



Strengthening Nigeria's Production Base for Effective Participation in African Continental Free Trade Area

by

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Abstract

African Continental Free Trade Area (AfCFTA) was launched on July 7, 2019 to provide African countries a platform for greater economic cooperation and interdependence. Nigeria is a member of AfCFTA. One objective of AfCFTA, among others, is to enhance competitiveness at the industry and enterprise levels through exploiting opportunities for scale production, continental market access and better allocation of resources. This paper sought to examine the performance of the Nigerian economy in the recent past with a view to assessing if its production base is strong enough to enable it participate effectively in AfCFTA and tap the benefits. The paper adopted the historical – materialist method, which examines the role of economic factors in shaping the society. From our assessment of the domestic production base of the Nigerian economy, it is apparent that it is weak, characterized by inadequate supply of public electricity, low level of technological capability, and resultant weak industrial sector. Therefore, to strengthen Nigeria's domestic production base for effective participation in AfCFTA, the supply of adequate public electricity (from thermal power, hydropower, and other power sources – wind, solar, biomass) should be among the crucial developmental structures the government should seek to achieve. Improvement in technological capability should be a national question which can be achieved, among other means, through increase in expenditure on research and development (R&D), and increase in the number of researchers and technicians in R&D. Also, ailing iron and steel organizations in Nigeria should be revived, and chemical plants should be provided to give the industrial sector the needed leap.

Key words: African Continental Free Trade Area (AfCFTA), industrial sector, production, technological capability, Research and Development (R&D)

JEL Classification Code: BO, B 24, B 25

1. Introduction

African Continental Free Trade Area (AfCFTA) was launched on July 7, 2019 to provide African countries the needed platform for greater economic cooperation and interdependence. Major objectives of AfCFTA are:

- Creating a single continental market for goods and services, with free movement of business, persons and investments, and thus pave the way for accelerating the establishment of Continental Customs Union;
- Expanding intra-African trade through better harmonization and coordination of trade liberalization regimes and instruments across Regional Economic Communities (RECs) and across Africa in general;
- Solving the challenges of multiple and overlapping memberships and expedite the regional and continental integration process; and
- Enhancing competitiveness at the industry and enterprise levels through exploiting opportunities for scale production, continental market access and better reallocation of resources (Cofelice, 2018: 32 – 35).

The launching of AfCFTA, with its ambitious objectives, is conceived as a right and notable action towards achieving sustainable development in Africa. Nigeria, the largest economy in Africa, endorsed AfCFTA on Sunday, July 7, 2019, and is expected to tap the benefits there from to fast-track its development process. This implies that Nigeria is ready to participate in trade (exchange goods and services) with other member states of AfCFTA. However, the extent to which Nigeria can participate in trade and gain from AfCFTA depends on many factors, which include the capacity of its domestic production and the finesse (that is, delicacy of workmanship) that characterizes its products for trade.

Production and trade are interdependent. Production, generally, is the process of transforming resources into goods and services which have value (that is, capable of satisfying people's wants), while trade is the activity or process of buying, selling or exchanging goods and services produced. This implies that production necessitates trade, while trade encourages production. Production takes place when resources are hired and used (converted) to provide goods and services. As a process, production includes:

- The creation or transformation of goods, e.g., agricultural and manufactured goods;
- The transportation of goods from places where they are created/transformed to where they are consumed;
- The ware-housing of goods (that is, transportation through time); and
- The provision of personal services which are directly enjoyed by individuals or groups (Akpakpan, 1999).

Production, therefore, is essential for the growth and survival of a country. No doubt, an economy with a strong production base is self-sustaining, for it is capable of creating job opportunities, and opening new areas for people to learn new techniques and skills, through which the technological capability of the society grows and enables the economy to produce more goods and services for domestic consumption and for exports.

The question, therefore, is how strong is Nigeria's production base to enable it participate effectively in AfCFTA and tap the benefits to fast-track its development process?

The paper, therefore, seeks to examine the performance of the Nigerian economy in the recent past with a view to assessing the strength of its production base. The paper adopted the historical – materialist method, which examines the role of economic factors in shaping the society. In the rest of the paper, theoretical issues are in Section 2. Section 3 gives explanations for the rise in regional trade areas. Section 4 presents an overview of the performance of the Nigerian economy in the recent past, and raises some issues pertaining to Nigeria’s domestic production matrix. Recommendations and conclusion are in section 5.

The Theoretical Issues in promoting African free trade include:

Economic integration

Economic integration is the merging, to various degrees, of the economies and economic policies of two or more countries in a given region for greater interdependence. It occurs when two or more countries undertake policy-agreement that results in greater economic cooperation and interdependence, with the aim to increase the productive capacity and efficiency of member countries. However, the interdependence may vary from a reduction in trade barriers on a number of goods to the establishment of a uniformed monetary and fiscal policy (Todaro and Smith, 2011).

In the literature, six (6) types (or levels) of economic integration have been identified, videlicet, (a) Preferential Trade Agreement (PTA), (b) Free Trade Area (FTA), (c) Customs Union (CU), (d) Common Market (CM), (e) Monetary Union (MU) or Currency Area (CA), and (f) Economic Union (EU). The process of integration is not usually gradual, that is, from one type or level to the other, rather the establishment of any type or level of integration depends on the agreement reached between or among the participating countries. We will give a succinct description of each of the six levels of economic integration.

- (a) *Preferential Trade Agreement (PTA)*: This is a trade agreement between two countries (bilateral) or more countries (multilateral) who have agreed to reduce restriction on trade between or among them while maintaining a high level of restriction on goods imported from countries outside their agreement. Preferential Trade Agreement “was the earliest form of economic integration. Trade relations between Great Britain and its 48 Commonwealth countries established in 1932 was a typical example PTA; however, it ended after the formation of General Agreement on Tariff and Trade (GATT) rules.
- (b) *Free Trade Area (FTA)*: Free Trade Area is a type of economic integration under which member nations, two or more, agree to completely eliminate trade barriers on product traded between or among them, while maintaining their own individual restrictions on goods imported from non-member nations. The operations of FTA are guided by a rule of “certificate of origin” or “rule of origin”. The rule is designed to prevent goods from being imported into the FTA member country with the lowest tariff and then transship to the other country with higher tariff. Examples of FTA are The European Free Trade Association (EFTA), The North America Free Trade Area (NAFTA), and Latin America Integration Association (LAIA).
- (c) *Customs Union (CU)*: Customs Union occurs when some countries in a region have agreed to come together to foster a higher degree of cooperation among them. Under Customs Union, member countries would remove all trade restrictions on goods for

member countries, and in addition would adopt a system of common trade restrictions on all goods imported to the Union from non-member states. Customs Union generally seeks to increase economic efficiency and to build closer political ties among member nations. Examples of Customs Union are European Economic Community (EEC), Central American Common Market (CACM), and Caribbean Community and Common Market (CARICOM).

