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TRADE DIVERSIFICATION AND ECONOMIC GROWTH IN NIGERIA: AN AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) APPROACH

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Abstract

The paper examines the impact of trade diversification on economic growth in Nigeria spanning the period 1990 - 2020. The relationship between trade diversification and economic growth has been intensively researched, with conflicting and inconclusive results. This study uses the Autoregressive Distributed lag (ARDL) Model techniques for the period 1990 - 2020. The empirical estimated results show evidence that there exists a long-run cointegration among the variables. The empirical findings further depict that trade diversification has a significant positive impact on economic growth in Nigeria. Moreover, this study demonstrates a positive and significant complementary relationship between export diversification, domestic investment and exchange rate in strengthening economic growth. The paper recommends that policymakers should develop and execute trade laws that are aimed at regulating various sources of import and export in the country.

Keywords: Trade Diversification, Economic Growth, Domestic Investment, Exchange Rate

1. Introduction

Trade diversification has consistently contributed to economic growth in both developed and developing nations, albeit to varying degrees. Many international organizations are encouraging countries to move their borders and to engage in exchanges with others. Countries are now emphasizing new strategies to align their domestic economies with the world economy through open trade through various channels. This makes exchange at the heart of relations between people and between countries. As some raw materials and products are impossible to obtain from self-country, it is essential

for each country to trade around the world. The unequal natural resources and skills distribution, therefore, encourages international trade (Hesse, 2008). With this perspective, a large number of developing countries have embraced the idea that they should increase the opening of their economies by increasing and diversifying their exports. These contexts have led each country to adopt new trade policies. As a result, trade diversification has become a trend in the modern economy.

Diversification is important because it is associated with economic growth and reduced volatility. Diversification of exports, which provide foreign exchange and enable

imports of critical goods, services, and know-how, is crucial for developing countries. The record on diversification is poor across a large number of developing countries, especially in Africa, the Middle East, and Latin America. Asian and Eastern European countries have performed better (Ait, Ali et al., 2020). Though diversification first requires domestic reforms, the current trading system does not help. The world trading system does not support developing countries with export diversification; moreover, the situation is deteriorating. Reducing tariffs and tariff escalation in labor-intensive manufactures is critical. In many developing countries, the diversification potential for agriculture is severely impeded by subsidies, tariff barriers, and protectionist standards. Individual countries can take many steps to foster export diversification, the most important of which are improving the efficiency of their service sector, liberalizing imports of services, and encouraging inward direct investment. (Ait Ali et al. 2020).

Still, studies failed to find the relationship between these variables. Therefore, this study serves to bridge the gap in Economic growth and trade diversification in Nigeria. Policymakers would also benefit significantly if an explicit link between Diversification to trade and economic growth were made, provide guidelines for the potential researchers to re-think the trade-growth relationship and contribute to the literature by exploring the new insights which are ignored in the available literature (Benli, 2020, Havvanur, 2018 Ajmi et al., 2015),) and contribute to existing literature to produce an acceptable conclusion regarding the trade-growth relationship (Amoro, 2020., Doki & Tyokohol, 2019; Maina & Rieber, 2019). This study is structure into five section. This includes Introduction, literature Review, methodology, data presentation and analysis of results and conclusion and recommendations of the study

2. Literature Review

2.1 Empirical Review

The relationship between Diversification to trade and economic growth has sparked many debates ongoing in empirical literature around the world.

On the empirical front, studies on trade opening and economic growth have been widely examined. There are large numbers of empirical studies on the correlation between trade and economic growth which have reported that trade has a strong positive impact on economic growth see (Amoro, 2020., Doki & Tyokohol, 2019; Maina & Rieber, 2019, Duru & Ehidihamhen, 2018 ; Osakwe et al., 2018; McIntyre et al., 2018., Gozgor and Muhlis, 2017., Fu et al., 2017., Lwesya, 2016; Lugeiyamu, 2016 ; Tesfay, 2016 ;).

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 levels. At this level, income starts to fall with export diversification portfolio. Similar results were found by Lwesya (2016) who has evaluated the effect of export diversification on economic growth in Tanzania. The Study found statistically significant effect of growth rate of non-traditional commodities on overall export growth

during short run but this effect is found to be insignificant in case of traditional products. The author has also advocated for the diversification of trade partners. Lugeiyamu (2016) observed that faster economic growth has been experienced by those countries which have more diversified export basket and more changes in the composition of exports. Thus, variations in the export diversification explain the actual growth differences across Africa. Study has given the evidences that both export diversification and export growth are robust factors of rate of economic growth rather than trade openness. More diversified export basket mitigates the negative effects of global economic shocks to growth in the region.

