee, R. V., Seetanah, B. &Lamport, M. J. (2014). *Export diversification and economic growth: The case of Mauritius.* World Trade Organization assisted paper.

Singer, H. W. (1950). *The distribution of gains between investing and borrowing countries.* American Economic Review, Vol. 40, no. 2, pp. 473-485.

Siope, V. O., Spence, M., Mevel, S., &Karingi, S. (2012). *Export diversification and intra industry trade in Africa.* United Nations Economic Commission for Africa (Draft).

Suberu O. J., Ajala, O. A., Akande, M. O., &Adeyinka, O. (2015). Diversification of the Nigerian economy towards a sustainable growth and economic development. *International Journal of Economics, Finance and Management Sciences:* Vol. 3(2), pp.107-114

APPENDIX

Dataset Employed for the Study

YEAR	LNPCGDP	EXDIV	DIN	DOP	FDI	LNEXC
1981	6.52992623	0.163064	35.22126	48.29	0.887948	-0.47804
1982	6.54047527	0.16087	31.95333	37.75	0.837806	-0.40048
1983	6.5922831	0.16421	23.0065	27.04	1.027979	-0.3285
1984	6.67114919	0.163771	14.22397	23.61	0.663717	-0.26136
1985	6.77940962	0.162659	11.96524	25.9	1.681726	-0.11653
1985	6.77178429	0.163663	15.15382	23.72	0.932437	0.559616
1987	7.14698543	0.165112	13.60753	41.65	2.534126	1.391282
1988	7.39976938	0.169784	11.87108	35.31	1.627125	1.512927
1989	7.80815457	0.167286	11.74232	60.39	7.776141	1.99606
1990	7.99135145	0.166964	14.25014	53.03	1.911375	2.084429
1991	8.1218571	0.16657	13.73268	64.88	2.600578	2.293544
1992	8.62014243	0.164554	12.74817	61.03	3.060115	2.850707
1993	8.84796297	0.167087	13.55003	58.11	8.520921	3.094219
1994	9.10218644	0.169492	11.16543	42.31	10.83256	3.091042
1995	9.83069322	0.174702	7.065756	59.77	3.780688	3.086487
1996	10.1376646	0.168439	7.289924	57.69	4.554308	3.085573
1997	10.1505003	0.168304	8.356764	76.86	4.297446	3.08603
1998	10.0940621	0.172806	8.60161	66.17	3.284921	3.08603
1999	10.2312673	0.17143	6.994108	55.85	2.80149	4.525477
2000	10.5598518	0.16562	7.017881	71.38	2.457999	4.622027
2001	10.5746737	0.170007	7.579868	81.81	2.697492	4.7116
2002	10.9223443	0.173471	7.009923	63.38	3.170113	4.792313
2003	11.1011297	0.171188	9.904054	75.22	2.964052	4.861516
2004	11.3646544	0.167676	7.39337	48.45	2.133362	4.889522
2005	11.5717197	0.166522	5.458996	50.75	4.438848	4.877256
2006	11.7844149	0.166848	8.265865	64.61	3.337937	4.857096
2007	11.8707564	0.168432	9.249637	64.46	3.626301	4.834773
2008	12.0079571	0.17093	8.323477	64.97	3.938918	4.775335
2009	12.0042236	0.171381	12.08816	61.8	5.047601	5.003275
2010	12.7650929	0.172941	16.5552	42.65	1.632849	5.012633
2011	12.876909	0.173142	15.53394	52.79	2.147237	5.036043
2012	12.980698	0.174419	14.16254	44.38	1.533762	5.059425
2013	13.0635812	0.173983	14.16873	31.05	1.08024	5.058218
2014	13.1437441	0.173004	15.08353	30.89	0.818201	5.06607
2015	13.171756	0.171664	14.82718	21.33	0.65216	5.259784
2016	13.2204179	0.170143	14.69825	20.72	1.098498	5.535324

Source: *World Bank Database (2017), IMF Export Diversification and Quality Database (2014)*