Entrepreneurial Business and Economics Review

2020, Vol. 8, No. 1

10.15678/EBER.2020.080107

Trade Policy and Export Diversification in Nigeria in the years 1970-2017: A Sectoral Analysis

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ABSTRACT

Objective: This study examines the impact of trade policy on export diversification of economic sectors in Nigeria over the period of 1970 to 2017.

Research Design & Methods: The study utilises Autoregressive Distributed Lag (ARDL) technique and the Herfindal formula to compute the export diversification index.

Findings: The results of the study show that trade policy has a significant impact on export diversification of the oil sector, while the impact of trade policy on export diversification of the remaining sectors of the economy is insignificant.

Implications & Recommendations: The Nigerian export base is still highly skewed towards oil export at the expense of other sectors. Thus, with exception to the oil sector, trade policy has not enhanced export diversification of other sectors of the Nigerian economy. Thus, the study recommends that the government de-emphasises dependency on oil and discoveries of new oil wells, such as those discovered in the Southwest and Northern regions of Nigeria.

Contribution & Value Added: This study contributes to the literature by showing that trade policy has diverse influence on export diversification in various sectors of the economy. Hence, the use of trade policy recommendations from aggregate analysis should be discontinued while sector specific policies should be adopted.

Article type: research article

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

JEL codes: F10, F13, O20, O24

Received: 26 August 2019 Revised: 18 January 2020 Accepted: 29 January 2020

Suggested citation:

Nwosa, P.I., & Fasina, O.T. (2020). Trade Policy and Export Diversification in Nigeria in the years 1970-2017: A Sectoral Analysis. *Entrepreneurial Business and Economics Review, 8*(1), 127-142. https://doi.org/10.15678/EBER.2020.080107

INTRODUCTION

Prior to the attainment of independence in 1960, the Nigerian economy was characterised by sectoral concentration of commodity export (dominated by agricultural export), while with the discovery of oil in exportable quantity, the country's export became dominated by oil which accounts for over 80% of total export from 1970 to 2017. Sectoral concentration on commodity export is associated with high sensitivity to sector-specific shocks, high terms of trade volatility, and high volatility of export revenue/foreign exchange earnings (Gylfason, 2001; Dawe, 1996; Bleaney & Greenaway, 2001). Particularly for countries like Nigeria – where natural resources account for a large share of exports – sectoral concentration of commodity exports resulted in many macroeconomic challenges such as economic instability, increased civil unrest and the Dutch disease that affects the competitiveness of the manufacturing sector due to the appreciation of domestic exchange rate (Corden & Neary, 1982; Corden, 1984; Mehlum, Moene, & Toruik, 2006; Ross, 2006).

In spite of the socio-economic challenges confronting sectoral concentration of export, the political emphasis on export diversification in Nigeria seems to fluctuate inversely with the trend in international commodity prices. For instance, periods of decline or collapse in international oil prices - such as the decline of oil price from 39.5 US dollars per barrel (dpb) in early 1980 to 11.57 US dpb in mid-1986 - witnessed strong agitation for export diversification that lead to the implementation of various trade policies like as trade liberalization, trade openness, exchange rate deregulation; among others, under the Structural Adjustment Program (SAP) of 1986. The rebound of crude oil in the late 1980s brought about the demise of agitations for the diversification of the Nigerian export base. Similarly, the recent intense resurgence of the need to diversify the economy is a fall-out of the decline in oil price from 105.79 US dpb in mid-2014 to 30.32 US dpb in early 2016. The decline in crude oil prices was accompanied by numerous economic challenges such as lower foreign exchange reserve, exchange rate depreciation, and a rising budget deficit.