Tesfay (2016) also found robust evidences about the positive effect of export diversification in the economic growth of Ethiopia. The study concluded that exports have positive statistical effects on output growth in case of Ethiopia. The study suggests to increase the trading partners and more diversification of exports of those commodities in which Ethiopia has comparative advantage. Fu et al. (2017) study provided robust evidences that growth benefits are linked with product export diversification rather than geographical export diversification. The government should distinguish between product export diversification and destination of exports and make necessary changes in their export policies as regional economies develop. Duru and Ehidihamen (2018) found that in Nigeria export diversification had positive but insignificant association with economic growth. However, the growth rate of exports and exports of goods and services had positive and statistically significant effect on country's economic growth. Similarly, Osakwe et al., (2018) studied association between trade, trade liberalization and export diversification in developing and Sub-Saharan African (SSA) countries. The study provided evidences that developing countries which are more open to trade have more diversified export structure than those are less open whereas those SSA countries that are more open to trade have less diversified export structure. An important study by McIntyre et al. (2018) has strongly advocated for the

export diversification in order to augment the rate of economic growth of many small states because export diversification has potential for reducing exogenous shocks in the form of global business cycle, international commodity price fluctuation, natural disaster, and so on. The results suggested that small states specialize in the production of narrow range products and are more prone to exogenous shocks. Therefore, their output and export earnings are inevitably more volatile because these shocks cause severe damage to small states. Furthermore, Gozgor and Muhlis (2017) study found that for upper middle countries, diversification of exports and globalization are positively related with economic growth. Maina and Rieber (2019) concluded that export diversification quality must be assessed as per a country's capacity to develop its productive structure. Furthermore, they found the export diversification and economic growth relationship also affected by new firm internationalization strategy.

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. Kenen and Voivodas (1972) found no relationship between export instability and economic growth. In addition, Moran (1983) found insignificant effect of export instability on economic growth during long run in less-developing countries but during short run export instability had shown negative effects on savings and hence economic growth. A study by Ajmi et al. (2015) showed there was no association between export instability and economic growth. Similarly, Havvanur (2018) found no effect of export instability on economic growth for Turkish economy in short run. Most of the

studies have exhibited negative effect of export instability on economic growth. Thus, development economists have strongly advocated for export diversification in order to minimize the impact of export instability on economic growth. Benli (2020), after studying 19 emerging economies, suggested different level of economic growth creates no long run relationship between export diversification and economic growth.

2.2 Theoretical Review

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

Clearly, there exist conflicts in literature relationship between trade diversification and economic growth for Nigeria. Given the fact that literature on the subject matter is not conclusive, there is need to empirically examine the relationship between trade diversification and economic growth for Nigeria. Thus, this paper sets forth to examine the long-run and short-run impact of trade diversification and economic growth in Nigeria for period 1990 - 2020.

3. Methodology

This paper provides an empirical analysis for the relationship between trade diversification and economic growth in Nigeria. The dependent variable is Gross Domestic Product Per Capita (GDPC) proxy for Economic growth and the independent variables are Non oil export proxy for Export Diversification (NOE), Gross Fixed Capital Formation (GFCF) proxy for domestic investment, Degree of openness (OPEN), Export + Import/GDP and Exchange rate (EXR) Naira per Dollar (N/\$). The study uses annual data covering the year 1990 - 2020. The data was sourced from the World Bank development indicators and spans from 1990 - 2020.

This paper 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.

3.1 Model Specification

This paper adopted the model by Doki and Tyokohol (2019) in a study on export diversification and economic growth in Nigeria with modification.

The functional form of the model is specified as follows:

$$GDP = f(NOE, GFCF, OPEN, EXR)$$

..... (1)

And in the stochastic form as:

$$GDP = \beta_0 + \beta_1 NOE + \beta_2 GFCF + \beta_3 OPEN + \beta_4 EXR + \varepsilon_t \quad \text{4.1 Unit Root Test Result}$$

..... (2)

Where: GDP = Gross Domestic Product Per Capita, NOE = Non oil Export, GFCF = Gross Fixed Capital Formation, OPEN = Degree of openness and EXR = Exchange rate

β_0 to β_4 are coefficient to be estimated and ε_t is the

error term.

The variables in Model was subjected to unit root test using Augmented Dickey Fuller (ADF) test and Phillip Perron (PP) test in order to ascertain in their stationarity and order of integration properties. For the annual data on variables GDP, NOE, GFCF, OPEN, EXR for the period 1990 to 2020, the result of the ADF test and PP test are presented in Table 1.

