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Trade performance of the ten most traded agri-food products between Nigeria, EU28 and ECOWAS

Nahanga Verter[1*], Ivo Zdrahal[1], Barbora Dankova[1] and Winifred Udende[2]

[1]*Mendel University in Brno, Department of Regional and Business Economics, Faculty of Regional Development and International Studies, 613 00 Brno, Czech Republic*
[2]*Federal University of Agriculture, Department of Business Administration, College of Management Sciences, Makurdi, Nigeria*
[*]*Corresponding author:* nahanga.verter@mendelu.cz

Abstract

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This paper uses Lafay index (LFI), trade balance index (TBI) and concentration ratio to investigate the dynamics and comparative advantage of the ten most traded agri-food products between Nigeria and the world as well as the European Union (EU28) and Economic Community of West African States (ECOWAS). The country markedly recorded an adverse TBI in food trade with the world, EU28 and ECOWAS. The share of Nigeria's food export in total food exports to the EU28 declined from 65% in 2007 to 37% in 2017. On the other hand, the share of the country's food exports to ECOWAS rose from 2% to 14% within the same period under study. Remarkably, 5 out of 46 mostly traded food products accounted for 78%, 93% and 92% of total food exports to the world, EU28 and ECOWAS, respectively.

The LFI further reveals that Nigeria has comparative advantages and positive TBI in trading with the world, the EU28, and ECOWAS with food products, such as crustaceans, cocoa, and oilseeds. On the other hand, Nigeria has comparative disadvantages and adverse TBI in about half out of the ten most traded products with the world, EU28, and ECOWAS. The study further reveals that Nigeria mostly exports unprocessed and imports high processed food products. Food processing and export promotion policies should be heightened to diversify export food baskets and reduce excessive reliance on food imports.

Keywords: cocoa; crustaceans; milk and cream; comparative advantage; Lafay index; trade balance index

Introduction

Trade performance and competitiveness are predominantly driven by productivity (WEF, 2018). Although the food production index in Nigeria has risen, the nation is far from achieving food self-sufficient. Also, scoring 48.4 out of 100 (where 100 is the best) in food security status in 2019 signifies that the country is food insecure (EIU, 2019). Recently, Nigeria (especially in the Northeast) has been characterized by chronic food insecurity occasioned by a low-level of food productivity and production relative to population growth coupled with adverse economic factors (FAO et al., 2020). Food production in the country, just as in many Sub-Saharan Africa (SSA) countries, has faced severe obstacles, such as adverse climate change, unpredictable rainfall, terrorism, herder-farmer crisis, lack of modern farm inputs and technologies, government neglect and lack of policy continuity by preceding administrations (Verter, 2016; MBNP, 2017; FAO et al., 2020). These bottlenecks have partially nullified Nigeria's capacity to achieve self-sufficiency in total food products (Torres & van Seters, 2016; UNCTAD, 2019).

Since Nigeria abandoned food production for oil extraction and exports in the late 1960s (Verter, 2016; MBNP, 2017), oil has accounted for an average of over more than

95% of export earnings for the past three decades, while food exports earnings drastically declined accounted for an average of 4% between 2007 and 2018 and the country has been a net importer of food since 1975 (UNCTAD, 2019).

Dependency theory has postulated that underdeveloped countries heavily rely on advanced economies for processed or manufactured commodities and in turn, export primary commodities to them (Verter, 2017). As postulated by the dependency theory, Nigeria has substantially dependent on Europe and other emerging economies for processed food products, such as wheat, rice, milk and tomato paste (Verter, 2016). Previous economic policies left Nigeria ill-prepared for the recent global oil shocks. Regrettably, the structure of Nigeria's agriculture has heavily remained food import-reliant, driven by consumption and undiversified economic-related activities (MBNP, 2017).

To diversify Nigeria's economy and proactively reduce its vulnerability, an economic policy document, named 'Economic Recovery and Growth Plan (ERGP)' was launched by the federal government in 2017. Similarly, food production and trade have been prominently mentioned in the policy document. Specifically, the ERGP focuses on the nation's self-sufficiency in tomato paste, rice, and wheat by 2019/2020. Thus, Nigeria plans to deepen investments to become a net exporter of main food products, such as rice, cassava, peanuts, cashew nuts, milk, and vegetable oil by 2020 (MBNP, 2017).

The ERGP is following the current Nigerian agrarian policies, such as the Agricultural Transformation Agenda (ATA), which was partially implemented between 2011 and 2015; and the Agriculture Promotion Policy (APP), also known as the Green Alternative Policy, launched in 2015, to be implemented for the period between 2016 and 2020 (FMARD, 2016). The ATA was established to boost food production, achieve national food security, improve exports, and drastically reduce over-dependent on food imports (FMARD, 2016). The APP continued in 2015 to further attract investments in food production, enhance farmers' access to finance and markets, reduce post-harvest losses, boost added-value and value chain, and ensure self-sufficiency in critical food products (MBNP, 2017). This study looks at the achievements and challenges of these policies from the food trade perspective, with attention to the top 10 traded food product groups in Nigeria.

Trade performance and competitiveness in food products have been investigated in recent years (Bojnec & Fertő, 2015; Benesova et al., 2017). For instance, Bojnec & Fertő (2015) use constant market share (CMS), Revealed Comparative Advantage (RCA) and other approaches to assess the competitiveness of agri-food exports of the EU27 member states for the period 2000-2011. Their findings indicate that although the EU27 has been a global player in agri-food markets, the communities' overall share in global agri-food exports shrank from 47.2% in 2000 to 41.3% in 2011. The results further show that most of the member states, notably the Netherlands, Spain, and France, have comparative advantages in agri-food products.

Benesova et al. (2017) investigate trade performance in the Russian agrarian sector. Their results reveal that the country has comparative advantages in bilateral food trade with Africa, Asia, and the Commonwealth of Independent States (CIS). On the contrary, the country recorded comparative disadvantages in trading with the EU and the Americas. They argue that the structure of Russian trade has changed and evolved along with economic progress and free trade. Nwachukwu et al. (2010) investigate the export competitiveness of Nigeria in cocoa beans. The findings reveal that Nigeria has a high comparative advantage in the product.

Although some studies have assessed food trade performance and competitiveness in Nigeria, to the best of our knowledge, no study has simultaneously investigated the dynamics of the ten most traded food products between Nigeria and the EU28 and ECOWAS. The article aimed at investigating the dynamics and comparative advantage of the ten most traded agri-food products between Nigeria and the world as well as the EU28 and ECOWAS.

