Financing Role in Structural Transformation in Nigeria

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Abstract: In this paper, the authors examined the role of financing in structural transformation in Nigeria. The key sectors that are investigated in the transformation are the agricultural and industrial sectors. Previous studies on the Nigerian economy scarcely examined both sectors comparatively, a gap which this present study sought to fill. The Autoregressive Distributed Lag (ARDL) analysis was carried out. The result shows a long run relationship between financing and agricultural output as well as between financing and industrial output. However, at a glance, bank financing is more concentrated on the industrial sector than the agricultural sector. There have been increased output in the industrial sector due to increase in money supply while the Agricultural Credit Guarantee Scheme has promoted increase in the agricultural sector's output. Although policies should be geared towards enabling development of the industrial sector, it is also vital to consciously drive the agricultural sector in order to increase its output production. The agricultural sector, if well-funded, has the capacity to bloom and form a strong linkage with the industrial sector. It is essential that future studies on the Nigerian economy include the service sector in the structural transformation analysis.

Keywords: sector financing; structural changes, autoregressive distributed lag

JEL Classifications: G32; O11; C32

1. Introduction

Although Nigeria is the 39th largest economy in the world and largest in Africa (African Development Bank, 2018; International Monetary Fund, 2019; World Bank, 2018), the country is bedeviled with increasing poverty, low Human Development Index, rising unemployment and rising inflation amongst other macroeconomic issues.[3] In tackling some of these economic issues, structural transformation has been advocated by some scholars (Dauda, 2016; Naiya & Manap,

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[3] See (Ajakaiye et al., 2014; Ariyo & Olaniyan, 2014; Dimova & Pela, 2018; Dauda, 2016; PriceWaterhouseCoopers, 2018; United Nations Development Report, 2013).

2013; Willem te Velde et al. , 2016). Thus, while it is paramount to tackle these challenges and achieve high economic growth, transforming the sectors of the economy should also take a centre stage.

As economic growth occurs, the structure of the economy is expected to change as well (Sanusi, 2010). Although Nigeria recorded high rate of economic growth coupled with significant capital inflows prior to its recession in 2016, its economy still suffers from structural and institutional lapses which have hindered economic growth from having a trickle-down effect (Hansen, 2013; Naiya & Manap, 2013; Oyelaran-Oyeyinka & Ola-David, 2017). The reason for this is not far-fetched. Naiya & Manap (2013) and Sanusi (2010) asserted that economic growth dynamics in Nigeria has been characterized by natural resource exploitation and dominance of primary products. The dependence on oil after its discovery led to the neglect of the agricultural sector which has crippled the growth of the agricultural sector down the years. Moreover, the agricultural sector has not been rigorously modernized and subsistence farming is still massive. Therefore, Nigeria has failed to achieve the plan of sufficiently feeding the nation.

However, focus is beginning to shift again towards revitalizing the agricultural sector to ensure sustainable growth in the economy since a shift to the oil industry has not yielded desired economic growth at the linkage with the industrial sector, the agricultural sector has also failed to provide needed raw materials while still failing in contributing largely to foreign exchange through exports (Sanusi, 2010). Countries that have succeeded in structural transformation in the past successfully upgraded from agrarian economies to “manufacturing powerhouses” (Lin & Wang, 2014). This shows how the agricultural sector has played a key role in the industrialization of advanced economies such as Europe, Asia and America (Lopes, 2015).

Structural transformation is an important factor that is critically needed for less developed countries to develop. Syrquin (1994) and Lin & Wang (2014) confirmed that there exists a strong relationship between economic growth and structural transformation. Although the United Nations Conference on Trade and Development (UNCTAD) (2012) noted that many African countries have gone through the process of structural transformation over the past thirty years; Oyelaran-Oyeyinka & Ola-David (2017) put forward an argument that structural transformation that is valid should cut across all sectors proceeding in such a way that the social welfare of the citizens is improved especially in the area of inclusive growth which engenders increase in employment and reduction in poverty. This of course is lacking in many developing economies. Thus, agriculture is yet to be a strong tool in the structural transformation of Africa (Lopes, 2015). Again, African Development Bank (2013) noted that structural transformation in the Nigerian economy is deficient in comparison with other developing and advanced countries as Nigeria has not learnt

lessons from similar countries that have successfully undergone structural transformation.

