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Economic Integration and the Margins of Exports in Nigeria: Implications for AfCFTA¹

Damilola Felix ARAWOMO² and Adegoke Ibrahim ADELEKE³

ABSTRACT

This paper explores the effects of economic integration on intensive and extensive export margins of Nigeria's trade with ECOWAS and other African countries. Multiple indices of economic integration and the margins of exports are computed. Fractional Logit model is used to estimate the intensive export margin equations while the Two-Stage Least Square (2SLS) is adopted for the estimation of the extensive export margin equations. Based on Regional Orientation Index, Nigeria recorded improved economic integration with ECOWAS and African countries in chemicals, beverages and tobacco, and manufactured products. However, Nigeria's margins of exports are still generally low with the Africa region and ECOWAS sub-region. Economic integration is found to have significant effects on extensive export margin but an insignificant effect on intensive export margin. Foreign and domestic investments are found to be the major drivers of export margins, and these could be achieved through improved ease of doing business. In preparation for the implementation of AfCFTA, it becomes imperative for Nigeria to intensify efforts in the production of manufactured, chemical, beverages, and tobacco products in which Nigeria has improved economic integration. Concerted efforts are thus required for Nigeria to be more competitive in both ECOWAS and AfCFTA.

Keywords: Economic Integration, Extensive, Intensive, Export Margins

JEL Classification: F14, F15, R10, R11.

¹ The views expressed in this paper are those of the authors and do not in any way reflect the official position or thinking of the Central Bank of Nigeria.

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1.0 Introduction

The structure of Nigeria's export conforms to the predictions of the classical and neo-classical trade theories (Adewuyi and Arawomo, 2014), as a large share of its exports is dominated by crude materials, agricultural products, and mineral products. One of the consequences of the over-concentration of exports is the cyclical deterioration of terms of trade, often reflected in the widening income gap between developed and developing countries. In Nigeria, export diversification (extensive and intensive) remains one of the goals of its economic plans since pre-independence. To this end, several strategies have been adopted to reverse the challenge of export concentration. However, the outcomes of these economic plans have left much to be desired.

One of the several strategies that could be adopted to enhance the margins of export is the negotiation for a reduction in tariff barriers and non-barriers in export destinations. This is usually one of the bases for pursuing economic integration by nations of the world. Several scholars have predicted the linkage between economic integration and economic specialization. Krugman (1979) stressed that gains from trade will happen even amongst nations with the same preferences, technological capabilities, and factor endowments. Dornbusch et al. (1977) for instance, ascertained that a reduction in tariff by two trading countries has the tendency of making export baskets of these countries more diversified through the expansion of traded goods for each country. A key factor that might encourage economic integration efforts is the reduction in international trade costs. A critical issue to note about reduction in trade costs is the unnecessary delays or complexities at the national borders, which are usually influenced by the customs formalities and trade procedures of different countries. Any impediments to international trade, especially exports, might constrain domestic production (Beverelli, Neumueller, and Teh, 2015).

Conventional trade theories suggest that trade promotes specialization through efficient reallocation of capital and employment as well as resources across different sectors that are in tandem with a nation's comparative advantage. Modern models also indicate that trade can promote diversification (Osakwe, Santos-Paulino, and Dogan, 2018). For example, Teignier (2018) shows that reductions in trade barriers affect sectoral reallocation of factors of production. Reduction in trade costs such as transport and tariffs costs render some intermediate range of goods cheaper, thereby making trade in goods attractive to potential investors. Tariff reduction could also promote cutbacks in trade costs, with implications of promoting exports in some of the earlier non-traded

goods (Aditya and Acharyya, 2015). Hence, export baskets of these countries could be made more diversified through tariff and non-tariff reductions.

The quest for and growth of economic integration across the world has been tremendous in the last couple of decades. Available statistics from the World Trade Organisation (WTO) database show that Regional Trade Agreements (RTAs) have increased to 481 in 2019. These RTAs are in different stages of economic integration, ranging from Preferential Trading Areas (PTAs), Free Trade Agreements (FTAs), Custom Unions (CUs), Single Markets (SMs), Economic Union (EU), etc. It should be noted that most of the RTAs (55 percent) across the world are at the stage of FTAs. Several RTAs in Africa are serving as the building blocks of the African Union (AU). Some of them include Common Market for Eastern and Southern Africa (COMESA), Arab Maghreb Union (UMA), Community of Sahel-Saharan States (CEN-SAD), Economic Community of West African States (ECOWAS), East African Community (EAC), Economic Community of Central African States (ECCAS), Southern African Development Community (SADC), and Intergovernmental Authority on Development (IGAD).

Nigeria is one of the fifteen member countries of the Economic Community of West African States (ECOWAS) formed in 1975 to promote economic cooperation and integration with the goal of becoming a monetary union in the sub-region. As part of the integration process, the sub-regional body established the Free Trade Agreement (FTA) and Common External Tariff (CET). Given the advancement in the economic integration in ECOWAS, the fundamental question to ask is: To what extent has the countries in the region deepened existing export within the region? How diverse are the trade flows of ECOWAS countries? Answering these questions is particularly important given that ECOWAS countries have a relatively similar and concentrated structure of production. Moreover, despite the headwinds and questions being raised about regional integration across the world, the demand for BREXIT⁴ in particular, Nigeria signed the African Continental Free Trade Agreement (AfCFTA) in July 2018. Based on AfCFTA, the African Union (AU) seeks to increase the socio-economic integration of the continent. The agreement births a single market for goods and services and facilitates the movement of people. The agreement is expected to reduce Nigeria's tariff on 95 percent of goods and services to zero percent in the next five years and 100 percent of the goods and services to zero in the next ten years.

⁴ BREXIT is the schedule withdrawal of the United Kingdom from the European Union.

Based on the foregoing, this study investigates two main objectives. First, this study seeks to examine the effects of economic integration on the margins of exports of Nigeria to ECOWAS. In addition, the effects of potential economic integration on the margins of exports of Nigeria to the rest of African countries (AfCFTA) would be considered. Multiple proxies are to be used for both economic integration and margins of exports; this makes the study strikingly different from the previous studies. After this introductory section, we characterize the extent of Nigeria's integration into the ECOWAS and African Union and the margins of exports in section two. The review of relevant literature is presented in the third section. Both the theoretical framework and methodology are presented in the fourth section while the empirical analysis is undertaken in the fifth section. The section six of the study discusses the lessons for Nigeria's participation in AfCFTA.