Materials and Methods

The secondary data used in this study was obtained from the UN Conference on Trade and Development (UNCTAD) for the period 2007-2017. The classification of specific food products used in this paper is adapted from UNCTAD following the UN Standard International Trade Classification (SITC, Revision 3). The valuables calculated (current prices in US$) at the three-digit level of the SITC for all the 46 food items (SITC 0 + 1 + 22 + 4).[1] Data on the total food trade

[1] The SITC (revision3, 3-digit code) for the 46 food items: SITC 001 (Live animals); SITC 011 (Bovine Meat); SITC 012 (Other meat, other offal); SITC 016 (Meat, ed. offl., dry, slt, smk); SITC 017 (Meat, offl. Prdd, nes); SITC 022 (Milk and cream); SITC 023 (Butter, other fat of milk); SITC 024 (Cheese and curd); SITC 025 (Eggs, birds, yolks, albumin); SITC 034 (Fish, fresh, chilled, frozen); SITC 035 (Fish, dried, salted, smoked); SITC 036 (Crustaceans, Molluscs); SITC 037 (Fish etc. prepd, prsvd. Nes); SITC 041 (Wheat, Meslin, Unmilled); SITC 042 (Rice); SITC 043 (Barley, unmilled); SITC 044 (Maize unmilled); SITC 045 (Other cereals, unmilled); SITC 046 (Meal, Flour of wheat, msln); SITC 047 (Other cereal meal, flours); SITC 048 (Cereal preparations); SITC 054 (Vegetables); SITC 056 (Vegetables, prpd, prsvd, nes); SITC 057 (Fruit, nuts excl. oil nuts); SITC 058 (Fruit, preserved, prepared); SITC 059 (Fruit, vegetable juices); SITC 061 (Sugars, molasses, honey); SITC 062 (Sugar, confectionery); SITC 022 (Milk and cream); SITC 071 (Coffee, coffee substitutes); SITC 072 (Co-

(46 food items) is presented in Tables 1 and 2, and the top 10 most traded are presented in the subsequent tables in this study to show the dynamics and competitiveness of Nigeria in the food sector.

The Herfindahl-Hirschman Index (HHI), also known as the Herfindahl index, is statistical measure the concentration ratio (CR) or product competitiveness across the globe (Frandsen, 2005). The product concentration index shows how exports and imports of a nation (or regions) concentrate on a few products or otherwise distributed in a more homogeneous manner among a broad range of products. In other words, the index measures the dispersion of exports or import's values across exporter's or importer's products (*n* products). The model is mathematically presented as follows:

$$s_l = \frac{x_{ij}}{\sum_1^n x}, \tag{1}$$

where l = CR3, CR5, CR10 most traded products

CR3, CR5 and CR10 indicate the share of the three, five and ten highest products out of all the 46 food products (SITC 0 + 1 + 22 + 4) traded (US$) each year. The findings are presented in Table 2.

Similarly, the HHI is mathematically presented here as follows:

$$HHI = \sum {s_{ij}}^2 \tag{2}$$

Where s is the share of exports (import) in the total food trade for the product *i* in the year *j*. The value of the index ranges from 0 to 1. A value closer to 1 indicates that an economy (Nigeria) concentrates in exporting (importing) a few agri-food products to (from) the global or partner markets. Hence, its vulnerability to agri-food trade shocks might be imminent. On the contrary, an economy with thoroughly diversified exports or imports will have an index close to 0.

In investigating trade performance and competitiveness, it is relevant to trade specialisation. Thus, the trade balance index (TBI) finds whether a given country is a net-exporter or net-importer for a product or total products. TBI is mathematically formulated as follows:

$$TBI_j^i = \frac{x_j^i - m_j^i}{x_j^i + m_j^i} \tag{3}$$

Where TBI^i_j denotes the trade balance index of country *i* for product *j*; x^i_j and m^i_j represent exports and imports of product products *j* by nation *i*, respectively. The values of the index range from -1 to +1. The TBI equals +1 if a nation only exports. Inversely, the TBI equals -1 if a country only imports. Undoubtedly, the index is not defined if Nigeria neither exports nor imports a given product. Nigeria is referred to as a net-exporter (net importer) of a food product if the value of TBI is positive (negative).

To capture the degree of trade competitiveness of Nigeria in the top 10 food product groups, it worth assessing the comparative advantages of the relevant products in the country. This can be achieved using a method known as the revealed comparative advantage (RCA). Therefore, the Lafay index (LFI) is selected (Lafay, 1992). The LFI uses both export and import values (Zaghini, 2005). The LFI is explained for a given country and product as follows:

$$LFI_j^i = 100\left(\frac{x_j^i - m_j^i}{x_j^i + m_j^i} - \frac{\sum_{j=1}^N \left(x_j^i - m_j^i\right)}{\sum_{j=1}^N \left(x_j^i + m_j^i\right)}\right)\frac{x_j^i + m_j^i}{\sum_{i=j}^N \left(x_j^i + m_j^i\right)} \tag{4}$$

Where *x* and *m* are the export and import values of the individual food product group, zero stands for a neutral value regarding comparative advantage. A positive value signifies the existence of comparative advantage for a specific sector, and a negative value shows the presence of a comparative disadvantage in a particular food product. This means that a higher index value suggests a higher degree of comparative advantage and specialisation.

Results and Discussion

Nigeria's trade performance in all 46 food items based on the TBI and descriptive approaches are presented below. The total food exports climbed from $844 million in 2007 to its peak in 2010 with $1.86 billion, before dropping to $1.15 billion in 2016, and then slightly rose to $1.45 billion in 2017. Sadly, Nigeria substantially recorded negative TBI in the overall food products throughout the study (Table 1).

This signifies that Nigeria's competitiveness in total food products have been reduced while over-dependent on imports intensified over the years (UNCTAD, 2019). Also, low value-added in the food value chain with low prices occasioned by government neglect has contributed to food loss (Verter, 2016) and insufficiency (EIU, 2019; FAO et al.,

coa); SITC 073 (Chocolate, oth. cocoa prep.); SITC 074 (Tea and mate); SITC 075 (Spices); SITC 081 (Animal feed stuff); SITC 091 (Margarine and shorten); SITC 098 (Edible prod. prepetns, nes); SITC 111 (Non-alcohol. Beverage); SITC 112 (Alcoholic Beverages); SITC 121 (Tobacco, unmanufactured); SITC 122 (Tobacco, manufactured); SITC 222 (Oil seeds and oleaginous fruits (excl. flour)); SITC 223 (Oil seeds, oleaginous fruits (incl. flour, n.e.s.)); SITC 411 (Animal oils and fats); SITC 421 (Fixed veg. fat, oils, soft); SITC 422 (Fixed veg. fat, oils, other); and SITC 431 (Animal, veg. Fats, oils, nes.)

2020). Thus, leading to excessive reliance on food imports to fill the domestic supply gaps.

Table 2 presented the findings of HHI, export and import product concentration ratio in total agri-food products be-

Table 1. Dynamics of total food trade between Nigeria and the World/EU/ECOWAS, 2007-2017

Indicator/year		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	No. of products	46	46	46	46	46	46	46	46	46	46	46
Nigeria-World	Export (Mill. US$)	844	991	1296	1862	1705	2370	2421	1772	1794	1147	1445
	Import (Mill. US$)	4736	5557	4484	5575	14 454	9057	7994	8769	6639	4391	6120
	Balance (Mill. US$)	-3892	-4566	-3188	-3713	-12 749	-6687	-5573	-6997	-4846	-3244	-4675
	TBI Index	-0.70	-0.70	-0.55	-0.50	-0.79	-0.59	-0.54	-0.66	-0.57	-0.59	-0.62
Nigeria-EU28	Export (Mill. US$)	551	461	578	695	736	1,010	1,286	793	927	505	534
	Import (Mill. US$)	1689	1308	1033	1073	2356	1702	1772	2205	1435	1068	1631
	Balance (Mill. US$)	-1139	-847	-455	-378	-1620	-692	-486	-1412	-508	-563	-1097
	TBI Index	-0.51	-0.48	-0.28	-0.21	-0.52	-0.26	-0.16	-0.47	-0.22	-0.36	-0.51
	Export share (%)	65.22	46.51	44.57	37.30	43.14	42.60	53.13	44.78	51.67	44.04	36.94
	Import share (%)	35.67	23.54	23.04	19.25	16.30	18.79	22.16	25.15	21.61	24.33	26.65
Nigeria-ECOWAS	Export (Mill. US$)	32	44	63	89	143	201	272	176	164	106	205
	Import (Mill. US$)	84	224	358	351	263	269	832	263	375	133	280
	Balance (Mill. US$)	-51	-180	-294	-262	-120	-68	-559	-87	-211	-28	-76
	TBI Index	-0.45	-0.67	-0.70	-0.60	-0.30	-0.14	-0.51	-0.20	-0.39	-0.12	-0.16
	Export share (%)	3.80	4.42	4.90	4.77	8.36	8.49	11.25	9.95	9.15	9.21	14.16
	Import share (%)	1.76	4.03	7.98	6.30	1.82	2.97	10.40	3.00	5.65	3.03	4.58