In order to achieve successful structural transformation, the role of financing cannot be overemphasized. It is necessary to have key investments in the agricultural sector in developing countries if structural transformation is to be seen as successful (Kuznets, 1955; Timmer, 2005; Timmer, 2009). Moreover, low profitability in the agricultural sector hinders structural transformation (Timmer, 2016). The agricultural sector is a key sector in many developing countries of the world, thus, Timmer's submission. As noted earlier, much focus has been placed on the oil sector after the oil boom in Nigeria, diversification into the agricultural and other non-oil sectors of the economy is of recent being welcomed (Evbuomwan 2016; Onodugo et al. , 2015; Orji, 2018; Uzonwanne, 2015). Meanwhile, Adediran & Obasan, (2010) have found that the manufacturing sector is a major driving force in the structural transformation of any economy.

A steady and well-organized financial sector is vital for sustaining growth and structural transformation in an economy (Department for International Development (DFID), 2004; Onodugo et al. , 2015; Paun et al. , 2019; Wampah, 2013). Naquib (2015) affirmed that financial structures of countries develop as their income and wealth grow. Olokyo (2011) also noted that sectors and sub-sectors of the economy having access to bank credit will further enhance their productivity. However, many developing economies experience bottlenecks in accessing funding within the system. Studies have shown that different sectors of the economy do not have a hitch-free access to finance to implement their economic growth plans. Oputu (2010); Akpansung & Babalola (2012) and Ume et al. (2017) observed the bottlenecks created by banks and private lending firms in giving out funds to manufacturing firms. It was advised that in giving credit, banks needed to give attention to the manufacturing sector as it is the engine of growth of any economy. Again, Adeola & Ikpesu (2016) and Ogbuabor & Nwosu (2017) observed that the agricultural sector has problems accessing loans from banks due to high interest rate and impracticable policies. In the same vein, Awotide et al. (2015) observed selection bias in accessing credit by the Nigerian agricultural sector. Ironically, Nnana (2004) mentioned that the contribution of commercial banks to the socio-economic development of Nigeria is wrapped up in the implementation of the national development plans and credit facilities given to the leading sectors of the economy. The position of Tesfachew (2016) thus seems to be true in the Nigerian situation. He opined that in many of the less developed countries, inability to access finance in commercial banks show the underdeveloped nature of the financial system operating in such countries coupled with a high-risk aversion in the system. This leads to greater investment in assets that are safer such as government securities.

In the light of the above, this paper seeks to examine the impact of funding on the

structural transformation of the Nigerian economy. Specifically, focus is on the agricultural and industrial sectors. These sectors have been so selected because according to Sanusi (2010), Ajakaiye and Tella (2013), they are the priority sectors of the economy since their robust development will enable a healthy service sector to emerge. Also, it has been observed that many papers have examined the impact of funding on these sectors of the economy independently without a parallel comparison at a given period (Awotide et al. , 2015; Ume et al. , 2017; Uzochukwu et al., 2015).

The remaining sections in this paper are as follows: Section 2 focuses on the review of relevant literature; section 3 explains the methodology adopted, section 4 presents the findings while section 5 concludes with appropriate recommendations.

2. Literature Review

Structural transformation can be seen as reallocating material and immaterial resources to sectors that are more productive in the economy (Lin & Wang, 2014; Wampah, 2013; Yilmaz & Oskenbayev, 2015). In the long run, the result is an economy that will put resources in many hands, contribute to further progress and the funding of social amenities through enhanced taxation and consumption of goods and services. On the other hand, financing can be understood as the extension of credit to needing sectors of the economy through legal and regulatory institutions. Innovative financing gears towards achievement of development in an economy. Finance mechanisms proposed by the United Nations include: additional mechanisms and centralization of resources, improving the quality of institutions, adopting a gradual approach by learning from systems that have worked in other countries, capacity-building of states in that area, domestic resources' collection optimization and development of local financial markets. If all these are taken into consideration, the economy is expected to be on the path of proper structural transformation. The Central Bank of Nigeria (2017) rightly asserted that the financial system provides a platform where economic growth and development, increased productivity, effective financial intermediation, capital formation and efficient management of payments system are attained.

Oyelaran-Oyeyinka (2017) adopted a descriptive and shift share analysis on structural transformation in Nigeria. The findings showed that Nigeria is going through a unique structural transformation. Between 1980 and 2010, industrial contribution to GDP declined while agriculture and services increased over the same period. On the other hand, although the number of those employed in the agricultural and industrial sectors has reduced in recent years, the service sector has employed more people. Also, growth in labour productivity with respect to structural change has increased probably due to changes within the service sector between 2005 and

2009. Moreover, the Nigerian industry got the largest share of FDI over the years under study but has declined in the past ten years while FDI to the service sector has been increasing. The findings by Oyelaran-Oyeyinka (2017) can be compared to that of Lin & Wang (2014) and Lopes (2015). Lin & Wang (2014) noted that China's investment (in terms of medical teams, agricultural experts, teachers, scholarships for African students, etcetera) in low-income African countries has led to structural transformation in such countries; while Lopes (2015) asserted that a driving force for structural transformation in Africa was agricultural development. Contrary to the opinions of Lin & Wang (2014) and Oyelaran-Oyeyinka (2017), Gries & Naude (2010) asserted that it is entrepreneurial start-up firms that aid structural transformation in an economy. New firms created out of the households provide intermediate inputs to final-good producing firms which will eventually increase productivity and employment in traditional and advanced sectors.