2.0 Regional Integration and Margins of Exports based on Nigeria's Exports to ECOWAS and Africa.

2.1 Economic Integration in West Africa

2.1.1 Key Developments in ECOWAS Economic Integration

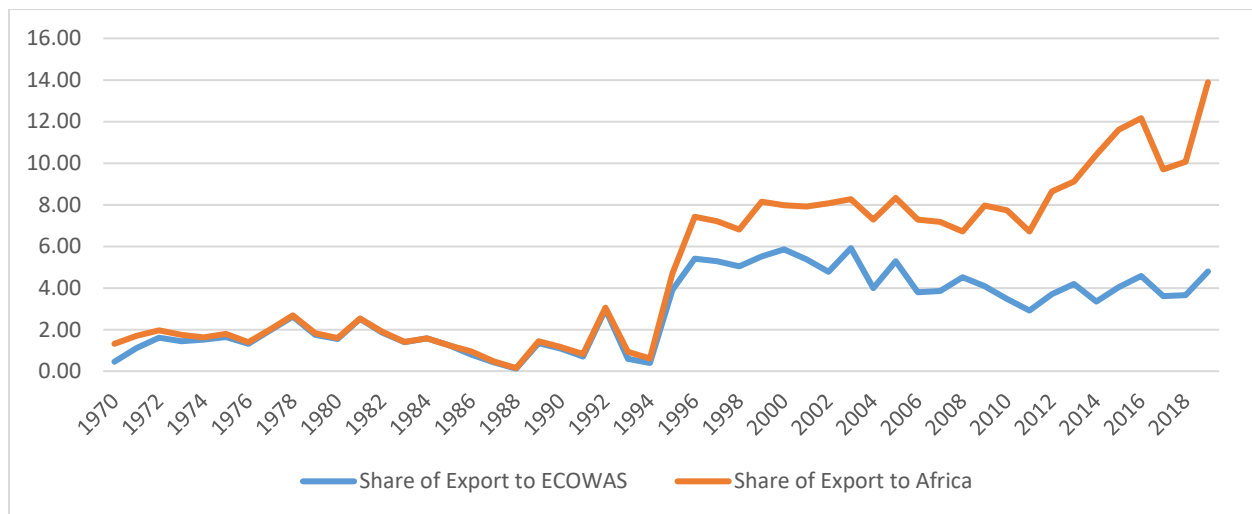
The initial effort towards regional integration among the West African states occurred in 1945. The Francophone countries in West Africa came together and formed a single currency known as the CFA franc. The proposal for the formation of ECOWAS emerged in 1972, following the combined efforts of the leaders of Nigeria and Togo that produced a draft proposal for the formation of ECOWAS. The actual treaty that birthed ECOWAS was signed in Lagos on May 28, 1975. The treaty was, however, revised and expanded in 1993 in Lagos. ECOWAS currently has fifteen member countries, namely: Benin, Burkina Faso, Cape Verde (Cabo Verde), Cote d' Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. The regional body was created with the goals of fostering economic cooperation and integration of member states. Moreover, it intends to harmonize and coordinate the policies of the various member states. It also desires to promote the creation of joint ventures, common market, economic union, balanced development, and a monetary union.

The framework for trade and integration in the region is anchored on the ECOWAS Trade Liberalization Scheme (ETLS). The ETLS is the binding agreement of free movement of goods, persons, and transportation within the ECOWAS nations. Further effort towards economic integration in ECOWAS was the creation of a Common External Tariff (CET), which became operational in 2015. The CET introduced the same import duties to trade all goods. Several international trade scholars (Qobo, 2007; Wignaraja, et al., 2019) have identified some constraints to the implementation of regional integration policies. A prominent one is the poor domestication of the policies.

2.1.2 Nigeria's Regional Integration with other ECOWAS Countries

This section discusses the indicators of regional integration in the ECOWAS specifically applied to Nigeria. There are several methods for measuring the performance of regional integration. Some of these methods include the share of exports to the region in total exports, the Regional Orientation Index (ROI), and the Michelaye Index (MI). These methods were used in the present study. Starting with the share of exports, as presented in Figure 1, Nigeria's share of exports to ECOWAS and Africa indicates low regional integration. The declining regional trade between Nigeria and Africa and the sub-regional ECOWAS reflect the similarity of products in the region. In addition, poor infrastructural connections among the countries explain the declining regional taxation.

Figure 1: Share of Nigeria's Exports to ECOWAS and Africa



Source: Authors Computation, underlying data from the World Integrated Trade Solution database

Generally, it has been mentioned that the total trade among ECOWAS countries has been very low. This is in spite of the long years of the formation of the sub-region in 1975. Although Nigeria has continued to dominate trade in the region, the share of Nigeria's export in the region has continued to decline in the last two decades. This has made it doubtful whether Nigeria is taking advantage of the benefits presented by the Free Trade Area in the sub-region.

Another important indicator of regional integration is the Regional Orientation Index⁵ (ROI). The index indicates whether the exports from a country to a particular region are greater than that of the rest of the world. It depicts the importance of intra-regional exports relative to extra-regional exports. The index takes a value that ranges between 0 and infinity, such that a value that is higher than 1 implies regional bias. As contained in Table 1, the ROI computed from 1-digit SITC exports of Nigeria to Africa and for that of ECOWAS (see Table A.1.1 in the Appendix section), we found that Nigeria has an intra-regional bias in beverages and tobacco, chemical, and some manufactured goods. The intensity is, however, lower in Africa when compared with the ECOWAS.

Table 1: Computed Regional Orientation Index (ROI) for Nigeria's Products in Africa

	1975	1980	1990	2000	2010	2016	2017	2018
Food and live animals	0.19	0.33	0.13	0.42	0.24	0.32	0.45	0.33
Beverages and tobacco	0.18	27.39	2.74	1.57	12.86	25.88	37.10	20.77
Crude materials, except fuels	0.19	0.42	0.02	0.06	0.12	0.06	0.04	0.05
Mineral fuels and lubricants	0.07	0.08	0.04	0.19	0.20	0.49	0.37	0.44
Animal and vegetable oils and fats	0.15	1.12	0.33	2.28	2.31	1.12	13.84	30.16
Chemicals	19.21	32.37	1.77	7.09	7.63	4.76	1.96	1.38
Manufactured goods	2.29	2.96	0.45	0.73	0.68	1.70	2.85	0.88
Machinery and transport equipment	9.43	149.27	6.72	5.11	93.40	13.20	47.09	16.10
Miscellaneous manufactured articles	37.34	38.15	7.40	5.35	8.33	8.83	6.08	3.22
Commod. & Transactions not classified	5.76	39.03	0.03	0.04	0.05	0.19	0.16	0.55
Total Trade	0.51	0.51	0.17	0.58	0.56	1.09	0.79	0.76

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

⁵ The Regional Orientation Index (ROI) is the ratio of two shares. The numerator is the share of a country's exports of a given product to the region of interest in total exports to the region. The denominator is the share of exports of the product to other countries in total exports to other countries.

Another index of regional integration is the Michelaye Index⁶ (MI), which was used to consider the comparative advantage of Nigeria's exports. The index has two ratios: the share of commodity A's exports in the total exports and the share of commodity A's imports in total imports. The value of the MI ranges from negative one (-1) to positive one (1). For a particular product, a positive value shows that the country is overspecialized while a negative value indicates under-specialization. The computed Michelaye Index for Nigeria's trade with the blocks used in this study are contained in Table 2 for Africa and for that of ECOWAS (see Table A.1.2 in the Appendix section). Considering trade relations with Africa, we can observe that Nigeria remains under-specialized in most of the products (Table 2). This further implies that Nigeria's imports from the regions (ECOWAS and Africa) are more than it exports for most products. The only exception is mineral fuels and lubricants.