Source: Own composition based on UNCTAD, 2019

Table 2. Product concentration ratio in agri-food trade between Nigeria and the orld/EU/ECOWAS, 2007-2017

	CR/HHI	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nigeria-World	CR3 export	0.78	0.75	0.79	0.76	0.74	0.69	0.71	0.76	0.70	0.75	0.67
	CR5 export	0.87	0.86	0.90	0.89	0.85	0.82	0.80	0.84	0.81	0.87	0.78
	CR10 export	0.95	0.97	0.98	0.97	0.96	0.96	0.92	0.96	0.93	0.96	0.92
	HHI export	0.38	0.28	0.35	0.27	0.30	0.23	0.26	0.28	0.26	0.24	0.19
	CR3 import	0.61	0.50	0.51	0.47	0.57	0.55	0.49	0.45	0.53	0.50	0.51
	CR5 import	0.76	0.69	0.67	0.62	0.73	0.71	0.66	0.64	0.65	0.68	0.70
	CR10 import	0.90	0.85	0.85	0.80	0.90	0.87	0.83	0.86	0.81	0.83	0.83
	HHI import	0.16	0.13	0.13	0.10	0.15	0.12	0.11	0.11	0.12	0.12	0.12
Nigeria – EU28	CR3 export	0.92	0.93	0.94	0.94	0.92	0.95	0.94	0.95	0.92	0.94	0.83
	CR5 export	0.96	0.96	0.97	0.96	0.95	0.97	0.95	0.98	0.97	0.98	0.93
	CR10 export	0.99	0.99	0.99	0.99	0.99	0.99	0.98	1.00	0.99	0.99	0.99
	HHI export	0.61	0.61	0.72	0.66	0.67	0.58	0.64	0.66	0.63	0.63	0.44
	CR3 import	0.62	0.57	0.54	0.56	0.66	0.56	0.59	0.64	0.58	0.56	0.60
	CR5 import	0.77	0.70	0.73	0.68	0.81	0.73	0.74	0.77	0.72	0.72	0.79
	CR10 import	0.89	0.87	0.90	0.87	0.93	0.91	0.90	0.93	0.89	0.90	0.93
	HHI import	0.16	0.13	0.13	0.13	0.17	0.13	0.14	0.15	0.13	0.13	0.15
Nigeria-ECOWAS	CR3 export	0.67	0.80	0.81	0.80	0.78	0.82	0.70	0.81	0.75	0.81	0.77
	CR5 export	0.76	0.87	0.87	0.87	0.86	0.89	0.81	0.89	0.83	0.89	0.92
	CR10 export	0.89	0.96	0.95	0.96	0.93	0.97	0.94	0.96	0.93	0.98	0.99
	HHI export	0.30	0.44	0.54	0.43	0.33	0.27	0.18	0.24	0.23	0.38	0.24
	CR3 import	0.49	0.71	0.67	0.72	0.42	0.66	0.76	0.65	0.55	0.61	0.53
	CR5 import	0.65	0.83	0.78	0.86	0.62	0.77	0.90	0.75	0.71	0.77	0.70
	CR10 import	0.90	0.94	0.92	0.94	0.85	0.90	0.96	0.90	0.93	0.89	0.91
	HHI import	0.12	0.26	0.20	0.20	0.09	0.18	0.34	0.25	0.14	0.19	0.13

Source: Own composition based on UNCTAD, 2019

tween Nigeria and the world as well as Nigeria and the EU28 and ECOWAS for the period 2007-2017. The concentration ratio shows that the share of the ten most exported food products (CR10 export) in the total food exports declined from 0.95 in 2007 to 0.92 in 2017. Also, the top 5 product groups, SITC 072 (cocoa), SITC 057 (fruits and nuts), SITC 222 (oil seeds and oleaginous), SITC 122 (tobacco, manufactured), and SITC 036 (crustaceans, molluscs) jointly accounted for 0.78 of the total food exports in the global market in 2017. Similar trends reveal in trade between Nigeria and the EU28 as well as Nigeria and ECOWAS (Table 2, Appendices 1-3).

On the other hand, the concentration ratio of the ten (CR10 import), five (CR5 import) and three (CR3) most imported food products declined from 0.90, 0.76 and 0.61 in 2007 to 0.83, 0.70 and 0.51 in 2017, respectively. Similarly, both HHI export and imports show a downward direction from 0.38 and 0.16 to 0.19 and 0.12 between 2007 and 2017 (Table 2). Also, the top 5 products, SITC 041 (wheat), SITC 098 (edible products), SITC 034 (fish, fresh), SITC 061 (sugar, molasses/ honey), and SITC 022 (milk and cream) jointly accounted for over 70% share of the total food imports in 2017 (Appendix 1). Similar trends reveal in trade between Nigeria and the EU28 as well as Nigeria and ECOWAS (Table 2, Appendices 1-3). This signifies that Nigeria's agri-food trade has been concentrated in a few products, especially export.

The LFI reveals that Nigeria has comparative advantages in 8 products (SITC 036 (SITC 036 crustaceans, molluscs; SITC 057 fruit, nuts, excluding oil nuts; SITC 072 cocoa; SITC 075 spices; SITC 111 non-alcohol beverage; SITC 112 alcoholic beverages; SITC 222 oil seeds and oleaginous fruits, excluding flour; SITC 223 oil seeds, oleaginous fruits, including flour) out of the top ten products traded in the global market in 2017. Also, Nigeria recorded positive TBI in those products in the same period, except SITC 111 (Table 3). This suggests that Nigeria's trade competitiveness has been in only a few product groups. This result is in line with the findings by Nwachukwu et al. (2010) as their studies also reveal that Nigeria has a comparative advantage in cocoa beans (SITC 072).

On the other hand, Nigeria's trade in the global market (Table 3) further reveals that the country has comparative disadvantages and negative TBI throughout the period in these product groups: SITC 034 (fish, fresh, chilled, frozen); SITC 035 (fish, dried, salted, smoked); SITC 041 (wheat, meslin, unmilled); SITC 048 (cereal preparations); SITC 061 (sugars, molasses, honey); SITC 098; SITC 044 (maize); SITC 121 (tobacco, raw); and SITC 422 (fixed vegetable fats).

Agri-food exports from Nigeria to the EU28 fluctuated but also grew from $551 million in 2007 to its peak in 2015 with $927 million, before declining to $505 million in 2016, and then slightly increased to $534 million in 2017. Sadly, Nigeria substantially recorded an adverse balance of trade with the EU in the total food products throughout the period under review, from -$1.14 billion (TBI -0.51) in 2007 to -$810 million (TBI -0.51) in 2017 (Table 1). The overall country's competitiveness in food products in trading with the EU28 has drastically shrunk, whereas over-reliant on food imports has rapidly risen in recent years. Although the share of Nigeria's trade with the EU28 in food products in the total food exports and imports also declined from 65.2% and 35.7% in 2007 to 36.9% and 26.7% in 2017 (Table 1) it is still substantial. Arguably, the shares have diminished because Nigeria has diversified beyond the EU markets and vice versa.