Meanwhile, the study by Bustos et al (2017) found that growth in agricultural productivity can cause structural transformation by impacting capital accumulation. Also, it was observed that more financially integrated regions with the soy boom area experienced faster structural transformation. Similarly, the paper by Nnamocha & Eke (2015) found that industrial output affected agricultural productivity positively in the short and long run in Nigeria.

Using ARDL bound testing technique, the study by Naiya & Manap (2013) investigated the interrelationship among key variables such as structural transformation, growth, inequality and poverty in Nigeria. Interestingly, it was observed that even though there exist slow structural transformation in Nigeria, there is a potential for long-run relationship amongst the variables used.

However, the study by Uzochukwu et al (2015) shows that although there are various sources of finance available to the health sector as one service sector, successful financing of the sector has remained a challenge. Identifying human capital development as a key in structural transformation. Sackey (2003)'s work observed that accessibility to education in Sub-Saharan Africa was regressive with high rate of school enrolment at the other extreme. Household income and other factors contributed to educational achievement in the region while availability of credit and educational status of workers served as driving force for training workers who work in firms. It is a well-known fact that banks serve as a major financing agent in any economy. Adolphus & Peterside (2014) found that the agricultural sector was not well funded in Nigeria as both merchant and commercial banks' funding had a negative effect on agricultural output. However, there was a positive relationship between merchant bank lending and manufacturing output, while an inverse relationship existed between commercial bank funding and manufacturing output. This could be as a result of lack of adequate access to commercial banks' loan. This again emphasizes the need to encourage the agricultural sector by sufficiently

funding it. Similar to these findings, Gaaitzen et al. (2015) noted that savings and investments were important factors in the structural transformation of African countries. The study focused on 11 sub-African countries (Nigeria inclusive) from 1960-2010 and used trends and decomposition analysis.

In sum, most of the studies have failed to examine the role of finance in structural transformation of the Nigerian economy. The study by Oyelaran-Oyeyinka & Ola-David (2017) is close to examining financing on structural transformation, however, foreign direct investment cannot be relied upon as an appropriate proxy for funding structural transformation. This calls for further studies on the subject matter.

3. Theoretical Framework and Methodology

This paper takes a clue from the finance-led growth theory by Levine (2004). This theory identified five channels through which financial development aids economic growth: capital allocation, exercising corporate governance on firms, risk management improvement, savings polling and enhancing goods and services exchange. These channels will impact investment decision making and in the long run, affect economic growth. The impact of financial development on economic growth can be felt endogenously when sectors within the economy are adequately financed. Interestingly, the relationship between financial development and economic growth can be bi-directional if there exist a strong linkage in the economy. Financial development increases economic growth when more credit is given to sectors that are more productive (Bencivenga et al. , 1995; McKinnon, 1973; Saquib, 2015; Shaw, 1973).

Annual time series on the variables are collected from the Central Bank of Nigeria statistical bulletin over the period 1986-2016. During this period, Nigeria implemented various policies that geared towards structural transformation. Also, the scope covers the period of major banking reforms in Nigeria. It was not until 1980s that ownership and control of banks by both public and private sector increased (Obienusi & Obienusi, 2015).

The two major sectors at the centre of structural transformation are: the agricultural and industrial sectors (Afzal, 2007; Chenery & Syrquin, 1975; Kuznet, 1966; Timmer, 2016; Yilmaz & Oskenbayev, 2015). Acaravci et al (2009) and Fisman & Inessa (2003) noted that credit provided by private banking sector best measures the level of financial development in an economy because it measures quality and quantity of investment. This implies that the level of financial development and the structure of financial intermediaries' ownership are imperative. Interest rate and inflation rate are other factors that affect agricultural credit in Nigeria (Obansa & Maduekwe, 2013; Ogbonna & Osondu, 2015). Thus, for the purpose of this study, sources of finance for the agricultural sector that were used include: bank credit,

private sector credit, broad money (M_2), interest rate and inflation rate. These data have also been so selected due to their availability and conceptual consistency over the years. Factors that affect finance of the industrial sector are: bank credit, private sector credit, money supply, interest rate, inflation rate, exchange rate (Afolabi, 2013; Ogar et al. , 2014; Udoh & Ogbuagu, 2012)