4. Presentation and Analysis of Results

Table 1: Unit Root Test Result

VARIABLES	ADF t-Statistics		PP Adjusted t-Statistics		ORDER OF INTEGRATION
	@ LEVELS	@1 ST DIFF	@ LEVELS	@1 ST DIFF	
GDP	-0.74(0.820)	-3.70(0.009)	-0.89(0.775)	-3.71(0.009)	I(1)
NOE	0.40(0.978)	-0.04(0.721)	-1.63(0.452)	-7.30(0.000)	I(1)
GFCF	-2.71(0.083)	-3.82(0.007)	-2.55(0.113)	-3.81(0.007)	I(0)
OPEN	-2.34(0.164)	-0.37(0.897)	-2.39(0.150)	-8.08(0.000)	I(1)
EXR	1.34(0.998)	-3.78(0.007)	1.44(0.998)	-3.690(0.009)	I(1)

Source: Computed from E-views 9 Output

Table 1 shows the result of the unit root test. At levels, only GFCF (domestic Investment) is stationary I(0), all the rest of the variables are stationary at first difference I(1). Table 1 reveals that the variables in the series are a mixture of I(0) and I(1) variables. Thus, ARDL model which accommodates such specification remains the most appropriate methodology for this analysis.

4.2 The Bound Testing Result

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 Schwarz Bayesian criterion.

Table 2: Coefficient Diagnostic for Bound Testing Result

F-statistic	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound
7.4127	3.4706	4.8535	2.8232	4.0316

Source: Microfit 5.0 Output

The results of the bound test in table 2 shows that the value of F statistics 7.4127 which is greater than the value of 95% upper bound of 4.8535, the null hypothesis of no cointegration is rejected. This means that there is long run relationship between economic growth independent variables.

4.3 Long-run model for bound testing and Discussion

Table 2: Long-run Model for ARDL (1,2,3,1,0)

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
NOE	0.4810	0.2575	1.8680[0.081]
GFCF	-124.1181	13.9357	-8.9065[0.000]
OPEN	19.1315	13.0996	1.4605[0.165]
EXR	-8.4927	1.6508	-5.1446[0.000]
INPT	4652.2	848.6027	5.4822[0.000]

Source: Author's computation using Microfit 5.0

The result of the estimated Long Run Coefficients using the ARDL (1,2,3,1,0) Approach presents that export diversification has positive and significant impact on economic growth in Nigeria at 10%. This conforms to the apriori expectation since export diversification is expected to increase economic growth. The finding is in line with Doki and Tyokonot (2019). A unit increase in export diversification increases economic growth by 0.4810 (48%).

The result also indicates domestic investment has negative statistical significance impact on economic

The existence of cointegration necessitates further test for long run relationship between Trade diversification and economic growth. Long Run Coefficients was estimated using the ARDL Approach ARDL (1,2,3,1,0) selected based on Schwarz Bayesian Criterion.

growth in the long run. A unit increase in domestic investment decreases economic growth by 124.11. Exchange rate in the long run has a negative significant impact on economic growth. A unit increases in exchange rate decreases economic growth by 8.4927.

4.4 Short-run model for bound testing and Discussion

The Error correction model for the selected ARDL Model is estimated. Table 4 presents the results of the estimated ECM corresponding to the long run estimates for Model 1 selected using Schwarz Bayesian Criterion using Microfit 5.0.

Table 4: Short-run Model for ARDL(1,2,3,1,0)

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
Dnoe	0.3028	0.5648	5.3604[0.000]
dNOE1	0.4278	0.2004	2.1349[0.047]
dGFCF	-53.0000	16.0921	-3.2936[0.004]
dGFCF1	47.7050	12.9455	3.6851[0.002]
dGFCF2	33.0667	11.0369	2.9960[0.008]
dOPEN	-1.2529	3.3027	-.37935[0.709]
dEXR	-3.9779	0.94004	-4.2316[0.001]
ecm(-1)	-0.46839	0.12914	-3.6270[0.002]

R-Squared	0.88155	R-Bar-Squared	0.79469
DW-statistic	2.3620		

Source: Author's computation using Microfit 5.0

The short-run coefficients estimates show the dynamic adjustment of all variables. The Error correction coefficient for ΔNOE , $\Delta GFCF$, $\Delta OPEN$ and ΔEXR estimated at -0.46839 is highly significant at the 5% level, has the correct negative sign implies a low speed of Adjustment to equilibrium. The coefficient of error correction term $ecm(-1)$ estimated at -0.46839 further confirms the existence of a stable long run relationship, indicating that Economic growth, domestic investment, openness and exchange rate are cointegrated. The coefficient of the error term ($ecm -1$) implies that the deviation from long run equilibrium level of food security of current year is corrected by 46.83 percent in the next year to bring back equilibrium. The magnitude of the coefficient (-0.4683) implies that nearly 46.8% of

any disequilibrium between Economic growth, domestic investment, openness and exchange rate is corrected within one year.

