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Trade Policy and Export Diversification in Nigeria: An ARDL Approach

Philip Ifeakachukwu Nwosa¹

Abstract: This study examined the impact of trade policy on export diversification in Nigeria over the period 1962 to 2015. In the study trade policy was measured by trade liberalization policy and trade openness. The study employed Autoregressive Distributed Lag (ARDL) technique and the result from the estimate showed that both measures of trade policy had insignificant impact on export diversification while foreign direct investment had negative and significant effect on export diversification in Nigeria. Thus, the study concluded that trade policy has not enhance export diversification in Nigeria over the period 1962 to 2015. The study recommended among other the need for the government to de-emphasize the dependency on oil and on the discoveries of new oil wells (such as those discovered in the Southwest and Northern regions in Nigeria. The continuous emphasis on oil would incessantly decline the drive of the government in diversifying the export base of the Nigerian economy.

Keywords: trade liberalization; trade openness; non-oil export; bound co-integration; Nigeria

JEL Classification: F13; O24

1. Introduction

Export diversification has been a contentious issue in Nigeria since independence due to the lopsided nature of the export structure characterised by the dominance of oil export over the years. To reduce this dominance of oil through export diversification, the Nigerian government has over the years implemented various trade policies - export promotion strategy in 1981; trade liberalization policy in 1986; exchange rate liberalization in 1986; establishment of the Nigerian Export-Import Bank (NEXIM) in 1991; and other bilateral and multilateral trade agreements. The implementations of the above trade policies were expected to enhance economic growth and diversify the export structure through improved market access to international trade as experienced by other emerging countries.² However, in spite of the initiated trade policies, the structure of the Nigerian export has remained dominated by oil export with modest contributions from the non-oil export.

As shown in figure 1 below, the contribution of oil export to total export in rose progressively from 2.6% in 1960 to 98.7% in 2000 before declining marginally to 92.5% in 2015. In sharp contrast, the contribution of non-oil export which stood at 97.4% in 1960 plummeted to 1.2% in 2000 before rising marginally to 7.5% in 2015. Figure 2 showed that on average oil export accounted for about 80% of total export in Nigeria between 1960 and 2015 while non-oil export accounted for one-fifth (20%) of total export with this period. This lopsidedness in export structure has posed serious economic obstacles such

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² See (Martincus & Gomez, 2009; Ruhl, 2005).

as: unstable economic growth rate; instability in foreign exchange earnings resulting from susceptibility to volatility and shocks of global oil prices; and exchange rate fluctuations among others.

Studies¹ have shown that trade policies affect export diversification with implications on macroeconomic variables such as rising investment level, increased employment rate, favourable balance of payment and sustained economic growth. In spite of the above, it is worrisome to note that the perusal of literatures showed that little or no empirical studies exist on the relationship between trade policy and export diversification in Nigeria. Most studies in this regard only focused on the relationship between trade policy (or trade liberalization or trade openness) and economic growth in Nigeria.² Therefore, this study contributes to existing literature by examining the impact of trade policy on export diversification in Nigeria. Specifically, this study seeks to address two important research questions: (a) “what is the impact of trade liberalization policy on export diversification in Nigeria?” and (b) “what is the impact of trade openness on export diversification in Nigeria”?

In addition to this introductory section, this study has five sections. Section two discusses the literature review while the research method is discussed in section three. Results and findings are discussed in section four while section five discusses the conclusion and policy recommendations arising from the findings of the study.