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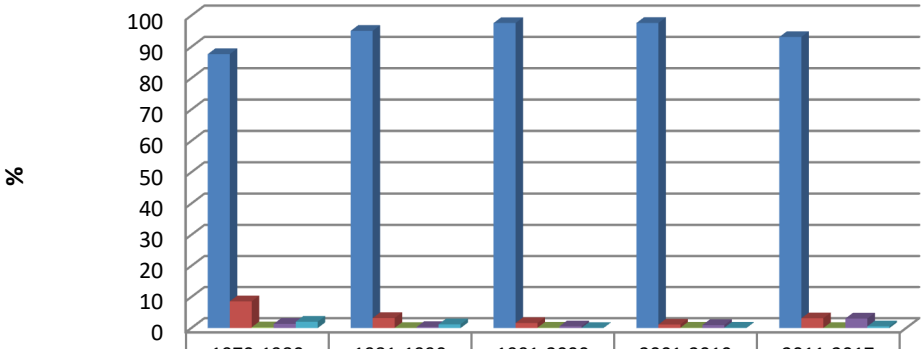
This inconsistency in the drive for export diversification shows the lack of political will and determination in the Nigerian government to diversify the economy, which resulted in the continuous lopsidedness in the export base or export structure of the Nigerian economy. Undoubtedly, the lack of economic diversification contributed immensely to the 2016-2017 economic recession, which was attributed mainly to the decline in international crude oil price. The recession was accompanied by rising unemployment and poverty rates that calumniated in the declined standard of living of the citizenry. Successive government established several trade policies and entered into various bilateral, multilateral, and regional trade agreements, such as – Trade and Investment Framework Agreement (TIFA) between the USA and Nigeria, Bilateral Investment Treaties (BITs) with many countries of the world, Economic Community of West African States (ECOWAS) trade liberalization scheme (ETLS), and common external tariff (CET) with ECOWAS among others. Moreover, the Nigerian economy is a member of, among other organisation, the World Trade Organization (WTO), Global System of Trade Preference developing countries (GSTP), and African Growth and Opportunity Act (AGOA). The above policies and trade agreements were

to increase trade transactions between Nigeria and its global trading partners, de-emphasise Nigerian dependence on oil with its perennial challenges, and expand Nigerian export base/structure through export diversification. These trade policies and agreements seem not to have yielded satisfactory outcomes as the country's export is still largely dominated by oil export as shown in Figure 1.



	1970-1980	1981-1990	1991-2000	2001-2010	2011-2017
Oil	87.69	95.11	97.6	97.63	93.15
Agric	8.61	3.24	1.64	1.15	3.15
Minerals	0.28	0.06	0.13	0.13	0.03
Manufacturing	1.37	0.36	0.58	0.97	3.08
Others	2.04	1.22	0.05	0.13	0.58

Figure 1. The percentage of the average share of sectoral export to total export in Nigeria in the years 1970-2017
Source: own computation. Data from Central Bank of Nigeria (CBN) Statistical Bulletin, 2018 Edition.

Figure 1 shows that despite the huge employment and other economic potentials of the agricultural and the manufacturing sectors, their share of export was less than 10% and 4% respectively. Moreover, despite the huge mineral endowments possessed by the economy, the share of total export by the mineral sector is less than 1% over the last four decades. The inconsequential export share of these sectors – agriculture, minerals, manufacturing, and others suggests that the Nigerian economy is far from attaining the export diversification objective and addressing the many economic challenges it is facing.

While acknowledging the facts that export diversification is not new in Nigerian trade policy profile, the absence of any meaningful increase in the export share of various non-oil sectors to total export calls for the need to examine the extent to which trade policy influenced export diversification in various sectors of the economy. The need for export diversification arises because oil resources are finite, and experience shows that both the price of and demand for oil fluctuated disproportionately with severe consequences on the macro-economy over the past years. This study is important because: (1) an increase in export diversification can increase productivity, given that exporters are more productive than non-exporters (Melitz, 2003) and (2) export diversification can reduce exposure to external shocks, reduce macroeconomic volatility, and increase economic growth

(Agosin, Alvarez, & Bravo-Ortega, 2012). Moreover, (3) given that natural resources are not evenly distributed across the economy, export diversification would enable the government to focus on other sectors/regions of the Nigerian economy which would reduce communal unrest. In this regard, Lederman and Malony (2003) note that the negative effect of natural resources abundance disappears once the country controls for export concentration on a single commodity. Finally, the expected growth in productivity resulting from export diversification would greatly contribute in reducing the rising poverty, reducing the escalating rate of unemployment, cushion the excessive volatility of foreign exchange rate through the supply of foreign exchange of diversified sectors, increase the foreign revenue base of the government, and set the country on the path of even and sustained growth across all sectors of the Nigerian economy.