- (d) *Common Market (CM)*: Common Market subsumes the arrangements of the Customs Union, and extends to include free movement of factors of production, capital and labour. Under CM, barriers to trade in goods, services, capital and labour are removed to allow member states trade freely, not just in tangible goods, but in all economic resources. Under Common Market arrangements, member nations are free to undertake their own monetary and fiscal policies to achieve their own macroeconomic objectives such as employment generation and general price stability. Example of Common Market is European Union.
- (e) *Monetary Union (MU) or Currency Area (CA)*: Monetary Union or Currency Area is a type of economic integration where exchange rates among member states are fixed, and fiscal, monetary, and national policies of member states are harmonized.
- (f) *Economic Union (EU)*: An Economic Union is the most advanced stage of economic integration. Under economic Union, member nations have no freedom to engage in independent macroeconomic policies. Economic Union has all the characteristics of Common Market and Monetary Union, and in addition involves the transfer of the responsibility of economic policy from individual member nations to a supranational decision-making unit, which represents all the member nations in decision making matters.

As economic integration progresses in level or stage, the succeeding level usually subsumes the preceding one. (Essien and Dickson, 2014; Ingram, 1983).

2. Explanations for the Rise in Regional Trade Areas

Scholars of various schools of thought have documented some explanations for the rise in regional integration; major among them are the liberals, realists and historical materialists. In our theoretical explanation for the rise in regional trade areas, we will consider the liberals and historical materialists views because while liberals offer the *pros* historical materialists offer the *cons* of the rise in regional economic integration.

Liberal Views

Liberalism is predicated on free trade postulate of the classical and neoclassical economists which is rooted in Adam Smith's *An Enquiry into the Causes and Nature of the Wealth of Nations* (1776). According to Cohn (2012: 215 -216), liberals, generally, argue that:

- Regional trade agreements are made to promote regional peace among member countries. For instance, the formation of European Coal and Steel Community (ECSC) in 1951 among France, West Germany, Italy, the Netherlands, Belgium, and Luxembourg was aimed at integrating France and West Germany's coal and steel resources and prevent them from renewing their age – old conflicts.

- Regional Trade Areas are formed to provide larger market for products of member countries. For example, the reason for the formation of Economic Community in 1957 was partly on the understanding that it would provide a regional market for France's agricultural goods and West Germany's industrial goods. A major attraction of North America Free Trade Area, NAFTA, for the two smaller partners – Canada and Mexico – was the free trade access they would have to the much larger US market for their products.
- Regional Trade Areas are formed to promote foreign investment flow. For example, the major reason Mexico joined North America Free Trade Area, NAFTA, was its need for more foreign investment from the United States, and the United States supported NAFTA partly to liberalize foreign investment flow in the region.
- Regional Trade Areas are formed because of pressure from domestic groups. Interdependence and globalization have caused many private firms to become more dependent on trade and shift their operations from national to multinational level. These multinationalists would pressurize for more regional trade. Regionalism often improves the competitiveness of international firms because they can develop economies of scale and benefit from the larger regional markets as their base rather than just the home market (Busch and Milner, 1994: 270).
- Sometimes, Regional Trade Areas are formed to compensate for the inadequacies of the multinational trade regime. Regional Trade Area negotiations are often a more feasible route to freer trade than GATT/WTO negotiations because they involve smaller groups of like-minded states (Hoekman and Kostecki, 2001).
- Regional Trade Areas “are formed as part of a two-level game, on which political leaders use the RTA negotiation to bring about domestic changes. For example, one reason Canada sought the Canada – US Free Trade agreement (CUSFTA) was ‘to constrain the more subtle new instrument of protectionism. More open borders would expose Canadian firms to greater international competition and encourage them to restructure and modernize’ (Hart, 1990: 45 – 46).

Historical Materialist Views

Historical materialism has its roots in Marxism. It examines structural changes in a society, region and the world historically in terms of class antagonism and North-South struggles, and also examines the role of material (economic) factors in shaping the society. From the view point of International Political Economy (IPE), as argued by Cohn (2012:216 – 217), historical materialists, like liberals, see multinational corporations (MNCs) and other sources of transnational capital as playing a critical role in the creation of RTAs. However, historical materialists argue that creation of RTAs would permit MNCs to locate their production facilities in member states of RTAs with the lowest taxes, wages, and environmental standards, and then export freely within the RTA. They also argue that the capitalist class benefits more from growth of regionalism while domestic labour suffers because capital can move more easily to low-wage regions and states within the RTA. Historical materialists also argue that the creation of RTAs may be as a result of the desire of some powerful states in the RTA to seek regional hegemony in connection with a more developed country (MDC) who seeks to establish hegemony more firmly in the region. On

this premise, some historical materialist critics argue that North American Free Trade Area (NAFTA) was designed to fit Canada and Mexico into American model of development, on terms amenable to American corporations Cameron, 1993:21; Morton, 2011).

3. Objectives of the Study

The paper seeks to examine the performance of the Nigerian economy in the recent past with a view to assessing the strength of its production base.

4. Performance of the Nigerian Economy: An Overview

A consideration of the behavior of some key macroeconomic variables will show how the Nigerian economy has performed in the recent past. An economy is a collection of all productive activities in a society (Akpakpan, 1999:3), therefore, in our overview of the performance of the Nigerian economy, we will start with the performance of the industrial sector as the performance of industrial sector of a country is a key measure of the wellness of other sectors of the economy and the overall productive capacity of a country (Ekpo, 2004, Essien, 2015)

4.1 Industrial Sector Performance

In Nigeria, the components of industrial sector include the manufacturing, construction, electricity, mining, crude petroleum and gas (Egwaikhide, Ekpo, Oyeranti and Ayodele, 2004; Essien, 2004). An examination of the performance of industrial sector of an economy can be done using a number of indicators which include: index of industrial production, annual growth rate of industrial production, average manufacturing capacity production, share of industrial output to gross domestic product, and share of manufacturing in total exports. Table 1 presents index of industrial production in Nigeria between 2000 and 2019.

