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Structural Transformation and Capital Formation in Nigeria: An ARDL Analysis

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Abstract
The study tests the proposition that structural transformation drives capital formation which in turn underlies development through the expansion of gross domestic product (GDP). Relevant data consistent with extant literature were obtained from the World Development Indicators between 1980 to 2017 and checked for integration and mean reversion properties. Having obtained satisfactory results from the pre-regression tests, the autoregressive distributed lag (ARDL) regression was chosen to fit the series. Post-regression evaluations check about the assumptions of normality, serial correlation, and homoskedasticity were all satisfactory to enable us to draw valid inference. Our results find no long-run evidence of structural transformation as a process of fixed capital formation in Nigeria. The correlation between the two is strongly negative. The GDP provides the most powerful and significant drive for fixed capital formation as well as the volume of domestic credit to the private sector, gross domestic saving, and the real rate of interest. The pattern of structural transformation observed showed an industrial structure comprising weak and low-capital intensive industries. The study recommends an industrial road map focused on both the industrialisation of agriculture and the creation of capital-intensive industries to drive sustained fixed capital accumulation.
Keywords: structural transformation, capital formation, agriculture, modern sectors, Nigeria
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1. Introduction

Leading theories of structural transformation have approached the subject with a focus on either demand-side or supply-side mechanisms (Gallipoli and Makridis, 2018). Built on the two-sector economy model, the supply-side mechanisms was rooted in development economics with focus on heterogeneity in sectoral growth rates (Acemoglu and Guerrieri, 2008; Ngai and Pissarides, 2007) such that economic growth depends largely on the modern sector where capital accumulation, innovation, and productivity growth takes place (Mc Millan, Rodrik, and Sepulueda, 2017). Demand-side mechanisms originated from the neoclassical growth theory of Solow (1956) and its various refinements (Grossman and Helpman 1991; Aghion and Howitt 1992; Kongsamut, Rebelo and Xie 2001) introduces heterogeneity in income elasticities. This line of thought posits that certain changes in demand favouring more diverse and complex products lead to changes in sectoral composition and in the economic specialisation by boosting technological innovation and creating new products (Saviotti and Pyka, 2012; Silva and Teixeira, 2012). In these models, growth rests on the saving rate, accumulation of physical and human capital, and continuous innovation in products and processes. Central to the two mechanisms is the accumulation of capital either to stimulate the growth process within modern sectors or facilitates relationships and flows among sectors for overall sustained economic growth. Economic growth by way of structural transformation, therefore, is both a cause and consequence of capital accumulation.

This study attempts to find evidence of the relationship between structural transformation and capital formation in Nigeria. The paper will proceed on the premise that economic growth is the outcome of continuous transformation in the structure of the economic, which requires the accumulation of capital to grow the modern sectors as a harbinger of productivity, technology generation, and diffusion. On this note, we expect to find relationships between structural transformation and economic growth on the one hand and between structural transformation and capital formation on the other hand. For the purpose of this study, capital formation is limited to fixed physical capital proxied by the gross fixed capital formation. We compute an index of structural transformation as the ratio of agriculture value added (percentage of GDP) to the combined value added of manufacturing and services (percentage of GDP).

1.1 Capital formation and structural transformation in Nigeria

The percentage of the GDP reinvested to expand the productive capacity of the Nigerian economy showed an interesting pattern during the period covered in this study. The first fourteen years from 1981 witnessed double-digit reinvestment rate of the surplus generated from aggregate domestic production with a mean of 16.73% of the GDP going into the replacement of worn capital and accumulation of new fixed capital. In the next fourteen years (1995-2008), the annual mean rate of capital formation fell to about half (7.75%) of the rate recorded in the previous fourteen years. Double-digit accumulation rate resumed in 2009 rising from 8.32% in 2008 to 12.01% with a mean of 14.65% for the decade 2009-2017. In comparative terms, however, Nigeria's GDP reinvestment

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rate has been consistently well below the Sub-Sharan Africa (SSF) average for over three decades since 1984. Figure 1 showed Nigeria's gross fixed capital formation percentage of GDP as a ratio of SSF.