Although articles abound on the issue of export diversification in Nigeria, most are newspaper texts that lack empirical analysis which limits their policy inferences. Moreover, the few local empirical works on this issue (see Olaleye, Edun, & Taiwo, 2013; Odularu, 2009) focus on the link between export diversification and economic growth in Nigeria, while Nwosa and Ajibola (2018) focus on the link between monetary policy and export diversification in Nigeria. The paucity of in-depth empirical understanding of the link between trade policy and export diversification from sectoral perspective makes the study not only original but also novel and worthy of investigation. Furthermore, this article contributes to the literature by showing the extent to which trade policy influenced export diversification in various sectors of the economy. The outcome of this study will show if trade policy recommendations from an aggregate study should be discontinued, while sector specific policies should be adopted to influence the export diversification of sectors. Thus, the objective of this study is to examine the relationship between trade policy and sectoral export diversification in Nigeria. In achieving this objective, the study used the Herfindal formula to compute the export diversification index and the Auto-Regressive Distributed Lag (ARDL) technique to analyse the data. In addition to the introduction, section two covers the literature review, while section three discusses the materials and methods used in the study. Section four discusses the results of the study, while section five presents the conclusion.

LITERATURE REVIEW

Prior to World War II, international trade theorists (Smith, 1776; Ricardo, 1817; Samuelson, 1971; Jones, 1971; Heckscher-Ohlin, 1991) stressed the importance of comparative advantage and encouraged specialisation in the production and exportation of commodities in which countries – particularly developing ones – possess such a comparative advantage. However, after the World War II, Prebisch (1950) and Singer (1950) noted that the specialisation on primary commodities make developing countries export-dependent on raw materials and agricultural products, and import-dependent on consumer and manufacturing products from the developed countries, hence the need for export diversification. Moreover, the Rybczynski (1955) theorem postulates that increases in the supply of a factor of production – while other factors remained – fixed causes the output of a good to increase by intensively using the accumulating factor and the output of other goods to decrease in absolute amount, provided that the goods and factor prices remain unchanged.

From a conceptual perspective, Ofa, Spence, Mevel, and Karingi (2012) and Krugman (1980) view export diversification as an increase in export which results from exporting new products and the discovery of new export markets – known as extensive export margin – or the exportation of older or more current products, known as intensive export margin (Armington, 1969). In this context, Amurgo-Pacheco and Pierola (2008) emphasise the geographic dimension of export diversification through the extensive export margin. According to Amurgo-Pacheco and Pierola (2008), export diversification involves the export of new products to existing markets, old products to new markets, and new products to new markets. However, Hummels and Klenow (2005) note that neither the intensive margin hypothesis nor extensive margin hypothesis fully explains the patterns of international trade in developing countries nor does it provide an empirical framework for dividing export diversification into intensive and extensive margins. Hummels and Klenow (2005) emphasise that improved economic development increases consumer preference for varieties of consumables, thereby providing an incentive for export diversification in the extensive margin. Furthermore, Hummels and Klenow (2005) show that countries export a higher volume of goods (intensive margin), a higher variety of goods (extensive margin), or a higher quality goods (Ofa *et al.*, 2012).

Apart from the above, Dogruel and Tekce (2011) note that export diversification can occur horizontally or vertically. Horizontal export diversification is simply an increase in the number of exported products that happens in the same sector. Samen (2010) and Herzer and Nowak-Lehnmann (2006) note that the addition of new products to existing export baskets in the same sector helps to mitigate adverse economic risks. On the other hand, a shift in a country's exports from primary products to secondary or tertiary sectors describes vertical export diversification.

Giri, Quayyum, and Yin (2019) analyse the determinants of export diversification across countries with respect to empirical literature. Their study employs Bayesian Model Averaging (BMA) to observe that human capital accumulation and reduction in trade barriers are key factors influencing export diversification. Moreover, the study observes that the improvement in institutional quality and financial sector development are important determinants of export diversification. Osakwe, Santos-Paulino, and Dogan (2018) examine the relationship among trade dependence, trade liberalization and export diversification in 144 developing countries in 1970-2010. Their study employs both parametric and non-parametric tests. The non-parametric estimates show that developing countries more open to international trade tend to have more diversified export structure compared to countries less open to international trade. With respect to Sub-Saharan Africa (SSA) countries, the study observes that countries more open to trade have less diversified export structures. Parametric estimates provide further support that trade liberalisation contributes to export diversification in developing countries. Nwosa and Ajibola (2018) examine the extent to which monetary policy influenced export diversification in Nigeria in 1962-2014. By employing the ordinary least squares techniques, their regression estimate shows that monetary policy had insignificant influence on export diversification in Nigeria.