The share of the ten major exported food products in the total food exports to the EU28 rose from 97% in 2007 to its peak in 2016 with 99%, and then, slightly dwindled to 99% in 2017. Also, 5 product groups[2] jointly accounted for over 93% of the total food exports to the region. Historically, cocoa (SITC 072) has had the most significant weight in the group, accounted for 87% in 2007, over 8% in 2009, and then about 65% of total food exports in 2017 to the EU28 (Appendix 2). Cocoa also records a high comparative advantage and positive TBI in the trade with the EU (Table 4).

The share of the top 10 major food products imported from the EU28 rose from 87% in 2007 to 93% in 2017. Similarly, the top 5 products[3] jointly accounted for over 79% of the total food imports in 2017 (Appendix 2). Although the HHI export results show a downward direction from 0.61 to 0.44 between 2007 and 2017 (Table 2), it signifies that Nigeria's food export to the EU28 has been highly concentrated in a few products.

In the same direction, as shown in Table 4, the LFI reveals that Nigeria recorded low comparative advantages in products, such as SITC 036 (crustaceans, molluscs), and SITC 222 (oil seeds and oleaginous fruits, excluding flour). Similarly, these products also recorded substantial positive TBI. This suggests that the country is competitive in trading with the EU28 in these product groups. On the other hand, Nigeria has comparative disadvantages and negative TBI throughout in these products: SITC 022 (milk and cream);

[2] The 5 product groups: SITC 036 (crustaceans, molluscs); SITC 072 (cocoa); SITC 222 (oil seeds and oleaginous fruits, excluding flour); SITC 223 (oil seeds, oleaginous fruits, including flour, nes); and SITC 422 (fixed vegetable fat, oils, other).

[3] The top 5 products: SITC 022 (milk and cream); SITC 034 (fish, fresh, chilled, frozen); SITC 041 (wheat, meslin, unmilled); SITC 048 (cereal preparations); SITC 098 (edible products and preparations, n.e.s).

SITC 034 (fish, fresh, live or dead, chilled or frozen); SITC 041 (wheat, including spelt and meslin, unmilled); SITC 048 (cereal preparations); SITC 056 (vegetables, roots and tubers, prepared or preserved, nes); SITC 098 (edible products and preparations, nes); and SITC 121 (tobacco, unmanufactured; tobacco refuse).

A critical look at the level of value-added products shows that Nigeria mostly imported processed food (SITC 022 (milk and cream), SITC 048 (cereal preparations), SITC 098 (edible products and preparations); SITC112) and exported fresh or

Table 3. Lafay index (LFI) and TBI in food trade between Nigeria and the World, 2007-2017

SITC code/Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
LFI											
SITC 022	-0.80	-0.71	-0.85	-0.60	-0.26	0.68	0.09	-0.35	0.42	-0.70	-0.48
SITC 034	-0.63	-0.92	-0.93	-0.96	-0.72	-0.97	-0.63	-0.94	-0.81	-0.96	-0.95
SITC 035	-0.90	-0.58	-0.89	-0.94	-0.96	-0.97	-0.23	-0.97	-0.80	-0.77	-0.66
SITC 036	0.55	0.41	0.53	0.62	0.30	0.30	0.31	0.25	0.22	0.36	0.31
SITC 041	-0.98	-0.99	-1.00	-1.00	-0.99	-1.00	-0.16	-0.90	-0.32	-1.00	-0.99
SITC 044	-0.97	-1.00	-0.98	-0.97	-0.95	-0.98	-0.85	-1.00	-0.87	-1.00	-0.99
SITC 048	-0.91	-0.89	-0.95	-0.93	-0.86	-0.87	-0.90	-0.89	-0.91	-0.90	-0.49
SITC 057	-0.13	-0.02	-0.20	-0.07	0.16	0.15	0.08	0.08	0.06	0.34	0.35
SITC 061	-0.08	-0.04	-0.32	-0.29	-0.20	-0.30	-0.31	0.04	-0.22	-0.27	-0.39
SITC 072	0.96	0.95	0.94	0.92	0.94	0.94	0.95	0.94	0.94	0.93	0.93
SITC 075	0.47	0.47	0.20	0.61	0.59	0.65	0.63	0.64	0.61	0.57	0.56
SITC 081	-0.04	-0.23	-0.35	-0.44	-0.35	-0.05	-0.59	-0.59	-0.57	-0.38	-0.33
SITC 098	-0.85	-0.84	-0.83	-0.90	-0.41	-0.63	-0.41	-0.30	-0.51	-0.54	-0.16
SITC 111	-0.60	-0.63	-0.87	-0.63	-0.72	-0.53	-0.23	-0.41	-0.41	-0.43	0.07
SITC 121	-1.00	-0.97	-0.93	-0.99	-0.98	-0.85	-1.00	-0.96	-0.81	-1.00	-1.00
SITC 122	-0.01	0.55	0.45	0.53	0.50	0.29	0.22	0.30	0.35	0.46	0.49
SITC 222	0.45	0.62	0.56	0.63	0.50	0.34	0.49	0.58	0.48	0.51	0.50
SITC 223	0.00	-0.27	-0.75	-0.67	-0.66	-0.84	0.15	-0.36	0.00	0.42	0.86
SITC 422	-0.90	-0.98	-0.99	-0.99	-0.99	-0.98	-0.79	-0.97	-0.76	-0.75	-0.57
TBI Index											
SITC 022	-0.99	-0.98	-0.98	-0.94	-0.95	-0.20	-0.71	-0.93	-0.46	-0.97	-0.94
SITC 034	-0.98	-1.00	-0.99	-0.99	-0.98	-1.00	-0.96	-1.00	-0.99	-1.00	-1.00
SITC 035	-0.99	-0.98	-1.00	-1.00	-1.00	-1.00	-0.94	-1.00	-0.99	-0.99	-0.98
SITC 036	0.96	0.17	0.99	1.00	0.85	0.96	0.72	0.97	0.82	0.96	0.90
SITC 041	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-0.94	-1.00	-0.97	-1.00	-1.00
SITC 042	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-0.95	-1.00	-1.00	-1.00	-0.99
SITC 044	0.08	-0.97	-0.80	-0.53	0.02	-0.93	-0.83	-1.00	-0.66	-1.00	-1.00
SITC 048	-0.97	-0.99	-0.77	-0.91	-0.98	-0.98	-0.81	-0.96	-0.86	-0.94	-0.93
SITC 057	0.88	0.89	0.90	0.89	0.53	0.81	0.19	0.25	0.37	0.54	0.49
SITC 061	-0.89	-0.90	-0.90	-0.84	-0.91	-0.90	-0.91	-0.89	-0.81	-0.94	-0.95
SITC 072	1.00	1.00	0.97	1.00	0.02	0.99	0.96	0.99	0.97	1.00	1.00
SITC 075	0.02	-0.07	-0.10	-0.19	-0.11	0.43	0.38	0.34	0.33	0.35	0.25
SITC 081	-0.10	-0.38	-0.19	-0.38	-0.53	0.04	-0.44	-0.57	-0.53	-0.42	-0.44
SITC 098	-0.98	-0.98	-0.97	-0.98	-0.99	-0.92	-0.90	-0.89	-0.91	-0.92	-0.86
SITC 111	-0.82	-0.87	-0.90	-0.80	-0.86	-0.91	-0.57	-0.76	-0.86	-0.65	-0.28
SITC 121	-1.00	-1.00	-0.98	-1.00	-0.99	-0.96	-1.00	-0.99	-0.97	-1.00	-1.00
SITC 122	-0.27	0.50	0.64	0.75	0.17	0.53	-0.69	0.62	0.18	0.45	0.35
SITC 222	0.96	0.94	0.99	0.89	-0.09	0.96	0.93	0.77	0.88	0.94	0.90
SITC 223	0.10	-0.05	-0.61	-0.98	-0.42	-0.93	-0.79	-0.15	-0.92	0.32	0.87
SITC 422	-0.76	-0.98	-0.99	-0.99	-1.00	-0.99	-0.94	-1.00	-0.94	-0.96	-0.91