The results in table 4 indicated that the overall model is well fitted as the independent variable explained over 88% (R-Squared) movement in the dependent variable. The R^2 value dropped to about 79.4% after adjusting for degree of freedom which is still significant. Durbin-Watson (DW) statistics of $2.36 \approx 2.0$ showed the absence of serial correlation meaning that there is independence of observation in the error term.

4.5 CUSUM and CUSUM-SQ Test for Stability for ARDL(1,2,3,1,0) model

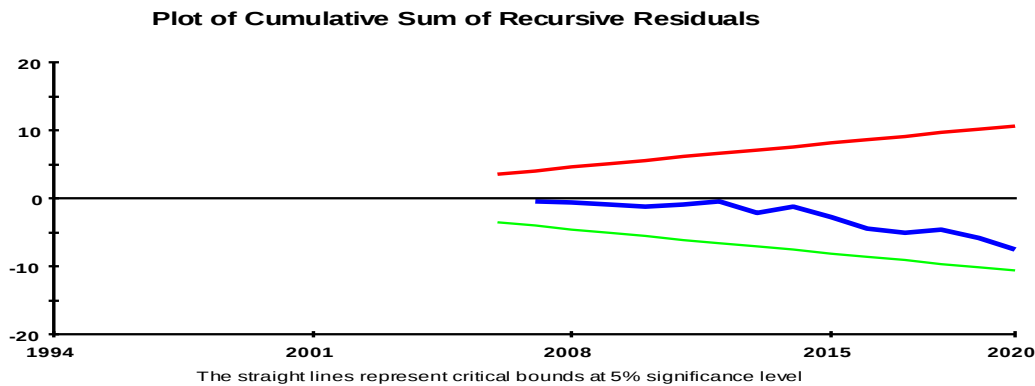


Fig1: CUSUM Test at 5% significant level.

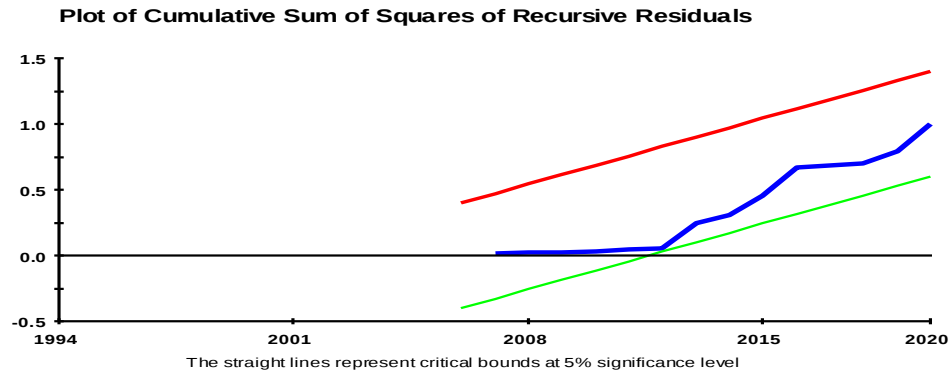


Fig2: CUSUM SQ Test at 5% significant level.

Figure 1 and 2 are graphical representations of CUSUM and CUSUM – SQ plots, respectively, which are applied to the error correction model selected by the adjusted R^2 criterion. Both CUSUM and CUSUM - SQ plots of the variables do not cross the critical bounds which indicate no evidence of any evidence of any significant instability.

5 Conclusion and Recommendations

The major conclusion from the study is that the much established positive relationship of growth-trade diversification nexus is true for Nigerian economy despite being an oil-based economy. Also, the trade diversification can reduce movement in exchange rate especially extensive diversification thus preventing it from substantial movement that can derail it from long

run equilibrium and this will go a long way in bringing about stability in Nigerian economy. This can be regarded as one of the channels through which trade diversification enhances growth. Also, the study confirms that the level of economic growth dictates the extent of benefits a country gets from trade diversification and this is in line with the assertion of (Tesfay, 2016., Maina and Rieber, 2019).

Policy recommendations from the study includes first that policy makers should pursue vigorously both intensive and extensive trade diversification in other to propel economic growth. Second, trade openness should be discouraged by banning importation of those goods that are produced locally so as to develop local industries.

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