In assessing the impact of finance on the agricultural sector as a ratio of GDP, this paper drew from the model of Bada (2017).

$$RAGDP = f(ACGSF, BCA, PSC, MS, INTR, INFR) \quad \ldots\ldots\ldots\ldots \quad (1)$$

Where, $RAGDP$ = Ratio of Agric to GDP; $ACGSF$ = Agricultural Guarantee Scheme Fund;

BCA = Bank Credit to Agricultural Sector; PSC = Private Sector Credit; M_2 = Broad Money; $INTR$= Interest Rate; and $INFR$= Inflation Rate

Equation (1) is expressed in an econometric form in equation (2) while applying logs to ACGSF, BCA, PSC and MS which are variables that are not in rates.

$$RAGDP = \beta_0 + \beta_1 logACGSF + \beta_2 logBCA + \beta_3 logPSC + \beta_4 logMS + \beta_5 INTR + \beta_6 INFR + \mu_t \quad (2)$$

Where β_0 is the constant, β_1, β_2, $\beta_3, \beta_4, \beta_5$ and β_6 are intercepts and μ_t is a white noise

Equation (3) which is on the nexus between financing and the industrial sector as a ratio of GDP drew from the studies by Bada (2017); Ebele & Iorember (2016); Siyakiya (2014) and Ume et al. (2017).

$$RIGDP = f(BCI, PSC, MS, INTR, INFR, EXCR) \quad (3)$$

Expressing equation (3) in an econometric form in equation (4) while applying logs to variables that are not in rates, we have

$$RIGDP = \beta_0 + \beta_1 logBCI + \beta_2 logPSC + \beta_3 logMS + \beta_4 INTR + \beta_5 INFR + \beta_6 EXCR + \mu_t \quad (4)$$

Where, $RIGDP$= Ratio of Industry to GDP; BCI= Bank Credit to Industry and $INFR$= Inflation Rate.

Equations (2) and (4) are re-written in a general ARDL form in equations (5) and (6), respectively. These equations involve lagged values of the explained variable as well as current and lagged values of one or more explanatory variables (X_s), among the regressors. Notice that lag stands for a chosen lagged value.

$$RAGDP = \beta_0 + \beta_1 lagRAGDP + \beta_s X_s + \beta_s lagX_s + \mu_t \quad (5)$$

$$RIGDP = \beta_0 + \beta_1 lagRIGDP + \beta_s X_s + \beta_s lagX_s + \mu_t \quad (6)$$

4. Empirical Result and Discussion

A preliminary check in Tables 1 and 2 on the variables show that none of the explanatory variables has perfect multicollinearity. However, private sector credit (PSC) strongly collinear with Agricultural Credit Guarantee Scheme Fund (ACGSF), bank credit to agricultural sector (BCA) and bank credit to industrial sector (BCI), therefore, PSC was dropped in the subsequent analysis. Although, there are some levels of high relationship between money supply (MS) and ACGSF in model 1 but this does not pose any threat to subsequent results as their coefficients were significant. The same applies to the relationship between MS and exchange rate in model 3.

Table 1. Multicollinearity Test on Model 1 (Agricultural Sector)

	ACGSF	BCA	MS	INFR	INTR	PSC
ACGSF	1. 0000	0. 6396	0. 8393	-0. 3957	-0. 5129	0. 8852
BCA	0. 6396	1. 0000	0. 6057	-0. 1974	-0. 1520	0. 8307
MS	0. 8393	0. 6057	1. 0000	-0. 2604	-0. 4470	0. 8739
INFR	-0. 3957	-0. 1974	-0. 2604	1. 0000	0. 3496	-0. 3173
INTR	-0. 5129	-0. 1520	-0. 4470	0. 3496	1. 0000	-0. 3993
PSC	0. 8852	0. 8307	0. 8739	-0. 3173	-0. 3993	1. 0000

Source: Authors' computation

Table 2. Multicollinearity Test on Model 3 (Industrial Sector)

	BCI	INFR	EXCR	MS	INTR	PSC
BCI	1. 0000	-0. 1863	0. 7794	0. 6245	-0. 1702	0. 8355
INFR	-0. 1863	1. 0000	-0. 4586	-0. 2604	0. 3496	-0. 3173
EXCR	0. 7794	-0. 4586	1. 0000	0. 8037	-0. 3408	0. 8387
MS	0. 6245	-0. 2604	0. 8037	1. 0000	-0. 4470	0. 8739
INTR	-0. 1702	0. 3496	-0. 3408	-0. 4470	1. 0000	-0. 3993
PSC	0. 8355	-0. 3173	0. 8387	0. 8739	-0. 3993	1. 0000