Source: Own composition based on UNCTAD, 2019

Table 4. Lafay index (LFI) and TBI in food trade between Nigeria and the EU28, 2007-2017

SITC code	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
LFI											
SITC 022	-2.45	-1.63	-1.40	-1.40	-0.88	1.03	-1.42	-1.73	-0.06	-1.31	-1.51
SITC 034	-1.91	-0.81	-1.05	-1.05	-0.29	-1.40	-1.17	-1.36	-1.60	-1.63	-1.29
SITC 036	2.13	1.13	1.14	1.14	0.68	0.77	1.43	1.12	1.18	1.85	1.19
SITC 041	-1.15	-0.19	-1.67	-1.67	-0.05	-0.52	-0.37	-0.45	-0.31	-0.64	-1.00
SITC 048	-0.22	-0.29	-0.35	-0.35	-0.16	-0.50	-0.55	-0.51	-0.58	-0.63	-0.55
SITC 054	0.14	0.21	0.31	0.31	0.10	0.12	0.10	0.15	0.11	0.08	0.18
SITC 056	-0.25	-0.24	-0.41	-0.41	-0.06	-0.25	-0.25	-0.15	-0.24	-0.18	-0.13
SITC 058	0.00	-0.01	0.00	0.00	0.00	-0.01	0.00	0.00	-0.01	0.00	0.03
SITC 072	12.94	9.19	13.09	13.09	6.06	10.40	14.96	10.09	13.60	11.27	7.39
SITC 075	0.05	0.03	0.02	0.02	0.14	0.05	0.07	0.08	0.11	0.30	0.11
SITC 081	0.23	-0.02	-0.14	-0.14	0.02	-0.09	-0.13	-0.13	-0.22	-0.30	-0.11
SITC 098	-1.24	-0.96	-1.23	-1.23	-0.49	-0.91	-1.75	-1.36	-1.32	-1.50	-2.08
SITC 111	-0.04	-0.08	-0.08	-0.08	-0.03	-0.17	-0.16	-0.12	-0.22	-0.15	-0.14
SITC 112	0.07	0.31	-0.16	-0.16	-0.01	-0.34	-0.49	-0.37	-0.39	-0.42	-0.36
SITC 121	-0.07	-0.05	-0.03	-0.03	-0.01	-0.07	-0.12	-0.10	-0.14	-0.24	-0.16
SITC 222	0.11	0.04	0.24	0.24	0.15	0.17	1.30	0.75	0.62	0.53	0.92
SITC 223	0.01	0.02	0.00	0.00	0.00	0.00	0.08	0.01	0.03	0.00	0.90
SITC 422	0.00	0.00	0.00	0.00	0.00	-0.03	-0.02	0.00	-0.02	0.06	0.24
TBI Index											
SITC 022	-1.00	-1.00	-0.99	-0.98	-0.98	-0.33	-0.93	-1.00	-0.59	-0.99	-1.00
SITC 034	-0.99	-0.99	-0.98	-0.99	-0.98	-1.00	-0.95	-0.99	-0.99	-0.99	-0.99
SITC 036	0.97	0.86	1.00	1.00	0.90	0.99	1.00	0.99	0.99	1.00	0.95
SITC 041	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-0.89	-1.00	-0.94	-1.00	-1.00
SITC 048	-0.96	-1.00	-0.99	-1.00	-0.99	-1.00	-0.97	-1.00	-0.99	-1.00	-1.00
SITC 054	0.40	0.58	0.64	0.62	0.42	0.26	0.23	0.31	0.12	-0.23	0.26
SITC 056	-0.97	-0.98	-0.97	-0.98	-0.96	-1.00	-0.92	-0.98	-0.98	-0.99	-0.98
SITC 058	-0.52	-0.97	-0.81	-0.95	-0.88	-0.97	-0.73	-0.84	-0.93	-0.58	0.48
SITC 072	1.00	1.00	1.00	1.00	0.17	1.00	0.97	1.00	0.98	1.00	1.00
SITC 075	-0.38	-0.50	-0.38	-0.74	0.48	-0.21	0.03	-0.06	0.01	0.55	0.18
SITC 081	-0.37	-0.72	-0.79	-0.86	-0.71	-0.83	-0.78	-0.90	-0.93	-0.97	-0.74
SITC 098	-1.00	-0.99	-0.99	-0.99	-0.99	-0.99	-0.99	-1.00	-0.99	-0.99	-0.99
SITC 111	-0.78	-0.83	-0.89	-0.92	-0.96	-0.96	-0.92	-0.93	-0.95	-0.93	-0.95
SITC 112	-0.63	-0.55	-0.73	-0.77	-0.81	-0.93	-0.91	-0.92	-0.92	-0.90	-0.94
SITC 121	-1.00	-1.00	-1.00	-0.98	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
SITC 222	0.92	0.89	0.98	0.99	0.90	1.00	0.95	0.95	0.95	1.00	0.99
SITC 223	0.50	0.77	-0.57	0.51	0.58	0.74	0.99	0.59	0.91	0.49	1.00
SITC 422	-0.63	-0.52	-0.54	-0.91	-0.86	-0.96	-0.95	-0.59	-0.95	-0.27	0.81

Source: Own composition based on UNCTAD, 2019

raw food (SITC 036, SITC 072, SITC 222, SITC 223) to the EU28. Generally, Nigeria has comparative advantages mainly in (tropical) raw products, which the EU countries hardly produce in large quantities owing to the continent's natural conditions as postulated by traditional trade theories. On the other hand, as postulated by dependency and modern trade theories, Nigeria highly relied on value-added food products from the EU28 and other advanced economies because it has not developed its food processing industries. Also, the EU's trade policies, regarding sanitary and phytosanitary measures (SPS), non-tariff measures (NTMs) and tariff escalation[4] in

[4] Although there is market access for some tropical food products to the EU's markets, tax escalation exits in semi-processed and processed as well as in products that are produced within the EU member countries. For instance, import duties applied (AVE (ad valorem equivalent) based on the world tariff profile (WTP)) on Nigeria products in 2018: SITC 0306 – Crustaceans 5.35%;

Table 5. Lafay index (LFI) and TBI in food trade between Nigeria and ECOWAS, 2007-2017