Table 2: Computed Michelaye Index for Nigeria's Products Traded with African Countries

	1975	1980	1990	2000	2010	2016	2017	2018
Food and live animals	-0.14	-0.24	-0.22	-0.39	-0.05	-0.12	-0.16	-0.16
Beverages and tobacco	-0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Crude materials, except fuels	-0.21	-0.37	-0.09	-0.10	0.00	-0.04	-0.06	-0.06
Mineral fuels and lubricants	0.89	0.88	0.91	0.94	0.82	0.72	0.80	0.70
Animal and vegetable oils and fats	-0.03	0.00	0.00	-0.01	0.00	-0.01	-0.03	-0.01
Chemicals	-0.03	-0.08	-0.37	-0.20	-0.14	-0.29	-0.36	-0.27
Manufactured goods	-0.34	-0.12	-0.07	-0.17	-0.14	-0.07	-0.07	-0.09
Machinery and transport equipment	-0.13	-0.04	-0.19	-0.06	-0.43	-0.17	-0.07	-0.10
Miscellaneous manufactured articles	-0.03	-0.02	-0.01	-0.02	-0.04	-0.02	-0.03	-0.02
Commod. & Transactions not classified	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

2.2 Nigeria's Trade with ECOWAS Countries: Export Diversification

Export diversification can either be extensive margins or intensive margins. While the former concentrates on new products and new markets, the latter focuses on the expansion of exports of

⁶ The Michelaye index is defined as the difference of two shares. It is the share of one country's exports of the commodity of interest in its total exports and the share of the same country's imports of the same commodity in its total imports. The index takes a value between -1 and +1. A country is said to have a revealed comparative advantage if the value is greater than zero.

existing products and markets. Based on Nigeria's export to ECOWAS we demonstrated the two categories of export margins.

2.2.1 Extensive Export Margin

The growth rate in exports is one of the indicators of the extensive export margin. We show the growth rate of Nigeria's exports to Africa (see Table 3) and to ECOWAS in decades (Table A.1.3 in Appendix section). For the overall trade, Nigeria maintained a growth rate with ECOWAS except in 2016 when the country experienced economic recession. At the product level, Nigeria's exports to ECOWAS were less extensive. This is an indication of very poor export duration. In the last decade, however, Nigeria recorded positive export growth in the number of exports in food and live animals, animals and vegetable oils and fats, and chemicals. As depicted in Table 3, Nigeria's export to Africa indicates poor extensive export margin, compared with that of ECOWAS, the case of Africa is weaker.

Table 3: Growth Rate of Exports to Africa

	1975	1980	1990	2000	2010	2016	2017	2018
Animal and vegetable oils and fats	-36.5	-40.6	-99.7	31.7	-25.3	12.5	2026.4	69.6
Beverages and tobacco	-97.2	-32.7	106.7	-48.0	14.7	-5.1	8.6	-32.3
Chemicals	-18.1	-39.4	4.1	-32.1	29.2	-2.8	13.2	8.3
Commod. & Transactions not classified	151.1	-36.2	-26.6	-41.5	-84.8	-86.4	-48.3	52.9
Crude materials, except fuels	47.2	383.0	-64.7	-19.6	35.5	27.3	-7.4	14.9
Food and live animals	43.6	-43.6	-47.9	-33.4	104.9	-33.3	60.3	-20.8
Machinery and transport equipment	-16.4	17.5	23.3	-29.7	348.8	3.4	153.8	-58.2
Manufactured goods	-60.3	-60.6	132.6	-34.3	11.1	29.8	71.2	-54.2
Mineral fuels and lubricants	-4.1	41.2	1.6	57.5	35.8	-34.5	-1.6	52.0
Miscellaneous manufactured articles	5.2	-3.9	19.9	-14.8	7.6	-32.6	0.6	-39.0
Total Trade	-5.2	30.5	2.8	51.7	46.9	-32.7	3.8	39.8

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

The products that were not traded for a long time, but reappeared are Soya beans, Cigars & cheroots, Rice in the husk or not, Quartz, mica, felspar, fluorspar, among others. Also worth mentioning are products that Nigeria is exporting to ECOWAS, but have disappeared include motor spirits gasoline, distillate fuel, Silk fabrics & woven, groundnut and peanuts, cotton, and paper products.

Table 4: Destination of Countries that Nigeria Exports to within Africa

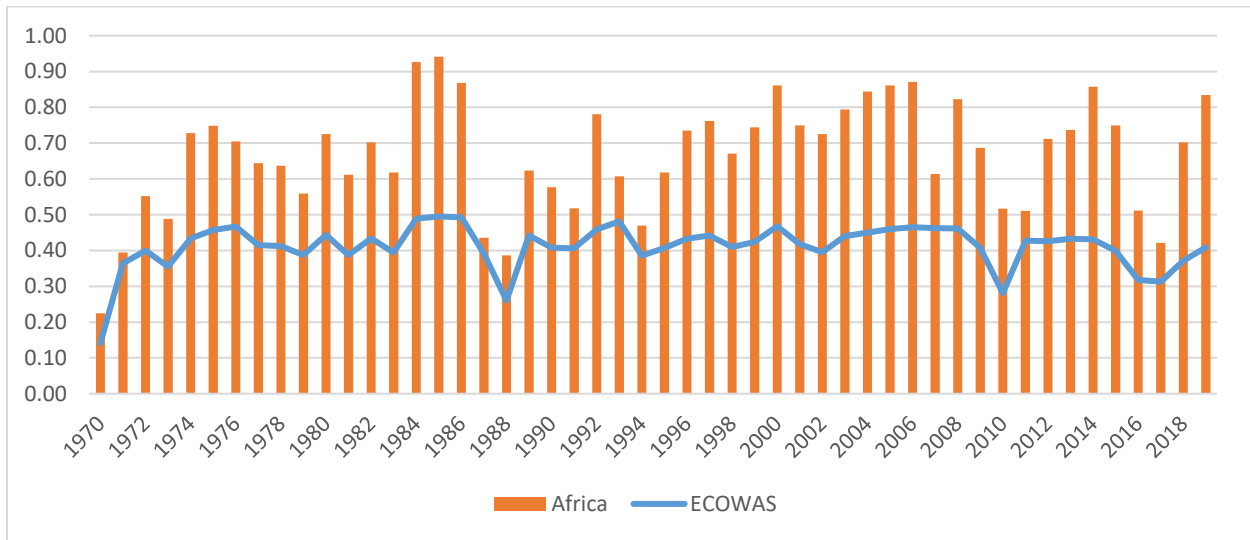
	1975	1980	1990	2000	2010	2016	2017	2018
Food and live animals	12	12	4	30	30	31	36	25
Beverages and tobacco	2	6	3	10	16	19	22	17
Crude materials, except fuels	12	13	6	23	27	28	26	22
Mineral fuels and lubricants	10	11	4	15	20	22	21	19
Animal and vegetable oils and fats	6	6	2	9	8	16	17	10
Chemicals	13	12	7	28	34	33	34	26
Manufactured goods	16	12	7	34	35	37	35	27
Machinery and transport equipment	11	15	6	31	36	36	36	26
Miscellaneous manufactured articles	15	14	6	32	38	36	38	27
Commod. & Transactions not classified	9	5	4	15	15	16	16	11
Total Trade	23	18	8	38	40	38	39	27

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

Another way to describe the margin of exports is the growth in the number of countries that receive the exports of a particular country (see Table 4 for Countries within Africa and Table A.1.4 in Appendix section for that of ECOWAS). Although there are fifteen-member counties of ECOWAS, eleven (11) countries have been consistent in accepting Nigeria's exports. Cape Verde and Guinea-Bissau and The Gambia are not regular Nigerian export destinations. Comparing 2010 and 2018, there is an appreciable increase in the number of countries that patronized Nigeria's exports among the ECOWAS countries. In four (4) out of the ten (10) products groups, less than half of the ECOWAS members received Nigeria's export in 2018. Only two (2) countries received Nigeria animal and vegetable oils and fats in 2018, although they were six in 2000. Similarly, the number of countries receiving Nigeria's products in African equally declined in the same period compared as shown in Table 4.