Source: Authors' computation

On Table 3 where we report the descriptive statistics, the average of the ACGSF as a major source of finance to the agricultural sector is the lowest with about N3. 47billion. The mean of the bank credit to the agricultural sector is considerably low (N241. 23 billion) compared to that of the industrial sector averaging N2360. 90 billion over the period. Minimum ACGSF was obtained in 1986 which was about N0. 07 billion and the highest amount was gotten in 2014 which was about N12. 46 billion. On the contrary, the industrial sector had a minimum of N4. 68 billion in 1986 and highest in 2016 which stood at N2,2801. 70 billion. In sum, N107. 69 billion was expended on ACGSF between 1986-2016 while N73,187. 83 billion was expended on the industrial sector over the years under review. This shows the wide

gap in financing these two major sectors of the economy. The Jarque-Bera test shows that the variables are normally distributed with the exception of BCI, BCA and inflation rate which are not normally distributed at 1% and 5% levels. This may be due to constant fluctuations in these variables which imply the presence of some outliers.

Table 3. Descriptive Statistics

	ACGSF	BCA	MS	INTR	INFR	BCI	EXCR
Mean	3. 4739	241. 225	14. 486	13. 758	20. 699	2360. 89	100. 324
Median	0. 729	48. 562	13. 064	13. 5	12. 169	277. 366	118. 566
Maximum	12. 456	1979. 84	21. 291	26	76. 759	22801. 7	305. 97
Minimum	0. 068	1. 83	9. 152	6	0. 224	4. 683	4. 017
Std. Dev.	4. 24582	534. 709	3. 9306	4. 02258	19. 4425	5433. 144	82. 416
Skewness	0. 76743	2. 64123	0. 5731	0. 69476	1. 57450	2. 82498	0. 710
Kurtosis	1. 93342	8. 30783	1. 8072	4. 473091	4. 24812	9. 77574	3. 2602
Jarque-Bera	4. 51235	72. 4335	3. 5349	5. 296875	14. 8207	100. 534	2. 6975
Prob.	0. 10475	0	0. 17076	0. 07076	0. 0006	0	0. 2595
Sum	107. 692	7478	449. 068	426. 5	641. 674	73187. 83	3110. 063
Sum Sq. Dev.	540. 811	8577415	463. 506	485. 435	11340. 4	8. 86E+08	203775. 1
Observations	31	31	31	31	31	31	31

Source: Authors' Computation

Unit Root Test

Table 4A. ADF and Phillips-Perron Unit Root Tests for the Agricultural Model

Variable	**ADF T-Stat**	**ADF Critical value @5%**	**Order of integration**	**PP T-Stat**	**PP Critical value @5%**	**Order of integration**
RAGDP	-5. 9131	-2. 9719	I(1)	-5. 6245	-2. 9678	I(1)
LOGAGCSF	-5. 1717	-2. 9678	I(1)	-5. 1717	. 2. 9678	I(1)
LOGBCA	-6. 0952	-2. 9678	I(1)	-6. 0952	-2. 9678	I(1)
LOGMS	-4. 9477	-2. 9678	I(1)	-5. 1087	-2. 9678	I(1)
INT	-3. 0425	-2. 9639	I(1)	-3. 0990	-2. 9640	I(1)
INF	-4. 6667	-2. 9810	I(0)	-6. 4221	-29678	I(0)

Source: Authors' computation

Table 4B. ADF and Phillips-Perron Unit Root Tests for the Industrial Model

Variable	ADF T-Stat	ADF Critical value @5%	Order of integration	PP T-Stat	PP Critical value @5%	Order of integration
RIGDP	-3. 8951	-2. 9678	I(1)	-3. 8532	-2. 9678	I(1)
LOGBCI	-5. 0766	-2. 9678	I(1)	-5. 3035	-2. 9678	I(1)
LOGMS	-4. 9477	-2. 9678	I(1)	-5. 1087	-2. 9678	I(1)
INT	-3. 0425	-2. 9639	I(1)	-3. 0990	-2. 9640	I(1)
INF	-4. 6667	-2. 9810	I(0)	-6. 4221	-29678	I(0)
EXCR	-3. 4425	2. 9719	I(1)	-3. 4169	-2. 9719	I(1)

Source: Authors' computation

The Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests in Tables 4A and 4B show that based on 5% level of significance, the variables are stationary at first difference except INF which is stationary at level. Therefore, an autoregressive distributed lag (ARDL) is appropriate for analysis of the models.