SITC code	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
LFI											
SITC 022	0.05	0.04	0.02	0.07	0.13	0.91	0.98	0.47	0.51	0.12	0.28
SITC 048	0.01	0.01	0.02	0.03	0.02	0.06	0.03	0.02	0.03	0.04	0.35
SITC 054	0.00	-0.02	-0.03	-0.02	0.00	0.00	0.01	0.00	0.00	0.01	-0.02
SITC 056	-0.03	0.01	0.01	0.01	0.01	0.02	0.11	0.01	0.02	-0.01	-0.01
SITC 057	0.01	0.02	0.03	0.03	0.00	0.00	-0.30	0.00	-0.07	0.00	-0.12
SITC 059	0.02	0.01	0.00	0.00	0.00	0.01	0.11	0.04	0.06	0.01	0.04
SITC 062	0.07	0.03	0.05	0.05	0.05	0.07	0.09	0.08	0.08	0.04	0.05
SITC 071	-0.05	-0.02	-0.05	-0.04	-0.01	-0.04	-0.04	-0.04	-0.01	-0.13	-0.10
SITC 073	0.03	0.00	0.01	0.01	0.00	-0.01	-0.01	0.00	-0.01	-0.02	-0.13
SITC 081	0.00	0.00	0.01	0.11	0.01	0.02	0.00	0.00	0.01	0.11	0.09
SITC 091	-0.04	-0.03	-0.05	-0.05	-0.01	-0.04	-0.03	-0.04	-0.03	-0.08	-0.10
SITC 098	0.04	0.03	0.05	0.00	0.21	0.25	0.65	0.70	0.42	0.46	1.12
SITC 111	0.00	0.00	0.01	0.00	0.03	0.13	0.30	0.11	0.17	0.17	0.54
SITC 112	0.02	0.03	0.02	-0.15	-0.01	-0.16	-0.02	0.00	-0.15	-0.03	-0.01
SITC 122	0.51	0.72	1.21	1.14	0.85	1.07	-0.95	1.02	1.09	1.71	1.50
SITC 222	0.01	0.00	0.01	0.00	0.02	-0.01	0.03	-0.01	0.01	-0.01	-0.01
SITC 223	-0.01	0.00	-0.01	-0.01	0.00	0.00	-0.37	-0.01	-0.54	0.11	0.06
SITC 421	-0.02	-0.02	0.00	-0.04	-0.04	-0.05	-0.03	-0.03	-0.13	-0.10	-0.30
SITC 422	0.02	-0.07	-0.16	-0.16	-0.05	-0.33	-0.37	-0.39	-0.09	-0.37	-0.29
TBI index											
SITC 022	0.75	0.20	-0.24	0.49	0.84	0.94	0.99	0.96	0.94	0.84	0.52
SITC 048	0.99	0.61	0.67	0.29	0.68	0.83	0.49	0.24	0.75	0.20	0.94
SITC 054	-0.75	-0.96	-0.81	-0.79	-0.79	-0.71	-0.13	-0.65	-0.37	-0.18	-0.79
SITC 056	-0.84	-0.50	-0.08	0.08	0.85	0.78	0.91	0.53	0.28	-0.88	-0.95
SITC 057	-0.43	-0.21	0.15	-0.04	-0.81	-0.65	-0.93	-0.80	-0.92	-0.74	-0.99
SITC 059	0.87	0.99	-0.62	0.40	0.56	-0.03	0.81	0.52	0.57	-0.24	0.22
SITC 062	1.00	0.96	0.23	0.70	0.93	0.96	0.91	0.88	0.91	0.90	0.19
SITC 071	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
SITC 073	-0.16	-0.79	-0.03	-0.28	-0.60	-0.87	-0.91	-0.81	-0.83	-0.93	-0.99
SITC 081	1.00	-0.91	0.17	0.95	0.97	0.40	-0.51	-0.78	-0.06	0.45	0.23
SITC 091	-1.00	-1.00	-1.00	-1.00	-0.97	-1.00	-0.96	-0.98	-0.98	-1.00	-1.00
SITC 098	-0.29	-0.23	0.18	-0.51	-0.04	0.21	0.64	0.53	0.16	0.63	0.71
SITC 111	0.76	0.56	1.00	-0.43	0.12	0.93	0.94	0.71	0.76	1.00	1.00
SITC 112	1.00	-0.11	-0.31	-0.96	-0.87	-0.98	-0.63	-0.66	-0.89	-0.89	-0.80
SITC 122	0.77	0.72	0.79	0.96	0.83	0.95	-0.72	0.92	0.36	0.72	0.45
SITC 222	0.01	-0.87	0.64	-0.15	0.57	-0.96	0.88	-0.78	-0.42	-0.82	-0.91
SITC 223	-1.00	-0.86	-1.00	-1.00	-0.92	-1.00	-1.00	-1.00	-1.00	0.43	1.00
SITC 421	-1.00	-1.00	-0.99	-1.00	-1.00	-1.00	-0.99	-1.00	-1.00	-0.98	-1.00
SITC 422	-0.05	-0.99	-1.00	-1.00	-1.00	-0.99	-0.99	-1.00	-0.97	-0.99	-0.99

Source: Own composition based on UNCTAD, 2019

semi-processed and processed food from Nigeria may have partially distorted market signals (Verter, 2017) and nullified the country's efforts to improve in producing and exporting value-added products to the EU's markets.

As presented in Table 1, the total agri-food products that Nigeria exported to the ECOWAS member states rose from $32 million in 2007 to its peak in 2013 with $272 million, before decreasing to $106 million in 2016, and then

SITC 1801 – Cocoa beans 0.0%, SITC 1806 – Cocoa powder, sweetened 11.72%; SITC 0206 – Edible offal of bovine animals 43.90%; SITC 0401 – Milk and cream 27.92%; 0402 – Milk and cream, concentrated 33.68%; SITC 0308 – Aquatic invertebrates 35.0% (ITC, 2019b).

slightly increased to $205 million in 2017. Although Nigeria recorded negative trade balance and TBI with the ECOWAS throughout the period under study, it has substantially reduced while trade with the regional bloc has improved in recent years.

The share of intra-ECOWAS trade in total food items merely rose from 11.3% (exports) and 9.1% (imports) in 2007 to 13.4% (exports) and 11.2% (imports) in 2017 (UNCTAD, 2019). Similarly, the share of total food trade from Nigeria to ECOWAS rose from 3.8% (exports) and 1.8% (imports) in 2007 to 14.2% (exports) and 4.6% (imports) in 2017. The export share was slightly above the intra-ECOWAS average but below expectations, while imports were below the intra-ECOWAS average. Arguably, Nigeria's export share to ECOWAS has grown partly because of the efforts and policies made by the community and the Nigerian government to boost local food production and intra-ECOWAS trade. For instance, Staatz & Hollinger (2018) and UNCTAD (2018) maintain that eliminating tariffs and NTMs and regulatory cooperation has fostered food trade in the region.

Arguably, reducing negative trade balance and TBI in total food items could be attributed to Nigeria's policies that led to import substitution of some selected food items to stimulate local production and high value-added. The measures may have started yielding concrete results. Nonetheless, the number of technical barriers to trade, especially SPS, varies across the ECOWAS member countries. Despite these differences, food demand has been driven by a wide range of drivers and trends in the region. Market opportunities for producers are increasingly dynamic induced by income changes, population growth, and dietary diversification.

Verter (2016; 2017) maintains that Nigeria's imports from ECOWAS have not been dramatically improved as its consumers predominantly demand semi-processed and processed food. On the other hand, the community highly trade with primary products with low demand and price. Some of these products, especially tropical commodities, are highly demanded in other continents, especially in the EU markets, but in primary forms, as postulated by dependency and traditional trade theories.