In 2000 index of the manufacturing subsector was 138.2. It dropped to 90.3 % in 2006, and rose sluggishly to 94.2 % in 2010. It rose to 106.6 % in 2012 then to 183.5 % in 2019. The mining subsector recorded an index of 144.3 % in 2000 which rose to 164.8 % in 2005 (the highest within the period under review). In 2006, index of mining subsector was 148.2 %; and between 2008 and 2019, index of mining varied between 129.6 % and 83.0 %. Index of the electricity subsector rose from 141.2 % in 2000 to 206.4 % in 2006 (the highest within the period under review). In 2019, index of the electricity subsector was 205.0. On the whole, index of industrial production in Nigeria was 138.9 % in 2000, and rose to 158.8 % in 2005 (the highest within the period under review). It dropped to 113.2 % in 2019.

Table 1: Index of Industrial Production in Nigeria 2000 – 2019*

Year	Manufacturing	Mining	Electricity	Total(All sectors)
2000	138.2	144.3	141.2	138.9
2001	142.3	144.9	144.6	145.3
2002	146.3	133.7	146.7	145.2
2003	147.9	146.6	147.2	146.7
2004	145.7	154.0	148.0	151.2
2005	145.8	164.8	291.0	158.8
2006	90.3	148.2	205.2	131.2
2007	89.2	132.7	190.2	119.4
2008	91.2	129.6	198.2	117.8
2009	92.4	129.4	198.3	118.2
2010	94.2	131.7	200.7	122.1
2011	102.5	143.2	202.5	131.9
2012	106.6	146.7	206.3	136.9
2013	109.2	146.3	206.4	138.0
2014	108.5	147.4	203.9	139.1
2015	188.4	91.5	204.7	120.2
2016	188.1	71.6	205.3	109.6
2017	180.4	55.3	205.0	105.6
2018	180.7	79.1	204.7	110.0
2019	183.5	83.0	205.0	113.2

Sources: Compiled from:

1. CBN (2011) *Annual Reports*, p. 261
2. CBN (2014) *Annual Reports*, p. 144
3. CBN (2017) *Economic Report for Fourth Quarter*, p.24
4. CBN (2019) *Economic Report for Fourth Quarter*, p.26

Note: * Between 2000 and 2014, base year was 1990 (1990= 100), between 2015 and 2019, base year was 2010 (2010 = 100)

The annual growth rates of industrial production in Nigeria gives a clearer view of the performance of the industrial sector (See Table 2). The manufacturing subsector which grew by 3.0 % 2001 declined precipitously to -38.1 % in 2006.

Table 2: Annual Growth Rate of Industrial Production (%), 2001 – 2019

Year	Manufacturing	Mining & Quarrying	Electricity	All Sectors
2001	3.0	0.4	2.4	4.6
2002	2.8	-7.7	1.5	-0.1
2003	1.1	9.6	0.3	1.0
2004	-1.5	5.0	0.2	3.1
2005	0.1	7.0	96.6	5.0
2006	-38.1	-10.1	-29.5	-17.4
2007	-1.2	-10.5	-7.3	-9.0
2008	2.2	-2.3	4.2	-1.3
2009	1.3	-0.2	0.1	0.3
2010	1.9	1.8	1.2	3.3
2011	7.4	5.4	4.3	8.1

2012	5.3	-23.2	-1.4	3.7
2013	2.4	2.4	0	0.8
2014	-06	0.8	-1.2	0.8
2016	-0.2	-21.7	0.3	-8.8
2017	-4.1	-92.5	-0.1	-3.6
2018	0.2	43.0	-0.1	4.2
2019	1.5	4.9	0.1	2.9

Source: Computed from Table 1 by the Author

However, it showed a positive growth of 2.2 % in 2008, and rose to a peak of 7.4 % in 2011, thereafter it dropped to 5.3 % in 2012, and to 2.4 % in 2013. In 2014, the manufacturing subsector experienced a negative growth of –0.6 %. In 2016, the subsector also experienced a negative growth of –0.2 %. However, it assumed positive growth rates of 0.2 % and 1.5 % in 2018 and 2019, respectively. The electricity subsector grew by 2.4 % in 2001 and reached 96.6 % in 2005. In 2006, the subsector experienced a negative growth of –29.5 %. Given the crucial importance of electricity in industrialization, the steep negative growth in the electricity subsector affected the industrial sector generally. In the same year, 2006, growth rate of the manufacturing subsector dropped by –38.1 %, and mining by –10.2 %, while the entire sector experienced a negative growth of –17.5 %.

Generally, between 2001 and 2019, the industrial sector showed the highest positive growth of 8.1% in 2011 which could be attributed to the continuation of policies and programmes government put in place in 2010. Specifically, the intervention fund for the manufacturing subsector improved performance in the cement, sugar and confectioneries, electronics and electrical components, and motor vehicle assembly subsectors. (CBN, 2014: 144).

4.2 Value Added of Industrial Sector to GDP

The share of the industrial sector to gross domestic product (GDP) is presented in Table 3.

The share of crude petroleum and natural gas to GDP decreased steadily from 30.3 % in 2000 to 22.2 % in 2006 and further to 9.6 % in 2015. In 2018, it dropped to 8.6 %. The steep decline in the share of crude petroleum to GDP from 2015 could be attributed principally to the reduction in the volume of America’s oil imports from Nigeria due to its (America’s) shale oil production. America has been a major buyer of Nigeria’s oil (about 40 % of total oil exports). This coupled with the decrease in the value of the naira relative the US dollar (between N192.3 for \$ 1.00 in 2015 and N 306.7 for \$ 1.00 in 2018) has directly reduced Nigeria’s oil exports and prices. For instance, the average spot price of Nigeria’s reference crude, Bonny Light (37⁰ API) dropped from US \$113.77 per barrel in 2011 to US \$ 111.36 per barrel in 2013 and further to US \$100.74 in 2014. It dropped to US \$54.9 per barrel in 2017, thereafter rose marginally to US \$58.16 per barrel in the last quarter of 2018 (CBN, 2014: 148, 2018:203) In January 2018, average crude oil price was US \$ 70.83 per barrel. It dropped to US \$ 67.2 in February 2018, and further dropped to US \$ 58.16 the rest of 2018. (CBN, 2018: 203).