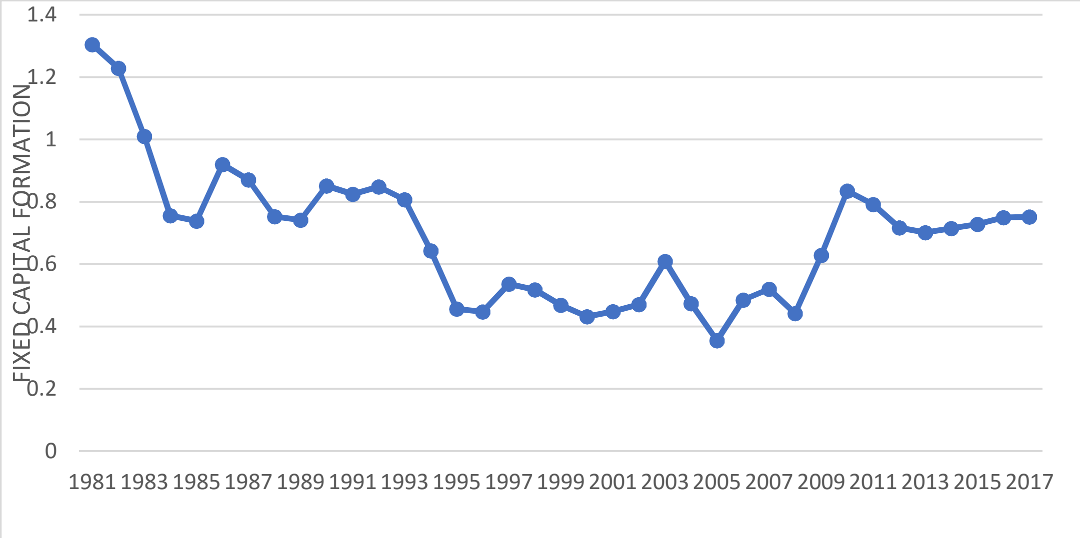

Figure 1: Nigeria Vs. Sub-Saharan Africa: Comparative gross fixed capital formation as a percentage of GDP

In the absence of diminishing marginal product of capital in the SSF or Total Factor Productivity (TFP) advantage for Nigeria, it is theoretically expected the SSF economic growth performance will be better than Nigeria's. Figure 2 depicts the economic growth performance of both Nigeria and SSF. Notwithstanding the superior capital accumulation in the SSF, Nigeria showed a stronger growth performance recovering from a four-year straight negative growth rate to an 8.32% growth in 1985 compared to an average of 2.28% growth for the SSF. This could imply that either the productivity of capital or TFP or both is higher in Nigeria than in SSF.