The share of the ten major food products in the total exported and imported from ECOWAS rose from 77.3% and 36.3% in 2007 to 98.7% and 91.2% in 2017, respectively. Also, five product groups (SITC 122 tobacco, manufactured; SITC 098 (edible products and preparations; SITC 111(non-alcoholic beverages); SITC 048 (cereal preparations); SITC 022 (milk and cream) jointly accounted for 92% of the total food exports to the region. This implies that Nigeria has concentrated on exporting only a few food products to the ECOWAS's markets (Table 2, Appendix 3). Although the HHI export results show a downward direction from 0.54 in 2009 to 0.38 in 2016 and 0.24 in 2017 (Table 2), it signifies that Nigeria's food export to ECOWAS member countries has been highly concentrated in a few products.

The LFI reveals that Nigeria has comparative advantages and positive TBI in 9 mostly traded product groups with ECOWAS in 2017 as follows: SITC 022 (milk and cream); SITC 048 (cereal preparations); SITC 059 (fruit, vegetable juices); SITC 062 (sugar, confectionery); SITC 081(animal feedstuff); SITC 098 (edible products and preparations, nes); SITC 111 (non-alcohol. Beverage); SITC 122; and SITC 223 (oil seeds, oleaginous fruits, including flour nes). It implies that the country performed better in trading with ECOWAS relative to the world market and the EU28.

Nonetheless, throughout the periods under study, Nigeria also has comparative disadvantages and negative TBI in these product groups: SITC 071 (coffee and coffee substitutes); SITC 091 (margarine and shorten); and SITC 421(fixed vegetable fats and oils, soft). The findings further reveal that the country has comparative disadvantages and negative TBI in SITC 054 (vegetables); SITC 056 (vegetables, roots and tubers, prepared or preserved, nes); SITC 057 (fruit, nuts, excluding oil nuts); SITC 073 (chocolate and other cocoa preparations); SITC 112 (alcoholic beverages); SITC 222 (oil seeds and oleaginous fruits, excluding flour); and SITC 422 fixed vegetable fats and oils, crude, refined or fractionated (Table 5).

By and large, Nigeria narrowly has more comparative advantages in trading with ECOWAS than with the world and the EU28, albeit with low dollar values. Also, the dynamics of the top five most traded products show that Nigeria exported processed food to ECOWAS (SITC 022 milk and cream, SITC 048 cereal preparations, SITC 098 edible products and preparations, nes, SITC 111 non-alcoholic beverages, nes, SITC 122 alcoholic beverages) than to the EU28 (SITC 422 fixed vegetable fats and oils, crude, refined or fractionated) and the world (SITC 122 alcoholic beverages) as a whole. Arguably, Liner's country similarity theory may have been valid between Nigeria and some ECOWAS member states coupled with the community's measures on zero tariffs (import duties) for its member states, and other measures to stimulate intra-ECOWAS trade.

Conclusions

This paper investigates the structure, and comparative advantage, especially in the ten food items (as defined by the UN) mostly traded between Nigeria and the world and the EU28 and ECOWAS. The LFI, TBI, concentration ratio and descriptive approaches are used in this paper. Nigeria

Appendix 1. Share of top 10 products (% of total food trade) in Nigeria, 2007-2017

Exports to the world (%)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SITC 072 Cocoa	59.76	48.15	55.84	44.93	51.18	41.82	47.53	47.61	46.64	43.01	35.57
SITC 057 Fruits and nuts (exc. oil nuts)	5.06	5.91	4.36	5.65	8.51	8.44	7.68	7.89	8.40	15.80	15.83
SITC 222 Oil seeds and oleaginous	9.36	19.43	16.12	21.54	14.40	11.03	16.01	20.02	14.56	15.94	15.74
SITC 122 Tobacco, manufactured	2.46	7.81	6.83	7.59	6.91	4.30	3.61	4.27	4.70	6.10	6.55
SITC 036 Crustaceans, mollscs, etc	8.48	4.92	7.28	9.63	4.21	4.10	4.49	4.41	4.16	5.99	4.50
SITC 098 Edible products and prep.	0.38	0.38	0.46	0.26	1.90	1.07	2.11	2.77	1.73	1.67	3.97
SITC 223 Oil seeds & oleaginous	0.21	0.14	0.03	0.04	0.04	0.02	0.41	0.14	0.28	0.66	3.22
SITC 075 Spices	1.34	1.27	0.73	2.20	2.26	2.63	2.41	2.92	3.15	2.77	2.54
SITC 081 Feeding stuff for animals	4.26	3.13	2.57	2.03	2.39	4.98	1.52	1.50	1.51	2.35	2.51
SITC 111 Non-alcoholic beverages	0.42	0.38	0.12	0.34	0.24	0.46	0.96	0.63	0.69	0.65	1.86
Top 10 (% of total food exports)	91.72	91.52	94.34	94.21	92.05	78.85	86.71	92.17	85.81	94.94	92.29
Imports from the world market (%)											
SITC 041 Wheat (incl. spelt), etc	30.54	26.91	27.42	16.42	14.73	20.73	23.68	22.98	24.06	24.99	26.41
SITC 098 Edible products and prep.	7.97	7.99	7.94	7.41	31.43	6.96	12.75	9.46	9.68	10.68	12.70
SITC 034 Fish, fresh (live or dead)	16.40	12.34	10.28	11.85	8.19	13.89	12.86	12.74	19.13	11.12	11.68
SITC 061 Sugar, molasses/ honey	6.59	6.98	8.15	7.20	5.49	8.82	9.62	9.22	3.85	13.77	11.28
SITC 022 Milk and cream	13.72	10.66	6.86	7.78	7.94	6.31	7.13	9.14	5.07	7.43	7.98
SITC 422 Fixed vegetable fats, etc	0.18	0.59	1.07	1.22	2.47	2.29	3.11	5.78	3.29	5.46	4.14
SITC 044 Maize (not incl. sweet	0.00	0.02	0.04	0.03	0.01	0.22	0.62	0.59	0.19	1.20	2.57
SITC 121 Tobacco, unman	0.96	1.47	1.32	1.41	0.40	0.99	1.32	1.15	1.39	2.10	2.27
SITC 048 Cereal preparations, etc	1.00	1.31	1.18	1.59	1.01	1.72	1.97	2.13	2.22	2.23	2.07
SITC 035 Fish, dried, salted/brine	1.42	1.95	3.44	2.89	0.98	2.43	2.33	2.49	2.62	2.40	1.94
Top 10 (% of total food import)	78.78	70.21	67.70	57.80	72.64	64.36	75.38	75.69	71.49	81.40	83.03

Source: Own composition based on UNCTAD, 2019

Appendix 2. Share of top 10 products (% of total food trade) between Nigeria and the EU28, 2007-2017