Autoregressive Distributed Lag Model

Table 5. Estimates of the ARDL for the Agricultural Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RAGDP(-1)	1. 255627	0. 100074	12. 54701	0. 0001
RAGDP(-2)	-0. 913093	0. 122931	-7. 427699	0. 0007
RAGDP(-3)	0. 524246	0. 143988	3. 640914	0. 0149
LOGMS	-0. 076646	0. 062424	-1. 227819	0. 2742
LOGMS(-1)	0. 875192	0. 07125	12. 28342	0. 0001
LOGMS(-2)	-0. 569568	0. 104038	-5. 474631	0. 0028
LOGMS(-3)	-0. 321079	0. 097537	-3. 291885	0. 0217
LOGBCA	-0. 01721	0. 017502	-0. 983308	0. 3706
LOGBCA(-1)	0. 012273	0. 014468	0. 84827	0. 435
LOGBCA(-2)	-0. 034458	0. 012272	-2. 807864	0. 0376
LOGBCA(-3)	0. 045783	0. 026516	1. 726596	0. 1448
LOGACGSF	0. 078173	0. 017224	4. 538557	0. 0062
LOGACGSF(-1)	0. 034669	0. 018154	1. 909747	0. 1144
LOGACGSF(-2)	0. 035481	0. 017594	2. 016617	0. 0998
LOGACGSF(-3)	-0. 06149	0. 01387	-4. 433297	0. 0068
INTR	0. 01265	0. 001005	12. 58442	0. 0001
INTR(-1)	0. 002858	0. 001354	2. 111432	0. 0885
INTR(-2)	-0. 002375	0. 000633	-3. 751973	0. 0133

INFR	-0. 000138	0. 000247	-0. 557738	0. 6011
INFR(-1)	0. 000616	0. 000341	1. 807602	0. 1305
INFR(-2)	0. 001682	0. 000309	5. 442665	0. 0028
INFR(-3)	0. 001798	0. 00037	4. 865693	0. 0046
C	-0. 153031	0. 124784	-1. 226367	0. 2747
R-squared	0. 995013	Mean dependent var		0. 251214
Adjusted R-squared	0. 973068	S. D. dependent var		0. 042801
S. E. of regression	0. 007024	Akaike info criterion		-7. 158841
Sum squared resid	0. 000247	Schwarz criterion		-6. 06453
Log likelihood	123. 2238	Hannan-Quinn criter.		-6. 824299
F-statistic	45. 34181	Durbin-Watson stat		2. 609252
Prob(F-statistic)	0. 00024			

Source: Authors' computation

Table 6. Estimates of the ARDL for the Industrial Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RIGDP(-1)	0. 624212	0. 101472	6. 151576	0
LOGBCI	-0. 016801	0. 013207	-1. 272108	0. 2166
LOGMS	0. 227412	0. 069447	3. 274625	0. 0035
LOGMS(-1)	-0. 122113	0. 07314	-1. 669568	0. 1092
INTR	0. 000103	0. 000957	0. 107273	0. 9155
INFR	-0. 000342	0. 000195	-1. 754048	0. 0933
EXCR	0. 000268	0. 000132	2. 035768	0. 054
C	0. 015208	0. 05766	0. 263747	0. 7944
R-squared	0. 91894	Mean dependent var		0. 317667
Adjusted R-squared	0. 893148	S. D. dependent var		0. 048981
S. E. of regression	0. 016011	Akaike info criterion		-5. 207905
Sum squared resid	0. 00564	Schwarz criterion		-4. 834253
Log likelihood	86. 11858	Hannan-Quinn criter.		-5. 088371
F-statistic	35. 62905	Durbin-Watson stat		1. 895842
Prob(F-statistic)	0			

Source: Authors' computation

Based on the long-run results in Table 5, the relationship among the first, second and third lags of ratios of agricultural output to GDP with its current values are significant at 5% level but negative in the second lag and positive in the third and first lags. By implication, previous values of agricultural output affect the current value of the sector. Money supply shows a significant relationship in the past one to three years. The relationship is only positive in the immediate last year but negative in the past two-three years. This shows that although money supply negatively impacted the agricultural sector output in past two-three years, its impact in the immediate past year is positive. This underscores the fact that monetary policy is less effective in the long-run. Bank credit to the agricultural sector is negative in the past two years and this relationship is significant. This is rather alarming as the relationship is expected to be positive. This same trend was observed for money supply. This suggests there might be misappropriation of funds in the period. Coincidentally, for instance, agricultural output dropped from 0. 210% in 2013 to 0. 202% in 2014. Positive relationships were observed in lags one and three but these relationships were not significant. Agricultural Guarantee Scheme Fund had a