2.2.2 Intensive Export Margin

The intensive margin shows the changes that occur in exports' value among existing exports. The Herfindahl-Hirschman Index (HHI) is used as a proxy for intensive export margin. The index measures the concentration of exports. The HHI lies between 0 and 1, such that any value close to 0 implies higher diversification of exports while a value closer to 1 indicates less diversification. Expressed differently, the HHI value of 1 expresses the export of mono-products and 0 value indicates an infinite number of commodities.

Figure 2: Herfindahl Hirschman Index (HHI) for Nigeria's Exports to ECOWAS and Africa

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

The computed HHI for Nigeria's exports to ECOWAS and Africa is presented in Figure 2. The index shows that Nigeria's exports to ECOWAS are relatively more diversified compared with the country's exports to Africa. The lower diversification of Nigeria's export to Africa reflects the pattern of regional trade in the region. The countries in each of the subregional organizations in Africa⁷ trade more among themselves. This must have fostered greater trade diversification in the ECOWAS sub-region than the aggregate Africa.

3.0 Literature Review

The issue of gains from trade has been a long-standing debate in literature. There are several arguments, theoretically and empirically, in support of gains from trade, especially free trade. From free trade, economies accumulate significant economic gains. Particularly, consumers get access to low-cost goods and with varieties, firms obtain intermediate inputs at a cheaper rate and get to

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- ⁷ Southern Africa Development Community (SADC)
 - Common Market for Eastern and Southern Africa (COMESA)
 - Economic Community of West African States (ECOWAS)
 - Economic Community of Central African States (ECCAS)
 - Arab Mahgreb Union (AMU)

specialize in specific products and benefits from economies of scale (Amiti, 1998). In line with these, economies make policies and embark on trade agreements to accrue maximum benefits possible from trade (Alawadhi, Al-Shammari & Alshuwaiee, 2019). Studies have also shown that there is a positive relationship between economic integration resulting from free trade agreements and export diversification (Beine and Coulombe, 2007; Odularu, 2009). Specifically, developing economies tend to gain substantially from diversification, as it ensures stability in export earnings in the advent of price volatility in the international market and, thus acts as a catalyst for economic growth resulting from the spillover effect from the benefiting sector. In other words, the economy is insulated from external shocks (Beverelli, Neumueller, and Teh, 2015; Mania and Rieber, 2019).

Hence, the theoretical linkage between international trade and diversification, either intensive or extensive margin, has been a subject of debate since the Ricardian theory of comparative advantage. The theory had stressed product specialization. Conversely, Dornbusch et al., (1977) considered the effects of trade liberalization on economic export diversification. The link is based on a reduction in trade costs (trade tariff and transportation), especially on intermediate goods that are previously non-traded. The reduction in trade cost can induce trade in non-traded products. The newly traded intermediate products occasioned by the tariff reduction can cause exports to diversify in both trading countries.

Even though there are several studies in this area that tend to suggest that there are positive linkages between integration and export diversification, there is, however, a great deal of variation in the empirical approaches to these studies. These variations involved the data type, methodology, measurement issues such as specialization indices, and sectoral disaggregation, which had led to mixed results. For instance, Amiti (1998) among other studies established that integration leads to a certain level of increased specialization. Aligning with the mainstream analysis, specialization will arise as a result of the concentration of labour-intensive firms in the developing country and capital-intensive firms in developed countries with the assumption that disparities between wage rates are higher relative to that of rental rate between the developed and the developing countries. In another vein, some other studies found relative stability in economies as a result of integration (Sapir, 1996; Head and Ries, 2001). Also, there are shreds of evidence in support of diversification from economic integration (Sawchuk and Sydor, 2001; Beine and Coulombe, 2007; Odularu, 2009; Solano et al., 2019). Despite these variations, however, a common characteristic of these studies is the assumption about the process of integration. They agreed that integration follows a

linear process and, consequently, investigates the progress of specialization overtime or by measuring trade integration using time dummy variables (Acharya et al., (2001).

Export diversification has been shown to aid economic growth. Proponents of export diversification contend that it can positively augment the growth potential of an economy in three different dimensions (Hirschman, 1958). First, for export diversification to take place there is a need to augment investment in different activities, which will improve the sources of income. It will also insulate the economy against the negative effect of export instability and increased terms of trade differences, thus lessening a country's exposure to shocks or risks related to instability of goods demand and prices (Edward, 2009). Lastly, it has a relationship with increased GDP and employment rates, lessened fluctuations in foreign exchange earnings, speedy increment of value additions ingenuities, and improvement in the quality of manufactured products (Elhiraika and Mbate, 2014).

In sum, international trade theories have shown that both intensive (prevalent trade dealings) and extensive (innovative trade dealings) margins have diverse implications for the welfare of trading countries (Alawadhi et al., 2019). For instance, an increase in the intensive margin tends to expand the supply of some existing goods, through fixed costs reductions and higher productivity, thereby making the product more abundant for consumers. While the extensive margin introduces the new spectrum of goods for consumers, thereby expanding consumers' choice through innovation and competition among products and producers. Hence, many studies have assessed the impacts of both intensive and extensive margins of trade on regional integration. Most of these studies agreed that integration reduces variable costs through changes in exchange rates and tariffs as well as facilitates trade among countries along the two margins of trade (Bauer 2000; Collier and Venables 2008; Chaney, 2008; Alawadhi et al., 2019).

There is scanty literature that specifically focuses on regional integration and margins of exports in Africa. Notwithstanding, Table 5 provides a summary of the literature on integration and margins of trade. As the table illustrates, some of the studies focus on integration and growth while others concentrate on export diversification within the developing and emerging markets economies. For instance, Odularu (2009) only focuses on how export diversification could drive trade expansion in the ECOWAS region within the framework of export promotion theory. It found that the age-long strategy of export promotion was no longer appropriate for ECOWAS members,

rather, the adoption of different methods to diversification, such as resource-based manufacturing and processing of primary products was essential. Thus, there was a call for resilient commitment to broad-based trade reform to change the outlook of the sub-regions' marginalization in world trade and investment. Therefore, this study focuses on regional integration and margins of exports in Nigeria, with implications for the implementation of the AfCFTA.