Table 3: Share of Industrial Subsectors to real GDP at 2010 Constant Basic Prices, in Nigeria (%), 2000 – 2018.

Year	GDP (N'billion)	Manufacturing	Building & Construction	Mining & Quarrying	Crude Petrol & Natural Gas
(1)	(2)	(3)	(4)	(5)	(6)
2000	23,688.28	6.4	2.8	0.07	30.7
2001	25,267.54	6.6	2.9	0.07	30.3
2002	28,957.71	6.3	2.6	0.07	25.0
2003	31,709.45	6.0	2.6	0.06	28.2
2004	35,020.55	6.1	2.2	0.07	26.4
2005	37,474.95	6.3	2.3	0.07	24.8
2006	39,995.50	6.4	2.5	0.07	22.2
2007	42,992.41	6.6	2.6	0.08	19.7
2008	46,012.52	6.7	2.7	0.08	17.3
2009	49,856.10	6.7	2.8	0.08	16.1
2010	54,612.26	6.6	2.9	0.08	15.4
2011	57,511.04	7.3	3.2	0.09	15.0
2012	59,929.89	8.0	3.3	0.11	13.6
2013	63,218.72	9.2	3.6	0.12	11.2
2014	67,152.79	10.0	3.8	0.13	10.4
2015	69,023.93	9.5	3.9	0.13	9.6
2016	67,931.24	9.3	3.8	0.11	8.3
2017	68,490.98	9.2	3.7	0.11	8.7
2018	69,810.02	9.2	3.7	0.12	8.6

Source: Column 2: CBN (2018) *Statistical Bulletin*, Vol. 29, pp. 111 – 112.

Note: Columns 3-6 computed by the Author from CBN (2018) *Statistical Bulletin*, Vol. 29, pp. 111 – 112

Between 2000 and 2010, manufacturing's share to GDP averaged 6.4 %. From 6.6 percent in 2010, manufacturing's share to GDP increased steadily to 10 % in 2014. It dropped to 9.5 % in 2015 and to 9.2 % in 2018. Building and construction contributed 2.8 % to GDP in 2000. Its contribution to GDP between 2005 and 2014 averaged 2.7 %. From 2005 to 2015, share of building and construction to GDP has been increasing steadily, though marginally. In 2014 it was 3.8 %, and in 2015 it reached a peak of 3.9 % within the period under review. It decreased steadily from 3.9 % in 2015 to 3.7 % in 2018. Mining and quarrying contributed 0.07 % to GDP in 2000 and maintained it to 2002. Between 2007 and 2010 the subsector's share to GDP averaged 0.08 %. Share of Mining and quarrying which was 0.09 % in 2011 grew steadily, though marginally, to 0.13 % in 2015. However, it decreased marginally to 3.7 % in 2017 and 2018. From the trends in the shares of the manufacturing, building and construction, mining and quarrying to GDP, it could be observed that relative remarkable increases started in 2011. The improved performance of these subsectors from this period was largely due to the intervention fund for the manufacturing subsector which had extended positive effects on building/construction and mining/quarrying. On the whole, the manufacturing, as a leading subsector in the industrial sector, was expected to contribute not less than 15% to GDP from 2011 (CBN, 2011). However, between 2011 and 2015, the average share of the manufacturing to real GDP was 8.8 %, and 9.3% between 2015 and 2018.

The performance of the Nigerian economy can also be assessed on a relative note when Nigeria’s structure of output is compared with that of other countries such as Egypt, Arab Rep., Lesotho, Malaysia Singapore and South Africa (See Table 4). In 2010, South Africa had the highest GDP of US \$375.3 billion followed by Nigeria with US \$ 363.4 billion. Egypt had US \$ 281.9 billion, while Malaysia had US \$256.0 billion. Lesotho got US \$ 24 billion, the least in the group.

Table 4: Structure of Output 2010, 2018

Country	GDP (\$ billion)		Agriculture % of GDP		Industry % of GDP		Manufacturing % of GDP		Services, value added % of GDP	
	2010	2018	2010	2018	2010	2018	2010	2018	2010	2018
Egypt, Arab Rep.	281.9	250	10	9	35	31	13	14	46.2	51.4
Lesotho	24	27	5	6	30	31	12	14	58.3	53.2
Malaysia	256.0	368	10	8	40	38	23	22	47.9	52.4
Singapore	239.8	384	0	0	27	27	21	21	67.8	69.4
South Africa	375.3	369	2	2	27	26	10	12	61.0	61.0
Nigeria	363.4	397	32	21	25	26	7	10	50.6	52.0

Source: World Development Indicators, 2019 (Table 4.2)

In 2018, Nigeria had the highest GDP of US \$ 397.3 billion followed by Singapore with US \$ 384.2. South Africa had US \$ 369.3 billion. Malaysia had US \$ 369.8 billion while Egypt had US \$ 250.9 billion (WDI, 2019). In 2010, agriculture in Nigeria contributed 32 % to GDP, while in South Africa agriculture contributed 2 %to GDP and in Lesotho 5 percent. In 2018, agriculture in Nigeria contributed 21% to GDP, the highest in the group. The high percentage contribution by agriculture to GDP suggests that Nigeria still is largely agrarian relative to industry and manufacturing. Contributions of industry and manufacturing to GDP in the countries under consideration will also reveal the wellness of their industrial sectors. Industry’s contribution to GDP in Malaysia was 40 % in 2010 and 38% in 2018 while manufacturing contributed 23 % and 22 % to GDP in 2010 and 2018, respectively. Egypt, Arab Rep. followed with 35 and 33 % contributions from industry to GDP in 2010 and 2018, respectively. Its manufacturing subsector contributed 13% to GDP in 2010 and 14 % in 2018. Industry in Lesotho contributed 30 and 35 % to GDP in 2010 and 2018, respectively. Nigeria got the least contributions from both industry and manufacturing to GDP in 2010 and 2018. Industry in Nigeria contributed 25 % to GDP in 2010 and 26 % in 2018 while manufacturing contributed 7 percent to GDP in 2010 and 10 %t in 2018.