positive relationship with agricultural output in the past one-two and current years but negative in the past three years. This relationship is significant at 10% level in the past two years and 5% level in the past three years and current year. This shows the importance of ACGSF to agricultural output in Nigeria when the funds are disbursed and used within two years. Interest rate impacts the agricultural output positively in the current and past one year but negatively in the past two years at 5%, 10% and 5% significance levels, respectively. The positive impact of the interest rate is not expected but in tandem with some previous studies such as Ezeanyeji (2014) and Onyishi et al (2015). This is nonetheless not in line with findings from Omojimite (2012) who found out that interest rate had a negative and insignificant relationship with agricultural output. Inflation exhibits an infinitesimal positive relationship with the agricultural sector in all periods with the exception of the current period. However, current period and past one-year relationships are not significant. This could be as a result of the fact high inflation is injurious to agricultural sector growth. This finding is consistent with the study by Bada (2017).

Based on results in Table 6, the industrial sector's output share in GDP in the previous year affected its current value positively at 5% level of significance. BCI negatively impacted RIGDP although not significant. This negative trend was also observed in the agricultural sector in regards to BCA. Money supply positively and significantly impacted RIGDP in the current year but negatively in the previous year, although not significant. Interest rate does not pose a significant impact on the industrial sector in the current year whereas inflation rate shows a negative impact on the sector at 10% level of significance. This is consistent with previous findings such as Ebele & Iorember (2016), Bada (2017), Ume et al (2017) and Siyakiya (2014). The depreciation of the exchange rate raises the industrial output which is in line with economic theory.

This analysis for the two models were conducted using 3 lags based on the Akaike information criterion. A parsimonious model that is devoid of autocorrelation was obtained for the industrial sector model. The adjusted R-squared for the two models show that the models have a good fit while the F-stat shows that the joint parameters as well as R-squared and the models are significant. Also, the Durbin-Watson values show that the models do not have the problem of serial correlation. The long run and bounds tests are further conducted to affirm the long run relationship of the variables.

Table 7. Long run Form and Bounds Test for the Agricultural Model

Dependent Variable: RAGDP			
	Max Lag	Lag Order	F Statistic
	2	(2, 2, 0, 0)	5. 4887 (k=5)
Significant level		Lower I(0) Bounds	Upper I(1) Bounds
1%		3. 06	4. 15
5%		2. 39	3. 38
10%		2. 08	3
Stability and diagnostic tests			
	T-Stats	**p-value**	
Ramsey Tests	1. 8073	0. 0939	
Normality Tests	1. 8722	0. 3922	
Heteroscedasticity	1. 0172	0. 4875	
Correlation Tests	0. 7071	0. 5125	

Source: Authors' computation

Table 8. ARDL Long Run Form and Bounds Test for the Industrial Model

Dependent Variable: RIGDP				
	Max Lag	Lag Order	F Statistic	
	2	(2, 2, 0, 0)	4. 1234 (k=5)	
Significant level		Lower I(0) Bounds	Upper I(1) Bounds	
1%		3. 06	4. 15	
5%		2. 39	3. 38	
10%		2. 08	3. 0	
Stability and diagnostic tests				
	t-Stats	**p-value**		
Ramsey Tests	0. 2042	0. 8402		
Heteroscedasticity	0. 7363	0. 6439		
Normality Tests	0. 5982	0. 7415		
Correlation Tests	0. 3685	0. 6964		

Source: Authors' computation

The results in Tables 7 and 8 confirm the long run relationship amongst the variables based on the F-statistics which are greater than the lower and upper bounds critical values at 5% level of significance for both models. The correlation tests are not statistically significant which further reveal the absence of serial correlation in the

models. Given the insignificance of the p-values of the heteroscedasticity tests, we reject the null hypotheses of heteroscedasticity against the alternative hypotheses. The Ramsey tests generally tested whether there are neglected nonlinearities in the models. Since the p-values of the Ramsey tests are insignificant, we fail to reject the null hypothesis of correct specification which indicates that the functional forms are correct. Finally, the normality tests show that the two models are normally distributed since the p-values are not statistically significant.

Since both models show that the variables have long run relationships, the error correction mechanism is conducted for both models.