Table 5: Summary of Literature on Integration and Margins of Trade

S/No	Studies	Sample/Scope	Theoretical Framework	Methodology		Empirical Results
				Estimation Methods	Variables	
1	Odularu (2009)	ECOWAS countries	Export promotion theory	Descriptive		It found that the age long strategy of export promotion was no longer appropriate for ECOWAS members rather, adoption of different methods to diversification such as resource-based manufacturing and processing of primary products was essential.
2	Elhiraika and Mbate (2014)	53 African countries (1995-2011)		System generalized method of moment (GMM) estimates	GDP per capita, public investment, population growth, Human capital, exchange rate, terms of trade, government effectiveness, oil rich countries(dummy) SSA (dummy), official development assistance (ODA), Rule of Law	The study established that a number of factors which includes per capita income, infrastructure, public investment, human capital and institutional framework significantly drove export diversification.
3	Aditya and Acharyya (2015)		Synthesis of analytical structures of Dornbusch, Fisher and Samuelson (1977)	Analytical		The study found that when there was a unilateral tariff reduction by a country, there was a possibility that a liberalizing country's export would be diversified both across and within sectors. On the other hand, trading

			and Krugman (1979)			partners may experience across-sector diversification. However, in the case of bilateral tariff reduction exports of huge, differentiated products may be obtainable for the country national wage advantage.
4	Bekerman and Rikap (2010)	MERCOSUR: Argentina and Brazil (1997/1998 and 2005/2006)		Regional orientation index	Trade composition of Argentina and regional countries	It submitted that positive impact of regional integration and export diversification is felt more by Brazil and less by other partners such as Uruguay and Paraguay owing to asymmetries between the countries. In other words, largest MERCOSUR country is the main beneficiary of integration.
5	Beine and Coulombe (2007)	Canada export to USA and the rest of the world (1980-2001)		Time series and Cross sectional (TS-CS) regressions	Exports to USA and rest of the world	The study provided evidence to support Long-run relationship between trade integration and export diversification.
5	Beverelli, Neumueller and Teh (2015)	Developing countries	Work-horse heterogeneous firm approach	Generalized linear model (GLM) regression	Trade facilitator indicator (TFI), GDP, Area, landlocked, weighted TFI, remoteness, bilateral GDP, preferential trade agreement (PTA), distance, common border, common language, colony,	The study found that trade facilitation had favorable impact on the extensive margins of trade.

7	Regolo (2017)	CEPII's panel database of bilateral trade between 116 countries (98 developing countries) (1995-2010)				It established that in the medium-term export diversification comes along with trade regionalization.
8	Boehe and Jimenez (2018)	Panel dataset of Colombia-based exporters (2001-2010)		2SLS Regression results	Geographical diversification, production diversification, return on sales, debt-to-asset, sales, corruption, trade freedom, export intensity, GDP, inverse mills ratio	It found that associated geographic diversification tended to increase future product diversification. Also, related product diversification leaned towards decreasing future geographic diversification and unrelated product diversification tended to upsurge future geographic diversification
9	Osakwe, Santos-Paulino and Dogan (2018)	Developing countries and Sub-Saharan African (SSA) countries (1970-2010)		Correlation and OLS	Theil index, Total trade, Tariffs, GDP per capita, Human capital, remoteness, infrastructure, institution	In a non-parametric analysis, it established that developing countries with more trade openness were likely to have diversified export's structure compared to that which is less opened. For the parametric analysis, it provided evidence that trade liberalization allows for export diversification in developing countries. The study established that human capital, GDP per capita and Institution were pivotal in export diversification.

10	Regolo (2013)	Panel of 102 trade partners and 4998 HS-6 industries (1995-2007)	Romali's model	Panel regression	Capital stock, human capital, arable crop, investment, GDP per capita, population, natural resource endowment per worker	Diversified export is associated with similarities between two trading partners in physical capital, land and human capital endowments per worker. Also, when bilateral trade cost is relatively low, export is more diversified.
11	Sanguinetti, Pantano and Posadas (2004)	Argentina export to Mercosur and rest of the world (1992-2000)	Regional integration and trade diversification theory	OLS	Dummy Brazil, Tariff Brazil, scale, Dummy chapter, export to different region	Both tariff and economies of scale effects play a major role in growing export part of certain products in Mercosur relative to third-country destination.

4.0 Theoretical Framework and Methodology

4.1 Theoretical Framework

To link economic integration and export diversification, Dornbusch et al., (1977) provided the theoretical underpinning. The theoretical paper asserted that the more a country diversifies its exports, the more the volume of its trade increases. Expressed in another form, the theory emphasised cost reductions by two trading countries diversify both countries' export baskets by widening the variety of traded items in each country. Tariffs and non-tariff trade restrictions render some intermediate commodities non-traded or difficult to trade. Reduced tariff and non-tariff trade barriers indicate lower trade costs, allowing some previously untraded goods to be traded and, as a result, widening the export baskets of interested nations. It implies therefore, that any factor capable of reducing production or trading cost would enhance export diversification.

4.2 Model Specification

In line with the proposition of Dornbusch et al., (1977), the baseline time series econometrics model specified to examine the effects of regional integration on export diversification (intensive margin and extensive margin) take the form of equations (1 & 2).

$$extmarg_t = \alpha + \varphi regin_t + \sum_{j=1}^T \beta \chi_t + \xi_t \quad (1)$$

$$intmarg_t = \alpha + \varphi regin_t + \sum_{j=1}^T \beta \chi_t + \xi_t \quad (2)$$

Where the dependent variable, *extmarg* represents extensive export margins, *intmarg* represents intensive export margins, *regin* represents regional integration, X_t is the vector of determinants of export margins. The determinants of export margins include GDP per capital (*gdppc*), human capital (*hc*), domestic investment (*di*), foreign investments (*fi*). We equally introduced electricity access (*elec*), and terms of trade (*tot*) as the control variables. ξ_t is the error term. Variants of equations 1 and 2 are estimated.

4.3 Estimation Techniques

The model is estimated using each of export growth and growth of export destination as indicators of export extensive margin. The Normalized Herfindhal Hirschman Index (HHI) will equally be

used as the dependent variable for export intensive margin. For the main independent variable, regional integration, three proxies are used—the share of exports to the region, the Regional Orientation Index (ROI), and Michelaye Index (MI).

The nature of the dependent variable in an estimated equation is very important in determining the appropriate estimation technique. Different dependent variables are used as proxies for export diversification. The first proxy is the Normalized Herfindhal Hirschman Index. The index is normalized such that the values range from 0 to 1. For this type of dependent variable, the use of Ordinary Least Square (OLS) will be inefficient, because it does not guarantee that the fitted value lies within the unit interval (Fonchamnyo and Akame, 2016). Based on the nature of the variable, the fractionalized logit model is used to estimate the proxy for intensive margin. The fractional logit model was developed by Papke and Woodridge (1996) to estimate a model whose dependent variable is bounded by 0 and 1. The model, which is based on the quasi-likelihood method and does not require any distribution, is specified as equation (3):

$$E(y_{it}/X_{it}) = \frac{\exp(X_{it}\alpha)}{\{1+\exp(X_{it}\alpha)\}} = h(X_{it}\alpha) \quad (3)$$

Where the boundary probabilities for the dependent variable and regressands are specified as equation (4), thus:

$$Pr(y_{it} = \frac{0}{x_{it}}) > 0 \text{ and } Pr(y_{it} = \frac{1}{x_{it}}) > 0 \quad (4)$$

Equation (2) was estimated using the Two-Stage Least Square (2SLS) instrumental variable method. The equation expressed export intensive margin as a function of regional integration among other determinants. The dependent variable is the destinations of Nigeria's export to the ECOWAS. Most of the export models tend to have endogeneity problems. The 2SLS was adopted to remove the inherent endogeneity. The technique can produce a consistent estimate when the instrumental variables are uncorrelated with the error disturbance but correlated with the endogenous variable. The J-statistic and the Cragg-Donald F-statistic are used to validate the robustness of the estimates.