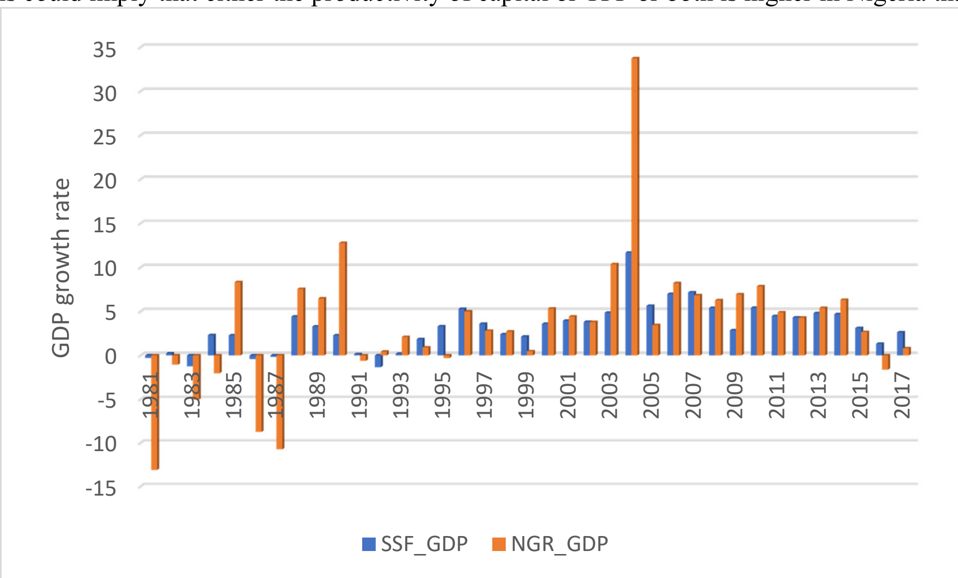

Figure 2. Economic growth rate in Nigeria and Sub-Saharan African

A correlation between gross fixed capital formation as a percentage of the GDP and GDP growth rate showed a negative association with a coefficient of -0.46. While no causal correlation relationship is implied by analysis, it does indicate in this instance that economic growth is not necessarily enhanced by accumulating more capital. Hence, Nigeria's stronger growth performance relative to SSF may be due to TFP gains than the size and productivity of capital employed.

Using a two-sector economy model with industry and services as constituting the modern sector, we compute an index of structural change as the ratio of the percentage of agriculture value added in GDP to the percentage of value added in GDP of the modern sector. A decline in this ratio over time is indicative of resources reallocation from low productivity traditional sector to the more skill- and technology-intensive modern sector.

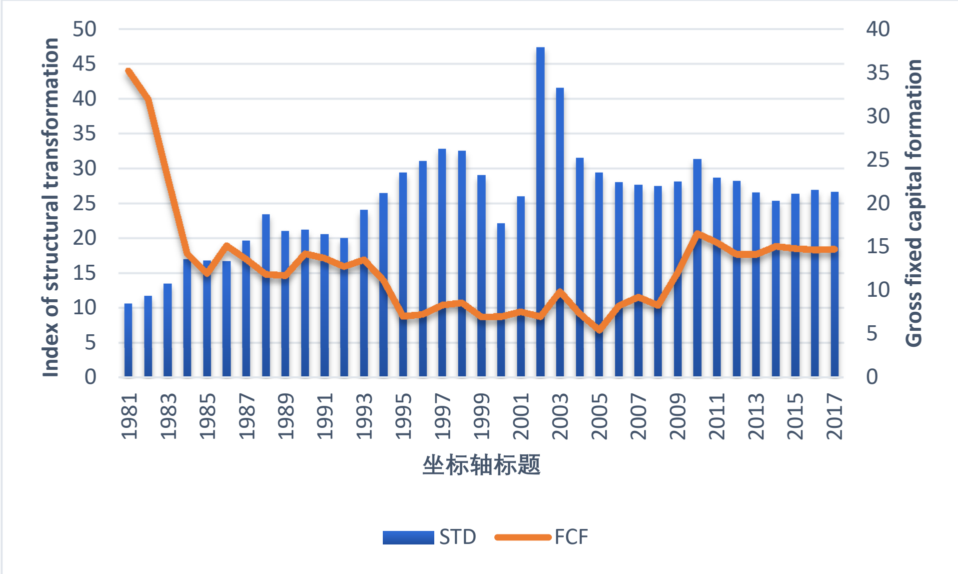

Figure 3. Structural transformation and capital formation

The bar graph in Figure 3 is the index of structural transformation and the line graph gross fixed capital formation percentage of GDP. Figure 3 presents no evidence of a radical consistent shift of resources from the agricultural sector to the modern sector and hence does not provide strong evidence of structural change in the Nigerian economy. Though agriculture value added as a ratio of the modern sector value added progressively declined since 2004 when compared to its all-time high 47.41% in 2002, its least value of 25.37% in 2014 was more than twice the ratio in 1981 and 1982, and higher than any value recorded in the 1980s. Generally, the ratio of the GDP contribution of the agricultural sector to the contribution of the modern sector has trended upward from 1981 to 2017. Capital formation, on the other hand, has trended downward over the same period. A strong negative correlation of -0.66 between the two showed that as agriculture value added in the GDP increased relative to the value added of the modern sector, less amount of the GDP is devoted to capital formation. Conversely, increased value-added production in the modern sector tends to rev up the rate of capital formation. However, there is a moderate positive correlation (0.45) between structural transformation and economic growth. We conclude thus, that the pattern of structural transformation in the Nigerian economy since 1981 is growth enhancing but not via capital accumulation.