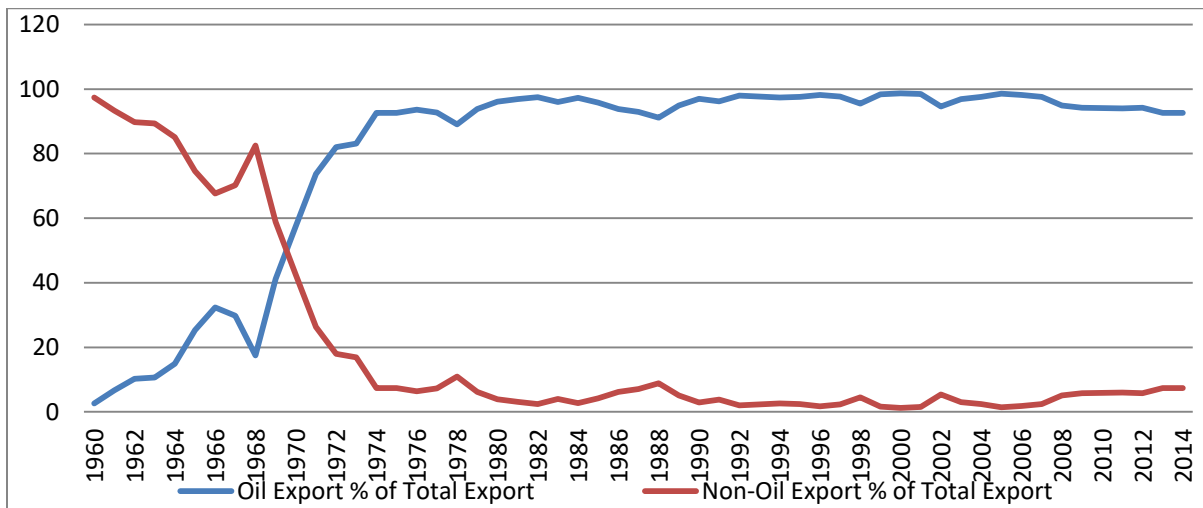


Figure 1. Contribution of Oil and Non-Oil Export to Total Export in Nigeria 1960 to 2015

¹ See (Martincus & Gomez, 2009; Kehoe & Ruhl, 2004; Feenstra & Kee, 2005).

² See (Ude & Agodi, 2015; Arodoye & Iyoha, 2014; Adelowokan & Maku, 2013; Omoke & Ugwuanyi, 2010; Saibu, 2004).

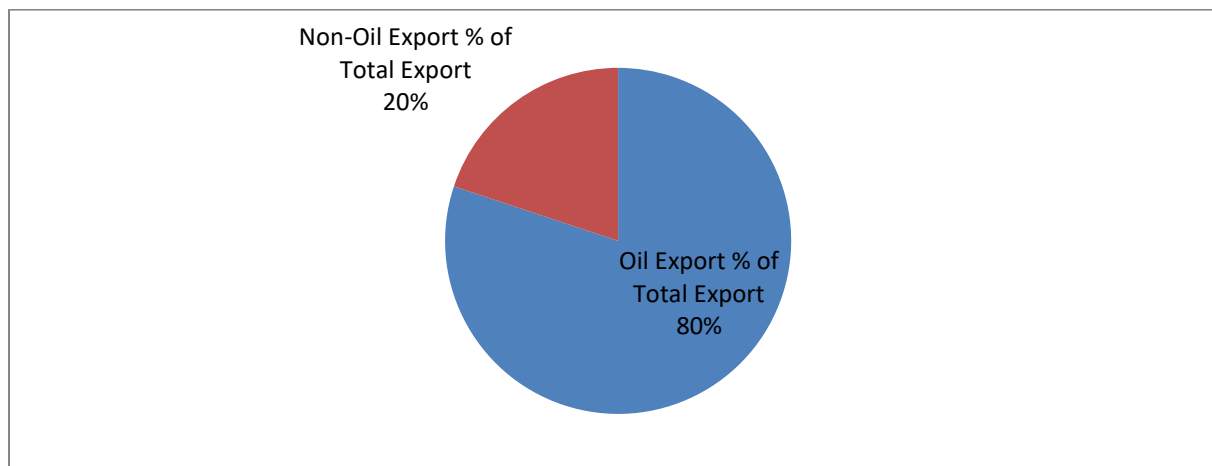


Figure 2. Average Percentage Contributions of Oil and Non-Oil Export to Total Export in Nigeria 1960 - 2015

2. Literature Review

Earlier theorists on international trade (Smith, 1776; Ricardo, 1817; Samuelson, 1971; Jones; 1971; Heckscher-Ohlin, 1991) argued that countries should specialize in production and exportation of commodities which they possess comparative advantage over other countries of the World. This theory was challenged by Prebisch (1950) and Singer (1950) after the World War II. Prebisch (1950) and Singer (1950) argued that specialization on primary commodities make developing countries export dependant on raw materials and agriculture products; and these developing countries are import dependant on consumer and manufacturing products from the developed countries, hence the need for export diversification.