For our empirical analysis, the variable definitions and data sources are provided in Table 6.

Table 6: Data Requirement and Sources

Variables	Definitions	Sources
Dependent Variable – (Extensive Margins of Exports)		
Extmarg_grec	Growth Rate of Nigeria's Exports to ECOWAS	Computed with underlying data from WITS
Extmarg_graf	Growth Rate of Nigeria's Exports to Africa	Computed with underlying data from WITS
Extmarg_dec	Destinations of Nigeria's export to ECOWAS	Computed with underlying data from WITS
Extmarg_daf	Destinations of Nigeria's export to Africa	Computed with underlying data from WITS
Dependent Variable – (Intensive Margins of Exports)		
Intmarg_ec	Computed Normalized Herfindhal Hirschman Index (HHI) for Nigeria's export to ECOWAS	Computed with underlying data from WITS
Intmarg_af	Computed Normalized Herfindhal Hirschman Index (HHI) for Nigeria's export to Africa	Computed with underlying data from WITS
Main Independent Variables – (Regional Integration)		
SEP	Share of export to the region,	Computed with underlying data from WITS
ROI	Regional Orientation Index (ROI)	Computed with underlying data from WITS
Control Variables		
PCGDP	GDP per capita (constant LCU)	WDI
HC	Human capital, School enrolment, secondary (% gross)	WDI
DI	Domestic investment, Gross capital formation (constant LCU)	WDI
FI	Foreign investment, Foreign direct investment (BoP, current US\$)	WDI
ToT	Terms of trade (constant LCU)	WDI
Elect	Access to electricity (% of population)	WDI

Source: Authors' Compilation**Note: WITS is World Integrated Trade Solution Online Database, 2020, WDI is World Development Indicators Online Database, 2020**

5.0 Empirical Analysis and Results Presentation

The theoretical prediction of Dornbusch et al., (1977) indicated that economic integration has the potential of affecting trade diversification (intensive and extensive) margins. This postulation is subjected to empirical analysis for ECOWAS and Africa. Both the Fractional logit model and the 2SLS estimation techniques were used to estimate the export margins equations. For robustness, multiple variables are considered for export margins and economic integration.

The first objective considers the effects of economic integration on the intensive exports margin. We adopt the Normalized Herfindhal Hirschman Index as the proxy for intensive exports margin. The variable, bounded by 0 and 1, necessitates the adoption of fractional logit estimation techniques in the equation. Moreover, the share of exports to the affected region and the Regional Orientation Index are the two proxies used for economic integration (the main explanatory variable). The second objective is to analyse the effects of economic integration on extensive export margin. The dependent variable (extensive export margin) is proxied by the growth rate of exports to the affected region and the number of export destinations in the affected region. The same share of exports to the affected region and the Regional Orientation Index served as proxies for economic integration.

5.1 Effects of Economic Integration on Intensive Export Margin

The Fractional logit model adopted for the estimation is a non-linear equation. The estimated coefficient might be seemingly difficult to interpret, hence the computation of the marginal effect. Since the coefficients have been converted, the new coefficients are the average points attributed to the independent variables and control variables. We begin with the first objective that sought to examine the effects of economic integration on intensive exports margin in ECOWAS and Africa. The two proxies adopted for economic integration (share of exports and regional orientation index) have a positive but insignificant effect on intensive exports margin in ECOWAS. The result implies that regional integration appears not to enhance the changes in the value of existing export products in ECOWAS. For Africa, however, the effect of the share of exports and regional orientation index on intensive exports margin is positive and significant. This indicates that economic integration promotes intensive exports margin in Africa.

The coefficients for electricity access and per capita income have statistically insignificant effects on the intensive export margins for both ECOWAS and Africa. The statistical insignificance of the per capita income is consistent with the results obtained in Imbs and Wacziarg (2003) which noted that the degree of diversification corresponds with the stage of economic development. The coefficient for domestic investment is found to have positive and significant effects on the intensive export margins with ECOWAS and Africa. Also, foreign investment has positive effects on exports intensive margin with ECOWAS, but insignificant effects with Africa.

Table 7: Results of the Effects of Economic Integration on the Intensive Export Margins (Fractional Logit Model, FLM)

	ECOWAS				AFRICA			
VARIABLES	(1A) intmarg_ec	(1B) intmarg_ec	(2A) intmarg_ec	(2B) intmarg_ec	(1A) intmarg_af	(1B) intmarg_af	(2A) intmarg_af	(2B) intmarg_af
	Coefficient (standard error)	Marginal Effects (dy/dx)	Coefficient (standard error)	Marginal Effects (dy/dx)	Coefficient (standard error)	Marginal Effects (dy/dx)	Coefficient (standard error)	Marginal Effects (dy/dx)
	Herfindhal Index		Herfindhal Index		Herfindhal Index		Herfindhal Index	
regin_shec	0.0274 (0.0257)	0.020 (0.019)			0.213*** (0.0534)	0.226*** (0.054)		
regin_roiec			2.426 (2.805)	0.016 (0.019)			0.830** (0.477)	0.099** (0.046)
Elect	-0.179 (0.600)	-0.068 (0.229)	-0.124 (0.638)	-0.047 (0.244)	-4.549 (3.010)	-1.515 (1.672)	0.218 (1.778)	0.073 (0.060)
PCGDP	-3.048 (2.055)	-4.001 (2.678)	-3.091 (2.111)	-4.056 (2.752)	-2.860 (3.825)	-3.268 (4.392)	-2.022 (4.634)	-2.343 (5.382)
DI	0.650** (0.304)	1.998** (0.845)	0.658*** (0.218)	2.021** (1.090)	3.0913*** (1.103)	0.244*** (0.049)	2.474** (1.341)	0.472** (0.212)
FC	0.341** (0.128)	0.202*** (0.091)	0.299** (0.130)	0.710*** (0.280)	0.436 (0.362)	0.537 (0.271)	0.472 (0.372)	0.621 (0.598)
ToT	0.0667*** (0.0322)	0.2241*** (0.087)	0.2752*** (0.084)	0.429*** (0.169)	0.459** (0.254)	0.0721*** (0.078)	0.3101*** (0.139)	0.3928*** (0.122)
Constant	4.734** (2.261)		4.769** (2.306)		19.382*** (6.328)		5.749 (6.700)	
Observations	45		45		45		45	
R-squared								

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Source: Author's Computation

Table 8: Results of the Effects of Economic Integration on the Margins of Exports in Africa (Two Stage Least Square, 2SLS)