Liu and Zhang (2015) examine the effect of diversification of export product on the choice of exchange-rate regimes in 1974-2010. The study covers 72 developing countries and employs the pooled regression estimation technique. The result of the study shows that diversification of export products had a positive but insignificant effect on the choice

of fixed exchange-rate regimes. Furthermore, the study reveals that when the diversification of export product is decomposed into extensive and intensive margins, the higher level of export product diversification at the extensive margin has a positive and significant effect on exchange-rate regime choices, while the intensive margin has a negative but insignificant impact on the choice of exchange rate regime. Shabana and Zafar (2016) examine the determinants of export diversification for a group of selected ASEAN (Association of South East Asian Nations) and SAARC (South Asian Association for regional Cooperation) member countries in 1986-2012. The study focuses on country factors such as financial sector development, competitiveness, institutional framework, domestic investment, and foreign direct investment. The study employs panel fully modified ordinary least squares co-integration technique and its result shows that the financial sector development, competitiveness, institutional framework, domestic investment, and foreign direct investment are significant determinants of export diversification for the ASEAN and SAARC regions. The study recommends the need for more export diversification policies particularly in their area of specialization, which is vital for economic development. The study also stresses the need for the regions to improve their international competitiveness while upgrading the environment to attract both domestic and foreign investment.

Hvidt (2013) examines past records and future trends of economic diversification in six Gulf Cooperation Council (GCC) countries. By employing a comparative approach, the study observes that past efforts on diversification yielded modest results. Using content analysis in evaluating future diversification trends based on current economic developmental plans, the study observes that the current development plans of the GCC countries generally indicate economic diversification as a means to securing the stability and sustainability of income levels in the future. Olaleye *et al*. (2013) examine the causal nexus between export diversification and economic growth in Nigeria in 1970-2012. The study proxies export diversification by the export shares of oil, manufacturing and agricultural sectors in total exports, while economic growth by per capita income. The result of the causality estimate indicates a uni directional causation from economic growth to agriculture and oil exports with no causality between economic growth and manufacturing export.

Dogruel and Tekce (2011) examine the relationship between trade liberalization and export diversification in selected MENA (Middle East North Africa) countries in 1992-2008. The study covers eight MENA countries (Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia and Tunisia) and utilizes the panel data regression estimate. The result of the study shows a dual effect of trade liberalisation on export diversification amongst the sampled countries. On the one hand, multilateral liberalisation in the World Trade Organization (WTO) and the wide-based regional trade agreement GAFTA (Grain and Feed Trade Association) enhanced the effort of these countries towards export diversification, while Association Agreements with the EU (European Union) and the membership to the GCC (Gulf Cooperation Council) lead to the specialisation on the exportation of certain products rather than export diversification. Martincus and Gomez (2009) examine the relationship between trade policy and export diversification in Colombia. The study examines what Colombia stands to gain from Free Trade Agreement (FTA) with the United States of America. By adopting the dynamic random effects Poisson estimation technique, the study observes that reduction in tariffs aid exports diversification from Colombia USA. However, the study stresses that the increase in exports resulting from the reduction in tariffs can

only be sustained and improved in the long run with the provision of physical infrastructure, improvement in institutional infrastructure linked to trade facilitation, enhanced logistic conditions, and improvement in human capital endowments.

Odularu (2009) examines export diversification as a promotion strategy for intra-ECOWAS trade expansion. The results of the study show that the potential of ECOWAS in exploiting economies of scale and enhancing competition is limited by low export diversification, poor infrastructure, and high trading costs among its members. The study stresses the need for a more favourable environment in the ECOWAS region for overall trade and the need for members to demonstrate a strong commitment to a programme of broad-based trade reform to reverse the sub-region's marginalisation in world trade and investment. The study also calls upon International organisations such as the World Trade Organisation (WTO) and the International Monetary Fund (IMF) to assist ECOWAS members in the implementation of development-oriented trade policies, the strengthening of their surveillance, and technical assistance in managing shocks that arise from trade liberalisation and regional integration.