With respect to empirical literature, Esu and Udonwa (2015) examine the relationship between economic diversification and economic growth in Nigeria for the period 1980 to 2011. Using an error correction modelling technique, the study observed that labour force and oil trade had significant positive impact on economic growth while non-oil trade had significant negative effect on economic growth in Nigeria. However, non-oil foreign direct investment, oil foreign direct investment, trade openness, export, inflation rate and capital stock had insignificant impact on economic growth. Thus, the study recommended that economic diversification can 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 and sustaining recent improvements in the agricultural sub-sector. Onodugo, Amujiri and Nwuba (2015) examined how diversification of the economy will enhance stable and viable economic growth in Nigeria. Employing descriptive analysis the study observed that the neglect of agriculture has resulted in constant depreciation in gross domestic product in Nigeria. Therefore, the study recommended the need for a conscious paradigm shift in economic policies and political will to implement such changes in policies.

Liu and Zhang (2015) examined the relationship between export diversification and exchange rate regimes for a group of seventy-two countries for the period 1974 to 2010. The result of the study showed that export diversification had a positive but insignificant effect on the choice of fixed exchange-rate

regimes. Decomposing export diversification into extensive and intensive margins, the result of the study showed that, higher level of product diversification at the extensive margin has a statistically positive effect on exchange-rate regime choices while the intensive margin has a negative but insignificant impact on the choice. Shabana and Zafar (2014) examined the determinants of export diversification for panel data-set of selected ASEAN and SAARC member countries for the time period 1986 to 2012. The study employed the fully modified ordinary least squares co-integration model approach. The result of the study showed that domestic investment, foreign direct investment, financial sector development, competitiveness and institutional strength were positive-significant determinants of export diversification in both the regions. The study recommended the need for the two selected regions (ASEAN and SAARC) to diversify their exports especially in their area of specialization which is vital for their economic development. Furthermore, the study encouraged the regional countries to improve their international competitive strength while upgrading environment to attract both domestic and foreign investment.

Aditya and Acharyya (2015) examined the relationship between trade liberation and export diversification. Specifically, the study evaluated the implications of tariff reductions for diversification of export basket across and within industries measured in terms of larger sets of homogeneous goods and horizontally-differentiated varieties in two country world. The findings of the study revealed that unilateral tariff reduction may make the liberalizing country's exports diversified both across and within sectors whereas the trading partner may experience across-sector diversification. Under bilateral tariff reduction exports of larger number of differentiated varieties may be realized only for the country in whose favour the ratio of national wages moves.

Longmore, Jaupart and Cazorla (2014) examined the determinants of economic diversification in Trinidad and Tobago over the period 1980 to 2010. Employing a dynamic panel GMM technique for a set of 183 countries, the study observed that openness to foreign direct investment inflows is the most fundamental determinants of economic diversification in Trinidad and Tobago. The study recommended that greater openness to foreign direct investment and improvements in business climate are strategy policies that can be implemented to expand the range of activities of the country's economic structure. Haouas and Heshmati (2014) assessed the role of economic diversification on the UAE economy. The findings of the study supported the fact that the UAE is facing an oil curse. This was evident by the declining levels of total factor productivity, volatile economic growth, negative returns on investment, and over reliance of domestic labor force on government's employment. The study also observed in recent times that the UAE economy has recorded impressive attempt at diversifying its economy. Thus, the study recommended that greater efforts were needed to stimulate the diversification of the production base by encouraging increased domestic, especially private investment. The study also stressed that well-targeted policies should be adopted to accelerate reform and facilitate the involvement of the private sector in the economy.