Furthermore, the structure of merchandise exports shows that Nigeria’s manufacturing sector is weak relative to other countries’ (See Table 5).

Table 5: Structure of Merchandise Exports 2010, 2018

Country	Merchandise Exports (\$ Million)		Food % of Total		Agric. Raw Materials % of Total		Fuel % of Total		Ore & Metal % of Total		Manufactures % of Total	
	2010	2018	2010	2018	2010	2018	2010	2018	2010	2018	2010	2018
Egypt	26438	27624	17.2	16.4	3.0	1.7	29.8	25.9	6.3	4.2	43.4	51.7
Ethiopia	2330	2803	78.5	83.8	9.0	1.8	0.0	0.0	1.1	0.7	8.9	12.5
Malaysia	198812	247365	11.9	9.2	2.6	1.3	15.9	15.3	2.0	4.3	67.2	69.5
Singapore	251857	412629	2.0	3.3	0.3	0.8	16.2	13.5	1.2	0.9	72.5	75.1
South Africa	91347	93982	10.0	11.5	1.8	2.3	10.6	11.1	28.3	26.5	48.7	47.9
Nigeria	84000	60665	3.3	2.0	1.6	0.1	87.1	94.6	1.1	0.3	6.1	3.6
Kenya	5189	6088	47.9	51.2	10.9	13.3	4.3	0.9	2.0	6.0	34.7	28.4
Mauritius	2261	2373	37.2	35.3	0.5	1.1	0.0	1.1	0.4	0.7	60.2	60.8

Source: World Development Indicators, 2019 (Table 4.4)

Among the components of the industrial sector, the manufacturing is very important since its growth measures the degree to which other components of the sector are utilized. In 2010, the worth of Nigeria's merchandise exports was US \$84,000 million with the manufacturing sector contributing 6.1 % (US \$ 5,124 million). In the same year, the value of Kenya's merchandise exports was US \$5,189 million with the manufacturing subsector contributing 34.7 % (US \$ 1,800.6 million). In 2010, the manufacturing subsector in Mauritius contributed 60.2 % (US \$ 1,361.1 million) to its US \$ 2261 million merchandise exports. In 2018, the contribution of the manufacturing sub sector to merchandise exports in Ethiopia increased to 12.5 % from 8.9 % in 2010. In Egypt, Arab Rep., manufacturing contribution to merchandise exports increased from 43.4 % in 2010 to 51.7 % in 2018. In Singapore, manufacturing contributed 75.1 % to its merchandise exports in 2018. In 2018, manufacturing contribution to merchandise exports in Nigeria dropped to 3.6 % from 6.1% in 2010, the least in the group (See Table 6). The contribution of fuel to merchandise exports in Nigeria was 87.1 % in 2010 and 94.6 percent in 2018. This indicates a very high dependence of the Nigerian economy on oil – a condition which makes the country susceptible to fluctuations in global oil prices.

The inadequate performance of Nigeria's industrial sector at large and the manufacturing subsector in particular can be linked to the low average manufacturing capacity utilization. Table 6 mirrors average manufacturing capacity utilization in Nigeria between 2000 and 2019.

Table 6: Nigeria: Average Manufacturing Capacity Utilization (%), 2000 – 2018

Year (1)	Capacity Utilization (CU) (%) (2)	Growth Rate of CU (%) (3)
2000	36.1	4.3
2001	42.7	18.3
2002	54.9	28.6
2003	56.5	2.9
2004	55.7	-1.4
2005	54.8	-1.6
2006	53.3	-2.7
2007	53.4	0.2
2008	53.8	0.7
2009	55.1	2.4
2010	56.2	2.0
2011	56.3	0.2
2012	56.8	0.9
2013	57.8	1.8
2014	59.6	3.1
2015	56.3	-5.5
2016	48.5	-13.9
2017	54.0	11.3
2018	55.0	1.6

Sources: *Compiled from:*

- (1) CBN (2014) *Statistical Bulletin*, Vol. 25, pp. 181 – 184
- (2) CBN (2016) *Economic Report Fourth Quarter*, p.29
- (3) CBN (2018) *Economic Report Fourth Quarter*, P.28

Note: Column 3 calculated by the Author from column 2.

From Table 6, in 2000, average manufacturing capacity utilization was 36.1 %, and rose to 56.5 % in 2003. It thereafter dropped to 53.3 % in 2006. Between 2004 and 2006 average manufacturing capacity utilization exhibited negative growth rates. However, it rose marginally to 53.8 % in 2008. In 2014, average manufacturing capacity utilization reached 59.6 % (the highest within the period under review) then dropped to 56.3 % in 2015 and to 48.5 % in 2016. In 2017, average manufacturing capacity utilization rose to 54.0 % and further to 55 %t in 2018. When we compare Nigeria to countries like Ghana, Malaysian, Indonesia, Mexico, and South Africa, Nigeria’s relative position in average manufacturing capacity utilization is clearer. In 2016, average manufacturing capacity utilization for Ghana, Malaysia, and Indonesia was 65.8 %, 80 %, and 79.8 %, respectively; while for Mexico it was 80.6 percent, and 81.7 % for South Africa (WDR, 2017). The smooth decline in the average manufacturing capacity utilization in Nigeria from 59.6 % in 2014 to 48.5 % in 2016, as reported by the Central Bank of Nigeria (2016) “was attributed to poor power supply, exchange rate challenges and squeezed cash flow, which impacted (negatively) on business confidence, hindering activities in the sector”, while the increase from 48.5 % in 2016 to 55.0 % in 2018 was “attributed to enhanced access to foreign exchange, increased demand as shown by continued improvement in new orders as well as moderating inflationary pressure” (CBN, 2018:197).

From the negative resultant effect of poor power supply on average manufacturing capacity utilization as observed by the Central Bank of Nigeria, it confirms that a functional power sector in a country is essential for the growth of its industrial sector, and the smooth functioning of its economy in general. Table 7 provides information on installed generating capacity, electricity generation and electricity consumption in Nigeria between 2000 and 2018.