	ECOWAS				AFRICA			
	Export Destinations		Export Growth		Export Destinations		Export Growth	
VARIABLES	(3) extmarg_dec	(4) extmarg_dec	(5) extmarg_grec	(6) extmarg_gr ec	(3) extmarg_da f	(4) extmarg_daf	(5) extmarg_gra f	(6) extmarg_graf
	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)
regin_shaf	0.412** (0.186)		2.319 (3.321)		3.387*** (0.582)		12.52 (22.47)	
regin_roiaf		44.94** (20.80)		2,468 (3,703)		12.31** (5.546)		168.4 (163.8)
Elect	3.362 (4.205)	2.989 (4.365)	-0.854 (0.750)	-0.866 (0.777)	-45.44** (21.89)	33.30 (19.92)	-841.3 (844.7)	-808.9 (588.4)
PCGDP	8.139 (8.964)	8.893 (9.134)	0.9802 (1.600)	1,012 (1,627)	-51.92 (32.51)	-43.41 (43.57)	597.0 (1,254)	896.2 (1,287)
DI	0.0448*** (0.015)	0.343*** (0.100)	4.873** (2.345)	5.010*** (2.452)	1.1150*** (0.2481)	2.1647*** (0.1260)	3.384*** (1.356)	4.880** (2.721)
FC	2.324*** (0.692)	2.474** (0.883)	0.542*** (0.452)	0.471*** (0.194)	3.799*** (1.516)	2.129*** (0.122)	1.231*** (0.092)	2.465*** (0.541)
ToT	0.0214 (0.180)	0.0286 (0.180)	-5.753 (2.192)	-5.286 (2.071)	-0.496 (0.688)	-0.263 (0.891)	-5.892 (26.56)	-7.544 (26.33)
Constant	-18.19 (15.41)	-18.44 (15.47)	1,596 (2,751)	1,587 (2,755)	83.21 (70.20)	-125.6 (76.22)	2.204 (2.709)	1.585 (2.252)
Durbin (Score) (P)	0.006	0.029	0.000	0.000	0.020	0.019	0.009	0.027
Wu Hausman (P)	0.004	0.020	0.000	0.000	0.014	0.010	0.001	0.035
Observations	45	45	45	45	45	45	45	45
R-squared	0.66	0.64	0.51	0.56	0.808	0.678	0.43	0.460
Anderson canon. corr. LM statistic (Underidentification test)	19.98 “0.000”	20.84 “0.000”	19.81 “0.000”	20.84 “0.000”	8.43 “0.003”	18.87 “0.000”	18.88 “0.000”	17.9 0.000
Cragg-Donald Wald F statistic (Weak identification test)	31.15	36.02	31.55	33.66	8.89	28.18	27.02	26.96
overidentification test of all instruments (Sargan statistic)	0.167	0.190	0.218	0.201	0.277	0.229	0.312	0.365

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, The Stock-Yogo weak ID test critical values: 10% maximal IV size is 16.38

Source: Author's Computation

5.2 Effects of Economic Integration on Extensive Exports Margins

To achieve the second objective, we used the 2SLS technique for equation (1), which eliminates the inherent endogeneity problem. Two proxies were used for the dependent variable – extensive export margin (the number of destination countries for Nigeria’s export to the respective regions and the growth rate of exports to the respective regions). The share of exports of Nigeria to the affected regions and the Regional Orientation Index served as the proxies for the main explanatory variable - economic integration. The Durbin score and Wu-Hausman F test hypotheses were rejected confirming the presence of endogeneity. The results of the estimated models contained in Table 8 show that economic integration has a positive and statistically significant effect on extensive exports margins when we considered the export destinations in ECOWAS and Africa. However, when the growth rate of exports is considered, the effects of economic integration on an extensive export margin were insignificant. The results suggest that the improvement and expansions in economic integrations enhance the number of destinations for Nigeria’s exports. However, this does not engender new products in both regions. For the other explanatory factors, electricity access and per capita income have no statistically significant effects on both types of extensive exports margins in ECOWAS and Africa. Domestic investment and foreign investment both have positive significant effects on the two types of extensive exports margins. Terms-of-trade, on the other hand, do not have significant effects on extensive exports margins. These results are largely in tandem with the existing literature and economic realities in the region (Kang, 2009; Bernard et al., 2009).

5.3 Robustness Checks

We proceed to check for the robustness of the results obtained using the 2SLS technique. This becomes important because of the use of instruments in solving the problem of endogeneity in the models. Specifically, in ascertaining the appropriateness of the empirical specification, we computed the weak identification test to measure the degree of instrument correlation with the endogenous regressors to identify low correlation levels, which in turn may translate to a poor overall performance (see e.g. Stock & Yogo, 2005; Mitze et al., 2010). The under-identification test is an LM test of whether the equation is identified, i.e., that the excluded instruments are "relevant", meaning correlated with the endogenous regressors. The result of the Anderson

canonical correlations LM statistic indicates the rejection of the null hypothesis that equations are under-identified (Table 8), which implies that the equations are identified. Also computed is the Cragg-Donald Wald F-statistic to test for weak identification. Since the Cragg-Donald statistics are all above the critical value given for the instruments for all the equations in Table 8, we cannot reject the null that the maximum relative bias due to weak instruments is 5%. We also apply the Sargan (1958) test for the overidentification of moment conditions. The p-values show that the instruments used for the endogenous variables are good.

6.0 Conclusion

6.1 Summary

Studies have argued about the potential gains of eliminating trade barriers. The global efforts toward trade liberalization date as far back as the General Agreement on Tariff and Trade of 1947. The West African countries were not left out, as the sub-region formed the Economic Community of West Africa States (ECOWAS) in 1975. Nigeria is a founding member of the ECOWAS and has played strategic roles in the region since its formation. More recently, Nigeria signed the Africa Continental Free Trade Agreement (AfCFTA), the agreement to create a single market for goods and services through the movement of goods, services, and investment within Africa.

As part of the exercise in understanding the benefits or desirability of the various liberalization effort, this paper considered the effects of economic integration on exports margins. We assessed Nigeria's exports to ECOWAS and Africa. This study finds that economic integration within the region appears not to have the capacity to promote the expansion of (intensive margins of exports) existing products. However, economic integration does have tendencies to enhance new export destinations (extensive margins) in ECOWAS and Africa. Thus, the objectives of AfCFTA are achievable.

6.2 Implications for AfCFTA

The AfCFTA became effective on the 30th of May 2019, in accordance with Article 23 of the AfCFTA. As of March 2023, about 46 of the 54 African countries had ratified and deposited instruments, and the negotiations on trade in goods and services are being discussed. The extent of existing economic integration becomes expedient, hence the present study. Moreover, an

understanding of the margins of export is very important for the negotiations, particularly for trade in goods analyzed in this study.

- i. African countries, including the ECOWAS, partake in vertical intra-industry trade (produce and trade in similar products). For instance, about 5 per cent of Nigeria's exports were received by ECOWAS countries. However, when product levels were considered, 86 per cent of beverages and tobacco, 30 per cent of manufactured goods, and 13 per cent of chemicals exports of Nigeria were purchased by the ECOWAS countries. This could explain why the Regional Orientation Index for Nigeria, in these products, is relatively high for ECOWAS and Africa. In preparation for the implementation of the AfCFTA, it becomes imperative for Nigeria to intensify efforts in the production of these products since markets already exist for them.
- ii. Based on the Normalized Herfindhal Hirschman index (HHI), Nigeria has a higher intensive and extensive export margin in her trade with Africa than with ECOWAS. In other words, Nigeria's export of existing products is more diversified in its trade with African countries than with the ECOWAS countries. Moreover, Nigeria has a higher growth rate in its new export destinations to Africa than the ECOWAS. This implies that Nigeria has a higher potential to benefit from her exports to AfCFTA than to the ECOWAS.