Lejarraga and Walkenhorst (2013) examined the relationship among economic policy, tourism trade and productive diversification for 151 countries. The result of the study showed that the determinants of tourism linkages were classified into five categories: resource endowments, level of development, institutional maturity, business environment, and trade regulations. Furthermore, the study observed that determinants representing the business environment which include: corporate tax rates, labor market regulations, and internet usage, as well as trade regulations, such as tariff and non-tariff measures, had the

most influence on the formation of tourism linkages. The other categories had lesser influence on the formation of tourism linkages. Therefore, the study recommended that policymakers should focus their reform efforts on improvements of the business environment and on streamlining trade regulations.

Agosin, Alvarez and Bravo-Ortega (2011) analysed the determinants of export diversification for a group of 79 countries. The study covered the period 1962 to 2000 and employed generalised methods of moments (GMM) technique. The study observed that trade openness and exchange rate volatility induced higher specialisation while financial development and exchange rate overvaluation were insignificant to diversifying exports. The result of the study also showed that human capital accumulation contributed positively to export diversification and that increasing remoteness tends to reduce export diversification. In addition, study revealed that improvements in the terms of trade tend to concentrate exports. This effect was lessened for countries with higher levels of human capital; suggesting that countries with higher education could take advantage of positive terms of trade shocks to increase export diversification. From the above reviewed literature, it was evident that there exists paucity of knowledge on the relationship between trade policy and export diversification based on the lack of studies on this issue in Nigeria, thereby justifying the need for this study.

3. Methodology

3.1. Theoretical Framework

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

3.2. Model Specification

To examine the relationship between trade policy and export liberalization in Nigeria, this study utilized a modified model by Agosin et al. (2011) on the determinants of export diversification. The model is stated as:

$$DIV = f(TP, FD, FDI, GOV, EXV) \tag{1}$$

DIV is export diversification; *TP* is trade policy proxy by trade liberalization (*TLIB*) policy and trade openness (*OPNX*); *FD* is financial development; *FDI* is foreign direct investment; *GOV* is government expenditure; and *EXV* is exchange rate volatility. The econometric form of equation (1) is stated as:

$$div_t = \beta_0 + \beta_1 tlib_t + \beta_2 opnx_t + \beta_3 fd_t + \beta_4 fdi_t + \beta_5 gov_t + \beta_6 exv_t + \mu \tag{2}$$

Export diversification is measured by export diversification index. Trade liberalization policy is measured by a dummy variable. Zero (0) represents the period before the adoption of trade liberalization (that is 1962 to 1865) while period after trade liberalization is proxied by one (1) (that is 1986 to 2015). Trade

openness is measured by import plus export as a ratio of real gross domestic product. Trade liberalization and trade openness are expected to promote export diversification through an increase in the number of exporters in sectors facing improved export opportunities. (Agosin et al, 2011; Melitz, 2003) Financial development is measured by the ratio of credit to the private sector to gross domestic product. The expected impact of financial development on export diversification is ambiguous. On the one hand, financial development reduces liquidity constraints by enhancing the level of investment by exporters which can facilitate export diversification. (Manova, 2008; Chaney, 2005) On the other hand, financial development may retard export diversification because investors do not want to take risk on untried ventures, and they may decide to concentrate their financial resources on existing activities where the economy has comparative advantage. Foreign direct investment is expected to increase export diversification if concentrated on the non-oil sector of the economy. Government expenditure is expected to increase export diversification through infrastructural development which enhances investment level while exchange rate volatility may inhibit export diversification because it discourages investment.