Osakwe (2007) examines the impact of foreign aid and resources on export diversification in Africa. The study utilizes unbalanced panel data for 31 African countries in 1985-2002. The System GMM (Generalized Method of Moments) technique was employed and the results of the study show that foreign aid, resource endowments, and the quality of infrastructure are significant determinants of export diversification in Africa. The study also observes that institutional factors are important, although they are not robust in influencing export diversification in Africa. Finally, the study observes that the geographical location of a country was insignificant in determining export diversification in Africa. Consequently, the study recommends that investment in infrastructure development is important in the region in order to reduce transaction costs and make the region more competitive in the global markets of manufactured goods. Sorsa (1999) examines the relationship among real exchange rate, export diversification, and trade protection in Algeria. Employing an Ordinary Least Square (OLS) technique, the study shows that a decrease in trade protection results in real exchange rate depreciation, which is expected to increase the competitiveness and incentives to invest in the non-oil sector of the economy.

The reviewed literatures clearly show evidences that there exists a dearth of knowledge on the relationship between trade policy and export diversification in Nigeria. Moreover, none of the above positions in the literature examines the link between trade policy and export diversification from a sectoral perspective, thereby justifying the need for this study. Consequently, this study adds to existing literature by examining the relationship between trade policy and export diversification in Nigeria in 1970-2017.

MATERIAL AND METHODS

Measurement of Variables

There are different measures of export diversifications, such as the normalized-Hirschmann index, the Herfindahl index, and the overall difference index (Shabana & Zafar, 2016; Pertersson, 2005; Pineres & Ferrantino, 1997).

The Normalized-Hirschmann Index

The normalized-Hirschmann index is with the below formula:

$$H_{\mathrm{jt}} = \frac{\sqrt{\sum_{i=1}^{n}\left(\frac{x_{\mathrm{it}}}{X_{\mathrm{jt}}}\right)^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}} \quad (1)$$

where:

x_{it} - is the value of exports of industry "i" located in country "*j*";
X_{jt} - is the total exports of country "j" in a given period t.

The number of industries is shows by *n*. The index H_{jt} indicates values $0 \leq H_{jt} \leq 1$. The index value of one denotes low or no presence of export diversification while the index value close to zero denotes high value of export diversification (Shabana & Zafar, 2016; Ofa *et al*., 2012; Al-Marhubi, 2000).

The Herfindahl Index

The Herfindahl index is calculated as follows:

$$Z_{\mathrm{jt}} = \sum\left(\frac{E_{\mathrm{jit}}}{\sum E_{\mathrm{jit}}}\right)^2 \quad (2)$$

In which E_{jit} is the exports of the country in the "*i*" product (sector) in the given period t, while $\sum E_{\mathrm{jit}}$ is the total export of the country in the period t. Moreover, the index Z_{jt} indicates values $0 \leq Z_{jt} \leq 1$. The index value of one indicates full degree of export concentration (or specialisation), while the index value of zero indicates a high level of export diversification (Petersson, 2005).

The Overall Difference Index

The overall difference index measures export diversification as the total deviation of the country's share of the world's overall exports. It is calculated as follows (Al-Marhubi, 2000):

$$S_{\mathrm{jt}} = \frac{\sum\left|h_{\mathrm{ijt}}\right| - \left|h_{\mathrm{it}}\right|}{2} \quad (3)$$

where:

h_{ijt} - is the share of industry "*i*" in total exports of country;
h_{it} - is the share of industry in world exports in a given period.

Moreover, the index S_{jt} indicates values $0 \leq S_{jt} \leq 1$. The index value of one indicates complete concentration and the index value of zero complete diversification (Shabana & Zafar, 2016; Al-Marhubi, 2000).

From the above measures, this study employs the Herfindal index to calculate export diversification in Nigeria. The Herfindal index is useful when export diversification is apparent by the changes in export composition within sectors. Moreover, it includes both the intensive and extensive edge of diversification (Shabana & Zafar, 2016; Matthee & Naude, 2007; Bebczuk & Berrettoni, 2006).