The rest of this paper is structured as follows. Section 2 will conduct a review of extant literature on the subject of the paper with the methodology and data employed laid out in section 3. Our data will be analysed based on the previously outlined methodologies with the results reported and discussed in section 4. The paper will conclude with recommendations in section 5.

2. Literature Review

Macroeconomics, development, and growth theories have devoted extensive literature to examine the role of capital in the growth/development process. An extensive search for the drivers of economic growth has come up with different types of capital including human capital, knowledge capital, social capital, institutional capital, infrastructure capital, natural resource capital, as well as physical capital. A mix of these different types of capital is required to drive growth and development (U.N Millennium project, 2005). This review will focus on physical capital accumulation.

Capital formation involves three discrete activities of saving, finance, and investment. The latter being the activity by which resources (saving and finance) is actually committed to the production of capital goods. The volume of capital formation thus is a function of the intensity and efficiency with which these interdependent activities are carried on (Abramowitz, 1955). There are three strands of growth and development theories which emphasise in varying degree the role of capital formation in the growth process. The classical and the Keynesian theories of growth as represented by the Harold-Domar model (Domar, 1947; Harrod, 1948) advanced saving and capital-output ratios as the driver of growth with growth expressed as the product of investment to GDP and the productivity of investment, so that a low investment ratio and low productivity of capital will result in a slow growth (Bisaliah, 2010). In the classical-based growth and development models, capital formation and structural change are intricately linked as a key engine of growth. Johnston (1970) describes structural transformation as a generalised process of capital formation and capital formation as the distinguishing feature of development, such that a country is developed or under-developed according to the size of various forms of capital accumulated and the effectiveness of established mechanisms for sustaining and increasing the large stock of capital per head. Lewis

(1954, 1955, 1958) particularly treated structural change and capital accumulation as the key determinants of development in less developed countries.

The neo-classical theory of growth championed by Solow (1956, 1957) and Swan (1956) disaggregated the sources of growth mainly into three components of labour, capital, and technical progress with economic growth propelled principally by technical progress which is treated as exogeneous. The New Growth Theory (NGT) pioneered by Romer (1990, 1994) and its various refinements rest on four major planks. First, unlike the neo-classical thesis, economic growth arises from the deliberate action of households, firms, and governments. Hence, industrial and other targeted policies can be used to stimulate growth (growth is endogeneous). Second, human capital accumulation is a precondition for averting diminishing returns to physical capital as the accumulation of useful knowledge enhances both the productivity of labour and of physical capital (Lucas, 1988). Third, economic growth is sustained through increasing returns to scale engendered by continuous accumulation of human and physical capital. Fourth, globalisation of trade will spur international capital and technology flows into developing countries bridging the knowledge gap between developed and developing countries, and leading to higher growth rates in developing countries (Majumdar, 2005). The NGT thus suggest that differences in growth rates across countries can be explained by differences in the size and quality of human capital, sustained physical capital accumulation, and access to new knowledge through trade.