Data on export diversification is sourced from International Monetary Fund (IMF) database. Data on other variables: trade openness (*opnx*); financial development (*fd*); foreign direct investment (*fdi*), government expenditure (*gov*) and exchange rate were sourced from the Central Bank of Nigeria (CBN) Statistical bulletin. Exchange rate volatility is computed using E-GARCH volatility model. The E-GARCH model has been judged by studies¹ as superior to other models of volatility due to its capturing of asymmetric effects and its non imposition of non-negative constrain on the parameters. (Jamil, Streissler & Kunst, 2012)

4. Data Analysis and Interpretation

This study starts its data analysis by examining the stationarity properties of the variables using Augmented Dickey Fuller (ADF) test. The results of the stationarity tests presented in table 1 showed that all the variables were integrated of order one, that is, the variables were I(1) series. Sequel to the result of unit root tests, the co-integration test was carried out using the Auto-Regressive Distributed Lag (ARDL) Bound Co-integration test. The result of the co-integration estimate showed that the value of the F-statistics was lower than the value of the lower bound critical value at various critical levels, suggesting the absence of co-integration among the variables.

Table 1. Unit Root Test

Augmented Dickey-Fuller (ADF) Test			
Variables	Level	After Differencing	Status
div	-2.7859	-5.8350*	I(1)
tlib	-1.1015	-7.2111*	I(1)
opnx	-2.1703	-8.9744*	I(1)
lfdi	-0.3453	-9.8516*	I(1)
fd	-2.4882	-6.8781*	I(1)
gov	-1.1138	-7.8110*	I(1)
extv	-2.4492	-22.7197*	I(1)

Source: Authors' Computation using E-views 9, 2017. Note: *=1% critical value

¹ See (Berument, et al., 2001; Kontonikas, 2004).

Table 2. ARDL Bound Co-integration Test

Estimated Model	F-Statistics	
Estimated Model	2.0722	
Critical Values	Lower Bound	Upper Bound
1%	3.15	4.43
5%	2.45	3.61

Source: Author's Computation, using E-views 9, 2017

The ARDL regression estimate on the impact of trade policy on export diversification showed that the two measures of trade policy - trade liberalization (tlib) and trade openness (opnx) had insignificant influence on export diversification in Nigeria. The results of the regression estimate corroborated the descriptive analysis on figures 1 and 2 which revealed the poor and lopsided performance of non-oil export in Nigeria. The insignificant effect of trade liberalization and trade openness clearly showed the lack incentive and commitment on the part of the government at diversifying the export base/structure of the country. The finding on the impact of trade openness on export diversification was in line with Longmore et al. (2014) but in contrast to the findings by Al-Kawaz (2008). Also, the result showed that foreign direct investment inhibits export diversification in Nigeria. This finding was also in line with that obtained by Longmore et al. (2014) and clearly showed the lopsidedness in the inflow of foreign direct investment which has over the years concentrated on the oil sector at the expense of the non-oil sector such as the agriculture and manufacturing sectors. The result of this study further showed that financial development and exchange rate volatility had insignificant influence on export diversification while government expenditure showed a positive and significant effect on export diversification. The error correction term (ecm-term) from the short run ARDL estimate is expected to be negatively signed and statistically significant. From the estimate, the coefficient of the error correction term was correctly negatively signed (-0.17) and statistically significant. The coefficient estimate of the error correction term of -0.17 implied that the model corrects its short-run disequilibrium by about 0.17 percent speed of adjustment in order to return to the long-run equilibrium.

With respect to the research questions raised in the introductory section, the findings of this study showed that trade liberalization policy and trade openness had not promoted export diversification in Nigeria. The insignificant impact of trade policy can also be attributed to the lack of political will of the government at diversifying the economy given the dominance of the oil sector. Also, the result of the study is also a pointer to the absence of the vital infrastructural facilities (such as good roads, stable power supply, stable political and economic atmosphere, policy consistency among others) which are essential in enhancing productive activities in the non-oil sector of the economy which is key to achieving export diversification in the country.