With respect to other variables, trade policy is measured by trade liberalisation and trade openness. Trade liberalisation is proxied with a dummy variable. Zero (0) represent the period of no trade liberalisation (1970-1985), while one (1) indicates the period of trade liberalisation (1986-2017). Trade openness is measured by import plus export as a ratio of real gross domestic product. Trade liberalisation and trade openness are expected to promote export diversification through an increase in export opportunities of these sectors (Agosin *et al.*, 2012; Melitz, 2003). Financial development is measured by the ratio of credit to the private sector to real 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 who can facilitate export diversification (Manova, 2008; Chaney, 2007). 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 in the economy that has a 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 that would enhance investment level, while exchange rate volatility may inhibit export diversification as it discourages investment.

Sources of Data

Data on sectors' export in oil, agriculture, minerals, manufacturing and others based on Central Bank of Nigeria's (CBN) classification, trade openness (*opnx*), financial development (*fd*), foreign direct investment (*fdi*), government expenditure (*gov*), and exchange rate were also sourced from the CBN's Statistical bulletin, 2018 edition. Exchange rate volatility was computed using E-GARCH volatility model. The E-GARCH model was judged by studies as superior to other models of volatility (see Berument, Metin-Ozcan, & Neyapti, 2001; Kontonikas, 2004) due to its ability to capture asymmetric effects and the non-imposition of non-negative constrain on parameters (Jamil, Streissler, & Kunst, 2012). The study covered the period from 1970 to 2017.

Model Specification

To examine the relationship between trade policy and export diversification in Nigeria, this study utilized a modified model by Agosin *et al*. (2012) on the determinants of export diversification:

$$\mathrm{DIV} = f(\mathrm{TP},\mathrm{FD},\mathrm{FDI},\mathrm{GOV},\mathrm{EXV}) \tag{4}$$

where:

DIV - is export diversification;
TP - is trade policy proxy by trade liberalisation (*TLIB*) policy and trade openness (*OPNX*);
FD - is financial development;
FDI - is foreign direct investment;
GOV - is government expenditure;
EXV - is exchange rate volatility.

The econometric form of equation (1) is as follows:

$$\mathrm{div}_t = \beta_0 + \beta_1 \mathrm{tlib}_t + \beta_2 \mathrm{opnx}_t + \beta_3 \mathrm{fd}_t + \beta_4 \mathrm{fdi}_t + \beta_5 \mathrm{gov} + \beta_6 \mathrm{exv}_t + \mu \tag{5}$$

Equation (2) can be express in a dynamic form as:

$$\begin{aligned}\mathrm{div}_t = \delta_0 + \sum_{i=0}^{p}\delta_1 \mathrm{div}_{t-i} + \sum_{i=0}^{q}\delta_2 \mathrm{tlib}_{t-i} + \sum_{i=0}^{q}\delta \mathrm{opnx}_{t-i} + \sum_{i=0}^{q}\delta_4 \mathrm{fd}_{t-i} + \\ + \sum_{i=0}^{q}\delta_5 \mathrm{fdi}_{t-i} + \sum_{i=0}^{q}\delta_6 \Delta\mathrm{gov}_{t-i} + \sum_{i=0}^{q}\delta_7 \Delta\mathrm{exv}_{t-i} + \psi \mathrm{ecm}_{t-1} + \varepsilon_t\end{aligned} \quad (6)$$

From equation (3) δ_1, δ_2, δ_3, δ_4, δ_5, δ_6, and δ_7 are the coefficients of the model, while ψ is the speed of adjustment.

Research Hypothesis

H1: Trade policy has a positive and significant impact on export diversification across sectors in Nigeria.

RESULTS AND DISCUSSION

This study begins data analysis by examining the stationarity properties of variables by using the Augmented Dickey Fuller (ADF) test. The results of the stationarity tests presented in Table 1 show that the Herfindal export diversification index for agriculture, mining, oil, and other sectors were integrated of order zero; that is, the variables were I(0) series. Meanwhile, the Herfindal export diversification index for manufacturing and the remaining variables (tlib, opnx, lfdi, fd, lgov, and extv) were integrated of order one; that is, the variables were I(1) series.