Table 9. ECM Result for the Agricultural Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RAGDP(-1))	0. 388846	0. 044958	8. 649148	0. 0003
D(RAGDP(-2))	-0. 524246	0. 042019	-12. 47645	0. 0001
D(LOGMS)	-0. 076646	0. 02649	-2. 893347	0. 0341
D(LOGMS(-1))	0. 890647	0. 037439	23. 78906	0
D(LOGMS(-2))	0. 321079	0. 053758	5. 972663	0. 0019
D(LOGBCA)	-0. 01721	0. 005735	-3. 000855	0. 0301
D(LOGBCA(-1))	-0. 011325	0. 005271	-2. 148344	0. 0844
D(LOGBCA(-2))	-0. 045783	0. 005764	-7. 943341	0. 0005
D(LOGACGSF)	0. 078173	0. 006559	11. 91913	0. 0001
D(LOGACGSF(-1))	0. 026009	0. 006576	3. 955058	0. 0108
D(LOGACGSF(-2))	0. 06149	0. 007642	8. 046604	0. 0005
D(INTR)	0. 01265	0. 000549	23. 05148	0
D(INTR(-1))	0. 002375	0. 000359	6. 609224	0. 0012
D(INFR)	-0. 000138	0. 000113	-1. 225109	0. 2751
D(INFR(-1))	-0. 00348	0. 000162	-21. 43271	0
D(INFR(-2))	-0. 001798	0. 000217	-8. 279629	0. 0004
CointEq(-1)*	-0. 133219	0. 007229	-18. 42963	0

Source: Authors' computation

Table 10. Parsimonious ECM Result for the Industrial Sector

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGMS)	0. 227412	0. 051539	4. 412386	0. 0002
CointEq(-1)*	-0. 375788	0. 053937	-6. 967157	0

Source: Authors' computation

Tables 9 and 10 show the ECM results. The ECM computes the speed of adjustment of the variables towards their long-run equilibrium. They both carry negative signs which is according to theoretical expectations. Deviations from equilibrium level in

the current year would be corrected by 13. 3% and 37. 6% in subsequent years for the agricultural and industrial sectors, respectively. This implies that it would take about one and half years to return to long run equilibrium should a shock in the explanatory variable occurs in the agricultural sector and close to 4 years in the industrial sector should the same condition hold.

5. Conclusion and Recommendations

In this paper, the authors have examined the relationship between financing and structural transformation in the Nigerian economy. They have contributed to the literature by doing a cross examination of the impact of finance on the two major sectors of the economy. It is interesting to note that there exists a long run relationship between financing and agricultural output as well as between financing and industrial output. However, the industrial sector in Nigeria is more concentrated than the agricultural sector in terms of bank financing. This is necessary for growing the economy because the country stands to earn higher foreign exchange when it exports industrial outputs. Also, the different forms of finance affect the agricultural and industrial sectors in varying forms. It is therefore important to understand factors that positively affect the sectors and critically address issues surrounding factors that negatively impact them.

The agricultural sector needs not to be underfunded. The increased output that was recorded in the industrial sector especially with respect to money supply and rising output in the agricultural sector credited to Agricultural Guarantee Scheme imply that more credits should be allocated to these sectors while the Central Bank of Nigeria ensures a low-level inflation rate. However, bank credit to both sectors showed a negative relationship with their outputs which might be due to funds misappropriation; thus, output in both sectors could have been greater provided bank credit was allotted adequately and utilized appropriately. Therefore, the study recommends that while policies should be geared towards enabling the further development of the industrial sector, it is also important to consciously drive the agricultural sector to increase production. This is because of its role in a developing economy. The agricultural sector if well-funded, has the capacity to bloom and form a strong linkage with the industrial sector. Nigeria can adopt China's policy of setting up agricultural technical demonstration centres. Moreover, a form of partnership can be established with China in the provision of training and scholarships to potential agriculturalist. This way, output of the agricultural sector would increase and this would aid provision of raw materials for the industrial sector. The agricultural sector needs to be functional for the industrial sector to be functional and even the service sector to also be functional and sustainable. Future research can extend this study to include the service sector.

Many young graduates prefer to take up jobs in the industrial sector and those in the agricultural sector practice subsistence farming. It is high time Nigeria encourage its youths to get skilled in practicing mechanized farming by providing appealing platforms. Higher institutions geared at training people on mechanized farming can be set up and graduates are provided with incentives to start up their own farming on a large-scale basis. This will lead to increased output in the sector which will further encourage banks to channel more loans to the sector for its further development, thus resulting to a positive vicious cycle.

Bottlenecks to assessing credit such as complex proposals, godfatherism, high collateral should be eliminated. It is also important to drive up the Agricultural Credit Guarantee Scheme Fund as its impact on the agricultural sector cannot be over-emphasized. However, in allocating bank credit, all intricacies should be examined and funds must not be diverted into other purposes. Lastly, high inflation is injurious to structural transformation of the Nigerian economy and should be discouraged.

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