Both domestic and foreign investments are found to be major drivers of exports margins in Nigeria's trade with the ECOWAS and Africa. Both the fiscal and monetary authorities are urged to make a necessary effort in granting domestic investors the incentives required to expand production and exports. These include an improved ease of doing business to facilitate investments in the country, tax waivers, and subsidies as well as an enabling credit and foreign exchange environment for investors.

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Appendix 1: Some Other Complimentary Analysis of Results**Table A.1.1: Computed Regional Orientation Index for Nigeria's Products Traded with ECOWAS**

	1975	1980	1990	2000	2010	2016	2017	2018
Food and live animals	0.00	0.01	0.00	0.03	0.02	0.02	0.04	0.04
Beverages and tobacco	0.02	1.23	0.32	0.42	4.43	3.29	1.29	7.75
Crude materials, except fuels	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Mineral fuels and lubricants	0.01	0.01	0.00	0.02	0.01	0.03	0.03	0.03
Animal and vegetable oils and fats	0.00	0.01	0.01	0.17	0.08	0.08	0.99	2.58
Chemicals	0.39	0.45	0.05	0.58	0.27	0.38	0.21	0.18
Manufactured goods	0.04	0.05	0.02	0.06	0.07	0.16	0.19	0.12
Machinery and transport equipment	0.03	0.41	0.09	0.23	2.75	0.49	0.17	0.30
Miscellaneous manufactured articles	0.47	0.32	0.15	0.49	0.41	0.48	0.39	0.26
Commod. & Transactions not classified	0.12	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Total Trade	0.02	0.01	0.01	0.05	0.03	0.04	0.03	0.04

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

Table A.1.2: Computed Michelaye Index for Nigeria's Products Traded with ECOWAS Countries

	1975	1980	1990	2000	2010	2016	2017	2018
Food and live animals	-0.18	-0.19	-0.12	-0.20	-0.08	-0.07	-0.14	-0.19
Beverages and tobacco	0.00	0.00	0.00	0.00	0.00	0.03	-0.04	-0.03
Crude materials, except fuels	-0.16	-0.41	-0.11	-0.26	-0.01	0.00	-0.05	-0.08
Mineral fuels and lubricants	0.84	0.87	0.95	0.91	0.90	0.26	0.51	0.45
Animal and vegetable oils and fats	-0.04	0.00	0.00	-0.03	-0.03	-0.04	-0.15	-0.07
Chemicals	-0.01	-0.09	-0.36	-0.20	-0.37	-0.04	-0.06	-0.07
Manufactured goods	-0.22	-0.10	-0.15	-0.17	-0.06	0.00	0.00	-0.01
Machinery and transport equipment	-0.20	-0.07	-0.20	-0.04	-0.15	-0.13	-0.06	0.00
Miscellaneous manufactured articles	-0.03	-0.01	-0.01	-0.02	-0.20	-0.01	-0.01	-0.01
Commod. & Transactions not classified	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00

Source: Authors Computation, underlying data from World Integrated Trade Solution database

Table A.1.3: Growth Rate of Nigeria's Exports to ECOWAS

	1975	1980	1990	2000	2010	2016	2017	2018
Total Trade	-5.2	32.2	3.6	64.4	28.5	-21.5	2.6	36.2
Food and live animals	-11.9	-34.4	-37.9	-30.6	105.3	29.2	141.0	-13.2
Beverages and tobacco	175.7	-36.9	125.6	-51.7	11.3	22.9	-18.3	2.1
Crude materials, except fuels	-95.6	-18.9	-4.7	-4.8	-37.7	321.9	-53.2	-25.6
Mineral fuels and lubricants	-4.3	41.2	1.0	71.8	2.4	-29.1	-0.5	47.4
Animal and vegetable oils and fats	161.4	8.7	-77.0	30.4	-61.6	209.8	2234.6	71.0
Chemicals	-29.4	-47.6	4.3	-27.5	-27.9	51.2	17.7	28.4
Manufactured goods	-27.6	-65.4	206.7	-50.5	19.1	137.0	39.5	-37.8
Machinery and transport equipment	22.2	19.7	37.1	-42.0	2338.1	65.3	-35.9	-6.5
Miscellaneous manufactured articles	-64.9	-4.7	23.5	-8.8	15.7	85.5	0.1	-32.4
Commod. & Transactions not classified	46.3	-36.5	465.0	-56.8	-89.7	-89.8	-91.7	-93.1

Source: Authors Computation, underlying data from World Integrated Trade Solution database

Table A.1.4: Destination of Countries that Nigeria Exports to within ECOWAS

	1975	1980	1990	2000	2010	2016	2017	2018
Food and live animals	9	3	10	5	7	13	12	13
Beverages and tobacco	3	2	7	3	7	13	14	14
Crude materials, except fuels	5	5	6	3	9	4	8	7
Mineral fuels and lubricants	8	8	8	5	6	8	7	7
Animal and vegetable oils and fats	2	0	3	6	0	2	0	2
Chemicals	10	0	11	4	11	14	12	13
Manufactured goods	10	5	11	9	9	13	12	10
Machinery and transport equipment	12	0	9	4	7	4	8	7
Miscellaneous manufactured articles	11	0	9	5	7	10	11	9
Commod. & Transactions not classified	13	8	10	2	9	8	2	4
Total Trade	14	11	13	12	13	15	14	14

Source: Authors Computation, underlying data from the World Integrated Trade Solution database

LIST OF ABBREVIATIONS

African Continental Free Trade Agreement (AfCFTA)
African Union (AU)
Arab Maghreb Union (UMA)
British Exit from the European Union (BREXIT)
Common External Tariff (CET)
Common Market for Eastern and Southern Africa (COMESA)
Community of Sahel- Saharan States (CEN-SAD)
Custom Unions (CUs)
East African Community (EAC)
Economic Community of Central African States (ECCAS)
Economic Community of West African States (ECOWAS)
ECOWAS Trade Liberalization Scheme (ETLS)
Economic Union (EU)
Free Trade Agreements (FTAs)
Intergovernmental Authority on Development (IGAD)
Preferential Trading Areas (PTAs)
Regional Trade Agreements (RTAs)
Standard International Trade Classification (SITC)
Single Markets (SMs)
Southern African Development Community (SADC)
Two-Stage Least Square (2SLS)
World Trade Organisation (WTO)
Regional Orientation Index (ROI)
Michelaye Index (MI)
Herfindahl-Hirschman Index (HHI)
Extensive export margins (extmarg)
intensive export margins (intmarg) regional integration (regin)
Gross Domestic Product (GDP) per capital (gdppc)
Human capital (hc)
Domestic investment (di)

Foreign investments (fi)

Electricity access (elec)

Terms of trade (tot)

World Integrated Trade Solution (WITS)

World Development Indicators (WDI)

Local Currency Units (LCU)

Growth Rate of Nigeria's Exports to ECOWAS (Extmarg_grec)

Growth Rate of Nigeria's Exports to Africa (Extmarg_graf)

Destinations of Nigeria's export to ECOWAS (Extmarg_dec)

Destinations of Nigeria's export to Africa (Extmarg_daf)

Computed Normalized Herfindhal Hirschman Index (HHI) for Nigeria's export to ECOWAS (Intmarg_ec)

Computed Normalized Herfindhal Hirschman Index (HHI) for Nigeria's export to Africa (Intmarg_af)