Table 3. Regression Estimate

Dependent variable	Regressors	Estimated Co-efficient	Standard Error	t-Statistics
div	c	10.0811	1.6430	6.1359
	tlib	-0.0967	0.6403	-0.1510
	opnx	0.0301	0.0291	1.0335
	fdi	-0.7479	0.2111	-3.5425*
	fd	-0.0606	0.0371	-1.6350
	gov	0.8864	0.1996	4.4403*
	extv	-0.0006	0.0005	-1.0269
	ecm-term	-0.1733	0.0818	-2.1178**
R² = 0.9642		F-Stat. (Prob.) = 38.72 (0.000)		
Adjusted R² = 0.9576		Durbin-Watson Stat. = 1.777		

Source: Authors' Computation using E-views 9, 2017

In addition to the regression estimate discussed above, the chow breakpoint test was conducted to examine the significance of trade liberalization policy on export diversification. The result of the chow test showed that trade liberalization policy had insignificant influence on export diversification in given the insignificance of the probability value at five percent (see table 4 below).

Table 4. Chow Breakpoint Test

F-Statistics	1.2987	Prob. F(6, 40)	0.2868
Log Likelihood Ratio	7.6586	Prob. Chi-Square(6)	0.1761
Wald Statistic	6.4936	Prob. Chi-Square(6)	0.2611

Source: Authors' Computation using E-views 9, 2017

To evaluate the robustness of the regression estimate stability test (cumulative sum (CUSUM) and cumulative sum of squares (CUSUMsq) were conducted on the residuals of the regression estimate. The stability tests showed that the model was adequately specified and that the parameters of the models did not suffer from any structural instability over the period of study. This is because the plots of both the CUSUM and CUSUMsq are within the bounded line of five percent significant level as seen on figures 3 and 4. In addition, normality and heteroskedaticity ARCH tests were conducted. The probability value of the Jarque-Bera in the normality test was greater than five percent, indicating the acceptance of the null hypothesis that the distribution is normal. The heteroskedaticity (ARCH test) also showed the absence of serial correlation in the estimates. This is because the probability value was greater than 0.05.