A great deal of empirical and theoretical research has been devoted to the understanding of the nexus among capital accumulation, structural transformation, and economic growth. In Acemoglu and Guerrieri (2008), structural change results from capital accumulation. As capital becomes more abundant output increases in the capital-intensive sector and a structural transformation in the direction of capital-intensive production ensues. With a particular focus on developing economies, Ju, Lin & Wang (2009), also argue that as capital accumulates, an economy's industrial structure advances towards more capital-intensive industries, and sustained economic growth is achieved when a country aligns its industrial structure with its capital endowment level. Berthelemy and Soderling (2001), based on panel estimations from 27 African countries from 1960 to 1996 identified capital accumulation as the main driver of Africa's extended growth of the 1960s and 1970s. Whereas, in the 1980s and 1990s gains in TFP drives growth with investment rate being too low to sustain economic growth. The first phase of growth (the 1960s and 70s) became stunted in part due to macroeconomic disorder and inefficiencies arising largely from a narrow degree of structural heterogeneity. Missio, Jayme Jr and Oreiro (2015) citing the Latin American Structuralist School of Thought described this condition as a situation where the production structure of an economy is restricted only to a small dynamic core of economic activities - relatively modern primary exports sector with a few associated manufacturing and service segments. Structural heterogeneity endogenises sustained economic growth through a balanced mix of physical capital accumulation and structural transformation underpinned by a deliberate system of rapid capital accumulation (physical and human), macroeconomic policy adjustment, and continuous technology upgrade (Berthelemy and Soderling, 2001; Krugman, 1994). In explaining the emergence of the 'Asian Tigers.' Lucas (1993), Krugman (1999), and Braude and Menashe (2004) acknowledged the prominent role of structural dynamics. Structural transformation, rapid physical capital accumulation, and technological progress-enhancing investment in scientific and engineering skills increasingly moved the Tigers from labor-intensive to more capital-intensive production (Kim and Lau, 1994; Tilak, 2002).

3. Data, model specification, and estimation procedure

3.1 The World Development Indicators (WDI) 2017 is the source of data analysed for this paper. Gross fixed capital formation (*FCF*), and gross domestic product (*GDP*) was recorded in constant 2010 US dollars. Expressed as a percentage of GDP are domestic credit to private sector (*DCR*) and gross domestic saving (*GDS*). The real rate of interest is a simple percentage (*RRT*). We construct a structural transformation index (*STD*) from the value added of agriculture, industry, and services measured in constant 2010 US dollars. *STD* is the ratio of agriculture value added to the combined value added of industry and services. The hypothesised specified relationship for estimation between gross fixed capital formation and the five explanatory variables is as in equations 1 below:

$$LFCF_t = \Phi_0 + \Phi_1 LGDP_t + \Phi_2 STD + \Phi_3 DCR_t + \Phi_4 RRT_t + \Phi_5 GDS_t + \upsilon_t \quad \ldots\ldots\ldots\ldots\ (1)$$

where Φ are parameters of equations 1 to be estimated and υ_t random error terms.

3.2 Unit root tests for stationarity

Macroeconomic analysis rests on the assumption of the long-run equilibrium of variables. That is, the underlying data-generating process of the time series is stationary. A stationary series displays mean reversion by fluctuating around a constant long-run mean, with the implication that the series has a time-invariant finite variance and that the effects of shocks dissipate over time. On the other hand, a non-stationary process suffers permanent effects from random shocks and thus has no tendency to return to a long-run equilibrium (Libanio, 2005). Therefore, we conduct stationarity checks on the variables in our model with consideration for the finite sample power and size properties of the test statistic. Hence our choice of the efficient unit root tests proposed by Elliot, Rothenberg, and Stock (ERS, 1996), known as the DF-GLS test. Unlike the standard augmented Dickey-Fuller test (ADF), the DF-

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GLS test transformed the time series through a generalised least squares (GLS) regression before testing for stationarity. Essentially, the DF-GLS involves fitting a regression on GLS-detrended series of the form:

$$\Delta y_t = \alpha + \beta y_{t-1} + \delta t + \varsigma_1 \Delta y_{t-1} + \ldots + \varsigma_k \Delta y_{t-k} + \mu_t \quad \ldots (2)$$

and test null hypothesis (H_0: $\beta = 0$) that y_t is a random walk, possibly with drift against two possible alternative hypotheses that: (i) y_t is stationary about a linear time trend or (ii) y_t is stationary with a possibly nonzero mean but with no linear time trend. ERS (1996) and later studies have shown that the DF-GLS test has significantly greater power than the regular ADF test when the autoregressive parameter is near one. We cross-checked our DF-GLS results with the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test to decide whether a variable is level stationary, *I*(0) or first difference stationary, *I*(1). The test results are as below:

Table 1. The result of Elliott-Rothenberg-Stock DF-GLS test

Variable	**Level**		**First difference**		**Order of integration**
	Test statistic	Critical value at 5%	Test statistic	Critical value at 5%	
LFCF	-1.448135	-1.951332	-1.961725	-1.951332	I(1)
LGDP	0.414602	-1.950687	-4.181939	-1.950687*	I(1)
STD	-0.942937	-1.950394	-6.560866	-1.950687*	I(1)
DCR	-2.805748	-1.950394*	-	-	I(0)
RRT	-5.886622	-1.950394*	-	-	I(0)
GDS	-4.040968	-1.950394*	-	-	I(0)

- Significant at the 1% level

Table 2. The result of Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test

Variable	**Level**		**First difference**		**Order of integration**
	Test statistic	Critical value at 5%	Test statistic	Critical value at 5%	
LFCF	0.419835	0.463000	-	-	I(0)
LGDP	0.665373	0.463000	0.378512	0.463000	I(1)
STD	0.615529	0.463000	0.082942	0.463000*	I(1)
DCR	0.170204	0.463000*	-	-	I(0)
RRT	0.376523	0.463000	-	-	I(0)
GDS	0.367951	0.463000	-	-	I(0)

- Significant at the 1% level

The two tests show both *LGDP* and *STD* stationary at first difference, and *DCR, RRT* and *GDS* level stationary. Both tests return different result for *LFCF*. Having no variable that is second difference stationary, we conclude that our series is a combination of level and first difference variables.

3.3 Cointegration test

Our stationarity tests show that variables in the model are a combination of I(0) and I(1) series. Thus, the cointegration test methods based on Johansen (1991; 1995) and the Johansen-Juselius (1990) that stipulate an integration order of one, *I*(1) for all variables are not appropriate and cannot be used for this study. We, therefore, opt for the Autoregressive Distributed Lag (ARDL) Bounds F test for cointegration. Generally, the flexibility of the ARDL modeling allows its application when variables are of different integration order (Pesaran and Pesaran, 1997). The only necessary condition for the application of the ARDL is that the order of integration of variables must not exceed 1 (Pesaran et al., 2001). In addition, ARDL modeling takes sufficient numbers of lags to capture the data generating process and avoid the problems resulting from non-stationary of time series data (Laurenceson and Chai 2003). Moreover, a dynamic error correction model (ECM) which integrates short-run dynamics with the long-run equilibrium without losing long-run information is derivable from ARDL through a simple linear transformation (Banerjee *et al.* 1993).

The asymptotic distribution for the Bounds F test statistic is non-standard under the null hypothesis that the series exhibits no level relationship regardless of the regressors' order of integration. The exact critical values for the bounds F test are not available for several combinations of *I*(0) and *I*(1) variables (Orhunbilge and Tas, 2014). However, Pesaran et al. (2001) calculated the bounds on the critical values for the asymptotic distribution of the F statistic under different scenario for the number of regressors (k), sample size, different model specifications, and for each conventional levels of significance. At all times, the lower bound is based on the assumption that all of the variables are level stationary, *I*(0), and the upper bound is on the assumption that all of the variables are first difference stationary, *I*(1). The variables are *I*(0), and no cointegration exists when the computed F test statistic falls below the lower bound. When the F test statistic exceeds the upper bound, by definition there is cointegration. The test is inconclusive when the bounds F test statistic lies between the lower and upper bounds.

The results of our cointegration tests are displayed in Table 3 showing cointegration at 1% level of significance, and by implication at all conventional significance level. The t-bounds test statistic value -11.74546 being greater than the upper critical bound value of -4.79 at 1% provide strong support the acceptance of cointegration of the variables.