Table 1. Unit root test

Augmented Dickey-Fuller (ADF) Test			
Variables	**Level**	**After Differencing**	**Status**
Agric	-21.5296*	-	I(0)
Man	-0.5900	-3.4969*	I(1)
Min	-148.0950*	-	I(0)
Oil	-4.4075*	-	I(0)
others	-3.5950*	-	I(0)
Tlib	-1.3592	-6.6333*	I(1)
Opnx	-2.0558	-8.2254*	I(1)
Lfdi	-0.7129	-9.2879*	I(1)
Fd	-2.4706	-6.2995*	I(1)
Lgov	-1.5842	-7.4851*	I(1)
Extv	-2.3244	-21.0351*	I(1)

Source: own computation with E-views 9. Note: *=1% critical value.

Following the mix in the result of the unit root tests presented in Table 1 above, this study conduct the co-integration test with the Auto-Regressive Distributed Lag Bound Co-Integration test. Pesaran, Shin, and Smith (2001) provide two asymptotic critical values (lower and upper) bounds for testing the existence of co-integration when the regressors are purely I(0) or I(1). A lower value assumes the regressors are purely I(0), while an upper value assumes the regressors are purely I(1). If the F-statistic falls outside the critical values, then a conclusive statement can be made regarding the nature of co-integration among the variables in the ARDL model, without a priori information on the order of integration of independent variables. For instance, if the F-statistic is higher than the upper

critical value, then the null hypothesis of no co-integration is rejected, suggesting the existence of co-integration among the variables. Conversely, if the F-statistic is lower than the lower critical value, then the null hypothesis of no co-integration cannot be rejected, suggesting the absence of co-integration among the variables. However, if the F-statistic falls between the upper and lower critical values, then the result is inconclusive.

In the co-integration result presented in Table 2 the values of the F-statistics for all the models were greater than the upper bound critical values at both 1% and 5%, which suggest the existence of co-integration among the variables in models.

Table 2. The ARDL bound co-integration test

Estimated Model	F-Statistics	
Agricultural Sector	12.6985	
Manufacturing Sector	7.9145	
Mining Sector	13.4239	
Oil Sector	15.5124	
Others	7.5869	
Critical Values	**Lower Bound**	**Upper Bound**
1%	3.15	4.43
5%	2.45	3.61

Source: own study.

The regression estimates from the auto-regression distributed lag technique for the six sectors is presented in Table 3 above. The models focused on the extent to which trade policy influenced export diversification in each sector of the Nigerian economy. From the estimate, we observed that trade policy proxied by trade liberalisation has a negative but significant influence on the agricultural export, while both measures of trade policy - trade liberalisation and trade openness – have a positive and significant influence on the oil export. The negative effect of trade liberalisation on export diversification of the agricultural export implies that the various trade liberalisation policies initiated and implemented by the government did not favour diversification of the sector. However, the positive and significant influence of trade liberalisation on export diversification of the oil sector clearly shows the increase in oil export as reflected by the percentage share of oil export in total export (see Figure 1 above). Moreover, the estimate shows that trade policy proxied by trade openness has a positive and significant influence on the mining sector, but the magnitude of this impact is zero, which implies that trade policy did not meaningfully enhance export diversification in the mining sector. Finally, trade policy has an insignificant effect on export diversification index of other sectors. The implication of the above results is that trade policy differently affects export diversification of sectors, which indicates that trade policy directed at export diversification should be sector specific rather than a one for all or identical policy for all sectors.

The error correction term (ecm-term) from the short run ARDL estimate is expected to be negatively signed and statistically significant. A highly significant ecm-term proves the existence of a stable long-run relationship (Banerjee & Newman, 1993). From the estimate, the coefficients of the error correction terms in the estimated models were correctly signed and statistically significant. The coefficient estimates of the error cor-

rection terms of -0.834 (agric), -0.247 (man), -1.832 (min), -0.374 (oil), and -1.302 (others) imply that the models correct their short-run disequilibrium by 0.834%, 0.247%, 1.832%, 0.374%, and 1.302% speed of adjustment, respectively, in order to return to the long-run equilibrium. Furthermore, the negative sign of the error correction term indicates a backward movement towards equilibrium.