Table 7: Installed Capacity, Electricity Generation and Consumption in Nigeria (2000-2018)

Year	Installed Capacity (MW/h)	Electricity Generation (MW/h)	Capacity Consumption (MW/h)
2000	5,580.0	1,738.3	1017.3
2005	6,130.0	2,779.3	1004.7
2006	6,999.5	2,638.1	1271.6
2007	7,011.6	2,623.1	1519.5
2008	7,011.6	2,403.2	1825.8
2009	7,816.1	2,257.6	1873.1
2010	8,820.7	2,981.9	2383.1
2011	9,287.0	3,086.1	2703.0
2012	9,937.0	3,268.0	2961.2
2013	12,323	3,350.3	3006.3
2014	12,323	3,300.0	3117.5
2015	13,584	3400.0	3310.4
2016	13,584	3806.7	2785.0
2017	13,363	3523.8	2873.8
2018	13,502.8	3713.2	3080.2

Sources: Compiled from:

1. CBN *Statistical Bulletin*, (2007), p. 172
2. CBN *Annual Report* (2014), pp. 145 -147
3. CBN *Annual Report* (2016), pp. 198 – 204. CBN *Annual Report* (2018), pp. 199 -201

From Table 7, in 2000, electric power installed capacity in Nigeria was 5,580.0 MW/h, which generated 1,738.3 MW/h out of which 1,017.3 MW/h was consumed. In 2005 electric power installed capacity increased to 6,130.0 MW/h and electricity generation also increased to 2,779.5 MW/h, out of which 1,004.7 MW/h was consumed, which suggests that 1,774.8 MW/h might not have been supplied or might have lost in transmission. Electric power installed capacity in Nigeria increased to 7,816.1 MW/h in 2009 from 6,130.0 MW/h in 2005 but electricity generation did not respond to the increased capacity, rather it decreased from 2,779.5 MW/h in 2005 to 2,257.6 MW/h in 2009. However, electricity consumption continued to increase from 1,004.7 MW/h in 2005 to 1,873.1 MW/h in 2009. In 2015 and 2016, electric power installed capacity in Nigeria was 13,584 MW/h with 3400.0 MW/h generated in 2015 while 3,806.7 MW/h was generated in 2016. Electricity consumption reached 3,310.4 MW/h in 2015, the highest

within the period under review. In 2018 electric power installed capacity in Nigeria dropped to 13, 502.8 MW/h from 13, 584 MW/h in 2016. Electricity generation also dropped from 3,806.7 MW/h in 2016 to 3,713.2 MW/h in 2018. Nonetheless, electricity consumption continued to increase from 2,785.0 MW/h in 2016 to 3,080.2 MW/h in 2018.

The issue is, Nigeria is the largest economy in Africa; in 2018 its electric power installed capacity was 13,502.8 MW/h; however, in the same year, 2018, electric power installed capacity of South Africa was 44,000 MW/h with over 40,000MWh of electricity generated (SAEO, 2019). In Brazil, installed electric power capacity in 2016 was 137 GW/h. It may be interesting to know that electricity production in Brazil is updated monthly since 1999 due to high power demand. Between 1999 and 2020, the lowest electricity generation in Brazil was in September 2001 with 23,683 GW/h of electricity generated, while in March 2020, 51,109 GW/h of electricity was generated. It is an established fact that in modern economies, electricity (the chief source of power) is an essential requirement in the production of goods and services; it is of crucial importance in daily economic and social activities of the people and in the functioning of the various sectors of the economy. Any country with poor public supply of electricity will consequently have a weak industrial sector and experience sluggish economic growth. All today's more-developed countries during their industrial take-off periods, Great Britain: 1783 – 1802, France: 1830 – 1860, Belgium: 1833 – 1860, United States: 1843 – 1860, Germany: 1850 – 1873, Japan: 1878-1900, Russia: 1890 – 1914, Canada: 1896 – 1914 for instance, variously had power in diverse forms as one of the most crucial factors in their industrial take-off (Jhingan, 2002: 126). The steady growth in the economies of the 'Asian Tigers' – Hong Kong, Taiwan, Singapore and South Korea, often referred to as 'Miracle Economies', which adopted state-led industrialization approach in the 1970s, can largely be attributed to the adequate attention their governments have given to power (electricity), among other factors (Akkemik, 2009, Yew, 2011). Oppositely, the poor performance of Nigeria's industrial sector and the sluggish growth of the Nigerian economy can be attributed to the poor public supply of electricity, among other factors.

In any economy sectorial linkage is crucial for the functioning and growth of the economy. The dysfunction of a sector (or subsector) will adversely affect some other sectors (or subsectors).

A virile economy is one with a viable industrial sector, which usually operates on a strong technological base. Technological capability in contemporary global setting is the dividing measure among the countries of the world. Some countries are referred to as more-developed (or advanced) based on their advanced level of technology, which manifests, among other things, in their production machines, tools, equipment, techniques of production, and quality and quantities of goods and services they produce. Contrarily, some other countries are called less-developed due to their crude technology and the level of finesse and adroitness that characterize their products. Technological capability is the capacity and competence to apply new scientific knowledge in the form of inventions and innovations with regards to both physical and human capital. It is the ability to improve in knowledge of possible techniques for efficiency which may bring about increased output and improved quality of life (Todaro and Smith, 2011:784). We will assess Nigeria's

technological capability in relation to that of other countries applying the five principal indices of technological capability used by UNESCO Institute of Statistics (UIS), 2009 and UNDP, 2013. The indicators are: (1) number of researchers (per million people) in R&D, (2) number of technicians (per million people) in R&D, (3) number of scientific and technical journal articles, (4) expenditure on R&D (percentage of GDP), and (5) value of high technology exports, expressed in percentage of manufactured exports, (See Table 8):

Table 8: Major Indices of Technological Capability of Selected Countries, 2000 – 2018