Exports to the EU28 (%)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
SITC 072 Cocoa	77.25	76.95	84.46	80.55	81.34	74.26	79.31	80.56	78.81	77.92	64.75
SITC 036 Crustaceans, etc	12.75	9.55	7.36	9.03	8.35	5.54	7.53	8.93	6.84	12.82	10.50
SITC 222 Oil seeds & olea. (exc. floor)	0.68	0.32	1.53	0.49	1.91	1.23	6.92	5.99	3.60	3.66	8.05
SITC 223 Oil seeds & olea. (incl. flour.)	0.05	0.14	0.00	0.00	0.00	0.00	0.41	0.05	0.17	0.01	7.85
SITC 422 Fixed vegetable fats, etc.	0.06	0.01	0.02	0.02	0.03	0.02	0.01	0.05	0.01	0.76	2.16
SITC 054 Vegetables	0.89	1.81	2.11	1.90	1.32	1.01	0.65	1.37	0.79	0.90	1.84
SITC 081 Feeding stuff for animals	2.30	1.16	0.57	0.53	0.78	0.35	0.48	0.36	0.20	0.11	1.66
SITC 075 Spices	0.47	0.50	0.41	0.51	1.84	0.60	0.54	0.88	0.89	2.21	1.14
SITC 112 Alcoholic beverages	2.04	6.68	1.20	1.05	0.97	0.42	0.51	0.72	0.39	0.68	0.49
SITC 058 Fruit, preserved, etc	0.01	0.01	0.01	0.00	0.01	0.01	0.02	0.02	0.01	0.03	0.28
Total top 10 products	**96.50**	**97.13**	**97.67**	**94.10**	**96.54**	**83.43**	**96.36**	**98.92**	**91.71**	**99.10**	**98.72**
Imports from the EU28 (%)											
SITC 098 Edible products & prep.	13.73	16.19	15.48	15.48	16.98	14.98	22.37	19.50	18.46	19.16	25.65
SITC 022 Milk and cream	26.77	27.13	17.65	25.03	30.67	18.20	20.45	24.55	16.54	16.52	18.36
SITC 034 Fish, fresh (live or dead)	21.44	13.84	13.48	15.38	10.03	22.84	16.30	19.56	22.60	20.62	15.91
SITC 041 Wheat (incl. spelt) and meslin	12.56	3.22	20.82	6.30	1.51	8.49	5.83	6.43	4.82	8.05	12.17
SITC 048 Cereal preparations, etc	2.63	4.87	4.39	4.89	5.50	8.10	7.26	7.27	8.06	7.95	6.74
SITC 112 Alcoholic beverages	2.96	8.02	4.35	5.38	2.81	6.47	7.38	6.60	6.27	6.46	5.11
SITC 081 Feeding stuff for animals	1.64	2.56	2.80	4.65	1.42	2.19	2.85	2.47	3.50	3.96	3.64
SITC 121 Tobacco, unmanufactured	0.76	0.84	0.42	0.46	0.22	1.11	1.57	1.37	1.94	3.03	1.92
SITC 111 Non-alcoholic beverages	1.50	2.86	1.25	2.01	1.29	2.93	2.33	2.11	3.38	2.17	1.90

Appendix 2. Continued

SITC 056 Vegetables, roots, tubers, etc.	2.99	4.25	5.44	4.49	2.43	4.04	3.71	2.22	3.44	2.33	1.67
Total top 10 products	**86.98**	**83.77**	**86.08**	**84.09**	**72.85**	**89.36**	**90.05**	**92.07**	**89.01**	**90.26**	**93.07**

Source: Own composition based on UNCTAD, 2019

Appendix 3. Share of top 10 products (% of total food trade) between Nigeria and ECOWAS, 2007-2017

Exports to ECOWAS (%)	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
SITC 122 Tobacco, manufactured	53.10	65.31	73.36	64.24	54.62	38.80	27.64	37.04	40.72	59.05	37.69
SITC 098 Edible products & prep.	6.77	3.68	3.99	2.11	14.95	10.65	17.31	26.83	17.00	16.20	26.57
SITC 111 Non-alcoholic beverages	0.22	0.31	0.60	1.01	2.06	4.55	7.48	4.13	5.70	5.73	12.45
SITC 048 Cereal preparations	1.31	0.94	1.51	1.72	1.41	2.37	0.85	0.73	1.08	1.46	8.15
SITC 022 Milk and cream	5.62	4.25	1.78	4.63	8.39	32.86	24.57	17.10	16.95	4.13	6.92
SITC 081 Feeding stuff for animals	0.40	0.06	1.07	6.33	0.64	0.71	0.06	0.21	0.59	3.88	2.54
SITC 062 Sugar confectionery	7.09	2.96	3.34	2.99	3.34	2.44	2.32	2.74	2.69	1.32	1.49
SITC 223 Oil seeds & olea. (incl. flour)	0.00	0.16	0.00	0.00	0.01	0.00	0.00	0.00	0.01	4.19	1.41
SITC 059 Fruit & vegetable juices, etc	2.41	0.72	0.04	0.14	0.28	0.37	2.84	1.62	2.07	0.76	1.08
SITC 054 Vegetables	0.41	0.22	0.86	0.59	0.48	0.25	0.24	0.16	0.26	0.28	0.35
Total top 10 products	**77.32**	**78.62**	**86.56**	**83.77**	**86.18**	**93.00**	**83.33**	**90.57**	**87.08**	**97.00**	**98.66**
Imports from ECOWAS (%)											
SITC 421 Fixed vegetable fats, etc.	3.90	1.85	0.11	1.87	11.08	5.64	0.95	3.30	7.09	10.28	21.47
SITC 422 Fixed vegetable fats & oils.	1.03	7.31	5.86	6.61	15.08	34.28	10.13	47.20	5.29	38.14	20.66
SITC 122 Tobacco, manufactured	2.60	2.05	1.52	0.34	2.79	0.77	55.60	1.00	8.38	7.63	10.56
SITC 073 Chocolate, food prep.	1.85	0.44	0.12	0.31	0.80	1.32	0.34	0.77	0.54	2.54	9.05
SITC 057 Fruits and nuts (exc. oil nuts)	2.17	0.62	0.34	0.63	7.07	0.81	9.37	1.19	4.21	1.08	8.38
SITC 071 Coffee and coffee substitutes	11.19	2.28	1.68	1.64	1.77	3.63	0.97	4.49	0.74	12.76	7.03
SITC 091 Margarine & shortening	7.73	2.78	1.82	2.03	3.00	4.30	0.98	4.48	1.42	8.07	6.78
SITC 098 Edible products and prep.	4.75	1.15	0.50	1.67	8.72	5.17	1.23	5.49	5.41	2.92	3.35
SITC 054 Vegetables	1.09	2.16	1.48	1.29	2.25	1.13	0.10	0.48	0.25	0.32	2.19
SITC 112 Alcoholic beverages	0.00	0.72	1.11	6.53	4.68	17.31	1.91	12.07	9.96	3.28	1.77
Total top 10 products	**36.31**	**21.36**	**14.54**	**22.92**	**57.24**	**74.36**	**81.58**	**80.47**	**43.29**	**87.02**	**91.24**

Source: Own composition based on UNCTAD, 2019

markedly recorded an adverse balance of trade and TBI in the total agri-food trade with the world, EU28 and ECOWAS.

The share of Nigeria's food export in the total food exports to the EU28 declined from 65% in 2007 to 37% in 2017. On the other hand, the country's food exports to ECOWAS rose from 2% to 14% within the same period under study. Surprisingly, the top 5 out of 46 food products accounted for 78%, 93%, and 92% of total food exported to the world, EU28 and ECOWAS respectively in 2017. Also, the top 5 out of 46 food items accounted for 61%, 79% and 67% of total food imports from the world, EU28 and ECOWAS in 2017.

The LFI further reveals that Nigeria has comparative advantages in 5 out of 46 food items trading with ECOWAS, the EU28, and the world. The country recorded comparative disadvantages and negative TBI in many products trading with the world and EU28, and ECOWAS. The study further reveals that food processing and export promotion policies should be heightened to diversify export food baskets and reduce excessive reliance on imports. The Nigerian government should dramatically implement its food production and trade policies to ensure self-sufficiency and foreign earnings in many food products.

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