Table 3. The regression estimate

Independent Variable	Estimated Models				
	Agric	**Man**	**Min**	**Oil**	**Others**
tlib	-0.0046 (-2.323)**	-0.0001 (-0.520)	0.0000 (0.568)	0.3721 (2.898)**	-0.0003 (-2.064)
opnx	-0.0001 (-1.889)	0.0001 (1.584)	0.0000 (4.068)*	0.011 (2.680)**	-0.0000 (-0.402)
lfdi	0.0033 (2.530)**	-0.0000 (-0.058)	-0.0000 (-1.132)	-0.024 (-0.586)	-0.0001 (-0.966)
fd	-0.0000 (-0.211)	0.0000 (1.201)	0.0000 (1.713)	-0.017 (-2.090)	-0.0000 (-0.468)
lgov	-0.0035 (-2.346)**	0.0000 (0.116)	0.0000 (0.091)	-0.0530 (-0.899)	0.0001 (1.299)
extv	-0.0000 (-3.083)**	0.0000 (0.283)	0.0000 (10.229)*	-0.0000 (-0.164)	-0.0000 (-1.720)
ecm-term	-0.8340 (-5.456)*	-0.2466 (-3.009)*	-1.8315 (-9.506)*	-0.3743 (-3.481)*	-1.3015 (-5.788)*

Source: own study.

The above allows us to deduce that trade policy proxied by trade liberalisation and trade openness did not influence export diversification in the various sectors of the Nigerian economy. Moreover, it is evident from the regression estimate that Nigerian export is still greatly dominated by oil export. We may also attribute the insignificant impact of trade policy to the lack of political will in the government to diversify the economy, given the dominance of the oil sector. Moreover, the results of the study indicate the absence of vital infrastructural facilities, such as good roads, a stable power supply, stable political and economic atmosphere, and policy consistency, which are essential in enhancing productive activities in the non-oil sector of the economy.

CONCLUSIONS

This study examined the impact of trade policy on export diversification of the various sectors of the Nigerian economy in 1970-2017. The study utilised the Herfindal formula to compute the export diversification index while the results from the auto-regressive distributed lag estimate showed that trade policy had a significant impact on the oil sector, while trade policy had an insignificant impact on other sectors of the Nigerian economy. The implication of this is that Nigerian export is still highly centred on oil export, while the influence of trade policy on the diversification of other export sectors remains insignificant. Hence, this study offers the following recommendations: (1) There is a 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 a stable power supply, good roads, and the adequate security of lives and properties. All the above will boost the activities of the manufacturing, wholesale and retail trade, and service sectors. (2) There is a need for the government to de-emphasise the dependency on oil and discoveries of new oil wells, such as those discovered in the South-western and Northern regions of Nigeria. The continuous emphasis on oil will incessantly lessen the government's drive to achieve export diversification of other sectors of the economy. Moreover, (3) there is a need for the government to vigorously support the growth of Small and Medium Enterprise (SMEs) in the non-oil sectors through its agencies, such as the Bank of Industry (BOI) and the Nigerian Export-Import Bank (NEXIM). The growth of SMEs in these sectors along with the granting of export subsidies will further enhance the diversification of export in non-oil sectors.

The research was limited by the non-availability of such data as tariffs on imported goods across sectors or the volume of trade between Nigerian and her trading patterns in each sector. This limitation constrained information on the influence of trade policy on export diversification across sectors.

This study suggests that future research should scrutinise the relationship between trade policy and export diversification by using panel or cross-sectional data. Moreover, future studies should consider the impact of other macroeconomic policies, such as monetary, exchange rate, and fiscal policies on export diversification in Nigeria or across Sub-Saharan African (SSA) countries.

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Acknowledgements and Financial Disclosure

The authors would like to appreciate anonymous reviewers and the editorial board for constructive criticisms and comments which have increased the value of this article.

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Published by the Centre for Strategic and International Entrepreneurship – Krakow, Poland

Ministry of Science and Higher Education
Republic of Poland

The copyediting and proofreading of articles in English is financed in the framework of contract No. 913/P-DUN/2019 by the Ministry of Science and Higher Education of the Republic of Poland committed to activities aimed at science promotion.