Country	Researchers in R & D 1(per million people)	Technicians in R&D (per million people)	Scientific and Technical Journal Articles	Expenditure on R&D (% of GDP)	High Technology Exports
					% of Manufactured Exports
	2000 – 2004	2000-2004	2003	2000-2004	2005
Nigeria	n.a	n.a	384	n.a	2
Japan	5287	528	60067	3.15	22
Korea Rep.	3,187	567	13746	2.64	32
China	708		29186	1.44	31
Hong Kong	1,564	222	n.a	0.50	34
Belgium	3,065	1473	6,604	1.90	9
	2004 – 2008	2004 – 2008	2007	2004 – 2008	2009
Nigeria	n.a	n.a	427	n.a	3
Korea Rep.	4627	720	18,467	3.21	32
China	1,071	na	58,806	1.44	31
Hong Kong	2,650	459	n.a	0.81	31
Belgium	3,435	1,407	7071	1.92	10
United Kingdom	4,269	895	47,121	1.88	23
Sweden	5,239	1,871	9,914	3.75	17
Singapore	6,088	539	3,792	2.52	49
	2010 – 2018	2010 – 2018	2018	2010 – 2018	2018
Ethiopia	91	33	1994	0.27	5.8
Ghana	38	30	1276	0.38	8.3
Kenya.	221	628	1247	0.79	3.6
Egypt Arab Rep.	687	371	13327	0.72	0.9
Malaysia	2397	263	13,661	1.44	52.8
Singapore	6636	451	11459	2.17	51.7
South Africa	492	135	13009	0.82	5.3
Nigeria	39	13	5602	0.22	1.9

Sources:

1. *World Development Indicators (2011)*, pp. 314 -317
2. *World Development Indicators (2019)*, Table 5.13).

NOTE:

1. *Researchers in R&D are professionals engaged in conceiving of or creating new knowledge, products, processes, methods, and systems and in managing the projects concerned.*

2. *Technicians in R&D are people whose main tasks require technical knowledge and experience in engineering, physical and life sciences and humanities. They engage in R&D by performing scientific and technical tasks involving the application of concepts and operational methods, normally under researcher supervision.*

3. *Scientific and technical journal articles are published articles in physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences.*

4. *Expenditure for R&D are current and capital expenditures on creative work undertaken to increase the stock of knowledge in the society, and the use of knowledge to devise new application.*

5. *High technology exports are products with high R&D intensity, such as aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery (World Development Indicators, 2019).*

Nigeria got 384 scientific and technical journal articles in 2003 while Belgium, New Zealand and Poland got 6,604, 3,034; and 6,770, respectively. In 2005 high technology exports by Nigeria accounted for 2 % of her total manufactured exports. In the same year, Poland, exported 14 % of high technology goods in its total manufactured exports, while Hong Kong exported high technology goods, which accounted for 34 % of its total manufactured exports. In 2007, Nigeria got 427 scientific and technical journal articles. Although this was an improvement compared with 384 in 2003, it was very insignificant when compared with 7, 071 of Belgium and 7,136 of Poland. Sweden, in 2007 got 9,914 scientific and technical journal articles while United Kingdom got 47,121. In 2009, high technology exports by Nigeria accounted for 3 % of her total manufactured exports, whereas in the same year Singapore, United Kingdom and Sweden exported high technology manufactured goods that accounted for 27 %, 23 % and 17 per cent of their manufactured exports, respectively.

Between 2010 and 2018, Ethiopia got 91 researchers (per million people) in R&D; Kenya got 221, while South Africa got 492. Malaysia and Singapore got 2,397 and 6, 636, respectively. Nigeria got 39 researchers (per million people) in R&D, the least in the group. Within the same period, 2010 – 2018, Kenya involved 628 technicians (per million people) in R&D. Egypt. engaged 371 technicians while South Africa engaged 135 technicians (per million people) in R&D. Nigeria engaged 13 technicians (per million people) in R&D, the least in the group.

Between 2010 and 2018, Kenya invested 0.79 % of its GDP in R&D. Within the same period, South Africa invested 0.82 percent of its GDP in R&D while Ghana and Ethiopia invested 0.38 %t and 0.27 % of their GDP, respectively in R&D. Singapore invested 2.17 % of its GDP in R&D while Malaysia invested 1.44 % of its GDP in R&D between 2010 and 2018. Nigeria invested 0.22 % of its GDP in R&D between 2010 and 2018.

The issue, therefore, is to note that the role of research and development (R&D) in technological progress is unrivalled. Technological progress engenders technological capability, which is the life-wire of the industrial sector in particular and the economy in general. Technological capability rests on the tripod of researchers in R&D, technicians in R&D, and expenditure on R&D. Among the tripod, expenditure on R&D, a percentage of GDP, is the commonly used indicator to measure the amount of resources invested in R&D, which indicates the regard and concern a country places on technological progress (WDI, 2019). From Table 8, we saw that Nigeria expended 0.22 % of its GDP on R&D between 2010 and 2018, with 39 researchers per million people in R&D and 13 technicians per million people in R&D. However, it is amazing to know that between 2000 and 2004, Belgium which took off industrially between 1833 and 1860, expended 1.9 % of its GDP

on R&D, and engaged 3,065 researchers per million people in R&D, and 1473 technicians per million people in R&D. Likewise, Japan which took off in industrialization between 1878 – 1900, expended 3.15 % of its GDP on R&D and engaged 5287 researchers per million people in R&D and 528 technicians per million people in R&D between 2004 and 2008. Between 2004 and 2008, Belgium increased the number of its researchers in R&D to 3,435 per million people, and the number of its technician to 1,407 per million people. The United States which took off in industrialization between 1843 – 1860, expended 1.88 % of its GDP on R&D between 2004 and 2008, and engaged 4, 209 researchers per million people in R&D. Korea Rep. which embraced industrialization in the 1970s expended 3.21 % of its GDP on R&D between 2004 and 2008, and engaged 4,627 researchers per million people in R&D and 720 technicians per million in R&D.

From the above analysis, it is apparent that the more concern and attention a country gives to the tripod of technological capability – number of researchers (per million people) in R&D, number of technicians (per million people) in R&D, and expenditure on R&D (percentage of GDP) – the higher the percentage of high technology exports in its manufactured exports. For instance, in 2005, high technology exports of Japan accounted for 22 % of its manufactured exports, while in Hong Kong, high technology exports accounted for 34 % of its total manufactured exports in 2005. In 2018, of all manufactured exports by Nigeria, high technology exports (see Note 5), accounted for 1.9 %; whereas high technology exports accounted for 8.3 % in Ghana's total manufactured exports, and 5.8 % in Ethiopia's. High technology exports accounted for 52.8 % of manufactured exports in Malaysia, and 51.7 % in Singapore. The relatively very low percentage contribution of high technology exports to total manufactured exports by Nigeria indicates the low level of technology its economy possesses, which suggests that Nigeria pays inadequate concern and attention to R&D in particular and technological progress in general.