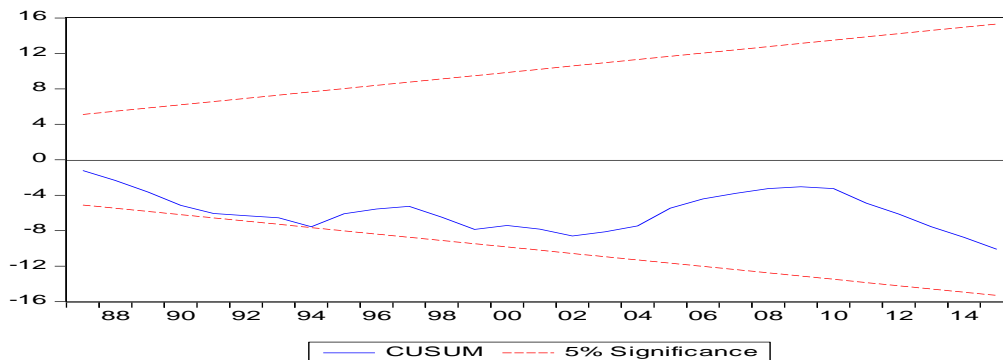


Figure 3. Plot of Cumulative Sum of Recursive Residuals

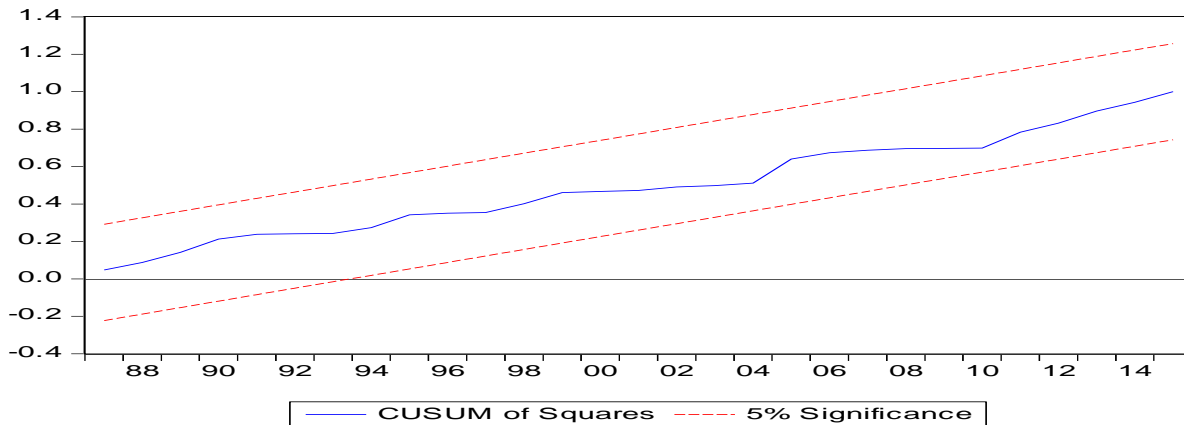


Figure 4. Plot of Cumulative Sum of Squares of Recursive Residuals

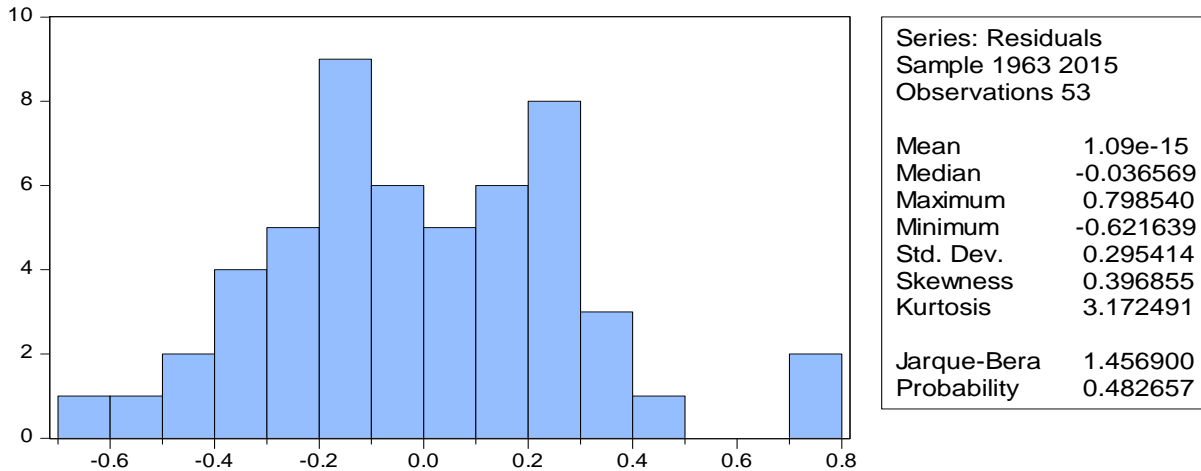


Figure 5. Normality Test

Table 4. Heteroskedasticity ARCH Test

F-Statistics	0.5184	Prob. F(1,50)	0.4749
Obs*R-squared	0.5336	Prob. Chi-Square(1)	0.4651

5. Conclusion and Policy Recommendations

This study examined the impact of trade policy on export diversification in Nigeria over the period 1962 to 2015 and concluded that trade policy had not enhanced export diversification in Nigeria. Consequently, the following recommendations were offered: One, there is the need for the government to make the already established free trade zone more operational (such as the Calabar and Lagos free trade zones). This could be done by providing the necessary business enhancing facilities such as stable power supply, good roads and adequate security of lives and properties. Two, there is the need for the government to de-emphasize the dependency on oil and on the discoveries of new oil wells (such as those discovered in the Southwest and Northern regions in Nigeria. The continuous emphasis on oil will incessantly decline the drive of the government at diversifying the export base of the economy. The insignificant impact of financial development on export diversification strongly indicates the need for

monetary authority in formulating policies that can spur export diversification through the expansion of long-term credits by banking institutions to private investors particularly in the non-oil sectors of the economy. Also, there is the need for the government through its agencies such as the Bank of Industry (BOI) and the Nigerian Export-Import Bank (NEXIM) to vigorously support the growth of Small and Medium Enterprise (SMEs) particularly in the agriculture and manufacturing sectors. The growth of SMEs in these sectors with the granting of export subsidy will further enhance the diversification of export in Nigeria.

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