In addition, manufacturing of high technology products needs functional iron and steel company and chemical plants as essential foundational structures; for there is no country in contemporary global economy that has risen to global recognition in the production of high technology products and industrialization without these structures (Yew, 2011). Dearth of these structures in Nigeria, therefore, also suggests why its industrial sector is yet weak.

Other key variable indicators of the wellness of an economy are inflation and unemployment rates. High inflation rates along with high unemployment rates in an economy usually indicate that the economy is unsound. Inflation in Nigeria between 2000 and 2019 maintained double digits with exception of 2006, 2007; 2013-2015 (see Table 9). Unemployment between 2000 and 2019 also maintained double digits. Unemployment increased from 13.1 % in 2000 to 14.4 % in 2002.

Table 9: Inflation, Unemployment and Nominal Lending Rates, 2000 – 2019

Year	Inflation (%)	Unemployment (%)	Lending Rates (%)	
			Prime	Maximum
2000	15.5	13.1	17.98	21.55
2001	16.5	14.0	18.29	21.34
2002	12.1	14.4	24.85	30.19
2003	23.8	14.2	20.71	22.88
2004	10.0	13.4	19.18	20.82
2005	11.6	11.9	17.95	19.49
2006	8.6	12.3	17.26	18.70
2007	6.6	12.7	16.94	18.36
2008	15.1	14.9	15.14	18.70
2009	12.1	19.7	18.99	22.62
2010	11.8	21.1	17.99	22.51
2011	10.3	23.9	16.02	22.42
2012	12.0	25.7	16.79	23.79
2013	8.4	24.7	16.72	24.69
2014	8.1	25.4	16.55	25.74
2015	9.6	25.5	16.85	26.71
2016	18.55	13.4	16.87	27.29
2017	16.5	17.5	17.58	30.68
2018	12.1	22.5	16.91	31.09
2019	11.98	23.1	14.99	29.98

Sources: Compiled from: NBS (2014); NBS (2018:14), CBN (2018:9), CBN (2019:8)

In 2011, unemployment rate was 23.9 %. It rose to 25.5 % in 2015. It reduced to 17.5 % in 2017, thereafter, it rose 22.5 % in 2018 and further to 23.1 % in 2019. Lending rates (prime and maximum) have also maintained double digits of not less 14.99 % for prime in 2019 and 18.36 % for maximum in 2007 within the period under review. High lending rates will reduce the amount of loans investors would need for investment, which in turn would reduce investment with consequent reduction in output, income and employment.

That the Nigerian economy is weak in not contestable; this is shown by economic performance indicator, misery index and discomfort index (see Table 10). In the recent past, Nigeria’s economic performance (EP) has graphically reduced while misery (MI) and discomfort (DI) indices have increased. In 2006, economic performance index was 76.1 %. This was less than 80% from which is deemed satisfactory. Misery index was 34.4 while Discomfort index was 29.7% in 2006.

Table 10: Nigeria: Economic Performance Indicator, Misery Index and Discomfort Index, 2006 – 2018 (%)

YEAR	2006	2010	2013	2014	2015	2016	2017	2018
EPI	76.1	68.2	67.6	73.8	68.0	56.4	Na	Na
MI	34.8	30.3	50.8	55.08	57.27	72.3	52.1	43
DI	29.7	34.8	37.2	33.4	36.7	52.1	Na	Na

Sources: 1. Ekpo (2017), 2. Hanke's MI (2019)

Note: EPI is Economic Performance Indicator; MI is Misery Index, DI is Discomfort Index

In 2010, EPI reduced to 68.2 % while misery index reduced to 30.3 %. Discomfort index however increased to 43.8 %. In 2015, EPI was 68.0 %, and in 2016 it reduced to 56.4 %. In 2016, MI increased to 72 % from 57.3 % in 2015 while discomfort index increased from 36.7 % in 2015 to 52.1 % in 2016. In the 2019 global ranking of miserable countries, Nigeria is among the top 10 miserable nations in the world in a pool of 95 countries, and ranked the sixth most miserable country in the world.

5. Conclusion and Recommendations

From our assessment of the domestic production base of the Nigerian economy, it is apparent that it is weak, characterized by inadequate supply of public electricity, low level of technological capability, and resultant weak industrial sector. With these conditions, Nigeria's participation in African Continental Free Trade Area (AfCFTA) may not be effective. Therefore, to strengthen Nigeria's domestic production base for effective participation in AfCFTA, the following recommendations are offered:

- (i) Supply of adequate public electricity from thermal power and hydro power, and other sources of power – wind, solar, etc., should be among the crucial developmental structures the government should seek to achieve in a short term. This will give the industrial sector and the Nigerian economy at large the needed springboard for sustained growth.
- (ii) Improvement in technological capability should be a national question. The Government should increase its expenditure on R&D. Also, the Government, through the various research centres and institutions, should recruit more researchers and technicians of diverse areas of specialty in research and development (R&D). This will broaden the scope of research and strengthen the quality of findings. Researchers and technicians in research and development (R&D) should be called yearly to meet and discuss their R&D findings. This will challenge them to strive to consolidate their skills; it will bring about singleness of purpose and synergy.
- (iii) Ailing iron and steel organizations in Nigeria should be revived, and chemical plants should be provided to give the industrial sector the needed leap. These economic structures are foundational and indispensable for industrial growth.

African Continental Free Trade Area (AfCFTA) is a platform for greater economic cooperation and interdependence among African countries. AfCFTA seeks to create a single continental market for goods and services, with free movement of business, persons and investments, among other objectives. Nigeria is a member of AfCFTA, and is expected to participate effectively and tap the benefits there from to fast-track its development process. From the assessment of the Nigerian economy, its industrial sector is not strong enough to give the country the leap in competitiveness at the industry and enterprise levels for scale production which AfCFTA seeks to enhance. Therefore, for Nigeria to participate effectively in AfCFTA, its domestic production base needs to be strengthened through increase in technological capability, provision of adequate public electricity and functional iron and steel

company and chemical plants, for without these foundational industrial structures, among others, Nigeria's participation in AfCFTA will be ineffective.

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