3.4 Table 3. Bonds F test of cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	17.24448	10%	2.26	3.35
k	5	5%	2.62	3.79
		2.5%	2.96	4.18
		1%	3.41	4.68

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-11.74546	10%	-2.57	-3.86
		5%	-2.86	-4.19
		2.5%	-3.13	-4.46
		1%	-3.43	-4.79

3.5 Model diagnostics

In constructing equation 1, we take the assumptions that the response of the *LFCF* to the five explanatory variables are linear in the Φ parameters and that the errors are independent and identically distributed normal random variables with mean zero and constant variance. The diagnostic tests are to ensure that these assumptions are valid in the results of our regressions so that subsequent inference and conclusions from the regression are not faulty. To this end, three residual diagnostics – normality, serial correlation, and heteroskedasticity test -will be performed. The regression assumptions are valid in the results if in each case the p-value of the test statistic is greater than the level of significance of the test. Lastly, the stability of the model will be interrogated using recursive estimates. All tests will be carried out at 5% level of significance. The results of the diagnostic tests will be reported in section 4 after the regression results.

4 Regression results and discussion

4.1 Regression results

Having satisfied the necessary conditions for fitting a regression, we run an ARDL regression to determine the direction, magnitude, and significance of the response of gross capital formation (*LFCF*) to each of the five independent variables. The model selection was based on Akaike Information Criterion (AIC) having maximum lags of 5 for the dependent variable and 3 for the dynamic regressors. The short-run and long-run regression results are presented in Tables 4 and 5, respectively.

Table 4. Error correction (ECM) regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	-11.97605	1.016372	-11.78313	0.0000*
D(LFCF(-1))	0.218846	0.081991	2.669156	0.0175**
D(LFCF(-2))	-0.193183	0.073947	-2.612442	0.0196**
D(DCR)	0.001265	0.003220	0.392875	0.6999
D(DCR(-1))	-0.008837	0.003323	-2.659713	0.0178**
D(DCR(-2))	-0.003924	0.003323	-1.180850	0.2560
D(GDS)	0.005603	0.001847	3.032795	0.0084*
D(GDS(-1))	-0.015481	0.002956	-5.238122	0.0001*
D(GDS(-2))	-0.011538	0.002540	-4.541645	0.0004*
D(LGDP)	0.933127	0.236967	3.937788	0.0013*
D(LGDP(-1))	-0.613696	0.254174	-2.414467	0.0290**
D(STD)	-1.069830	0.893995	-1.196685	0.2500
D(STD(-1))	2.379873	0.797084	2.985723	0.0092*
CointEq(-1)*	-1.091222	0.092906	-11.74546	0.0000*

Note: * and ** indicate that the coefficient is significant at 1% and 5%, respectively.

Table 5. Long run regression result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCR	0.021341	0.004420	4.828552	0.0002*
GDS	0.019351	0.004630	4.179108	0.0008*
LGDP	1.354253	0.080303	16.86439	0.0000*
RRT	0.003369	0.001696	1.986394	0.0656***
STD	-3.776576	1.197611	-3.153425	0.0066*

Note: * and *** indicate that the coefficient is significant at 1% and 10%, respectively.

The regression results reported above are validated for reliable inference and conclusion by results of the diagnostic tests. The p-value of the test statistic for each of the normality, serial correlation, and homoscedasticity tests is insignificant at 5% level (see Table 6), and the recursive test attests to the long run stability of the model as in Figures (a) and (b).

Table 6. Diagnostic results

Test	t-Statistic	value	prob	
Normality:	Jarque-Bera	0.219459	0.0896071	
Breusch-Godfrey Serial Correlation LM	F-statistic	0.970888	0.4384	F(3,12)
	Obs*R-squared	6.640702	0.0843	
Heteroskedasticity: Breusch-Pagan-Godfrey	F-statistic	1.178143	0.3781	F(18,15)
	Obs*R-squared	19.91416	0.3377	
	Scaled explained SS	4.536637	0.9994	

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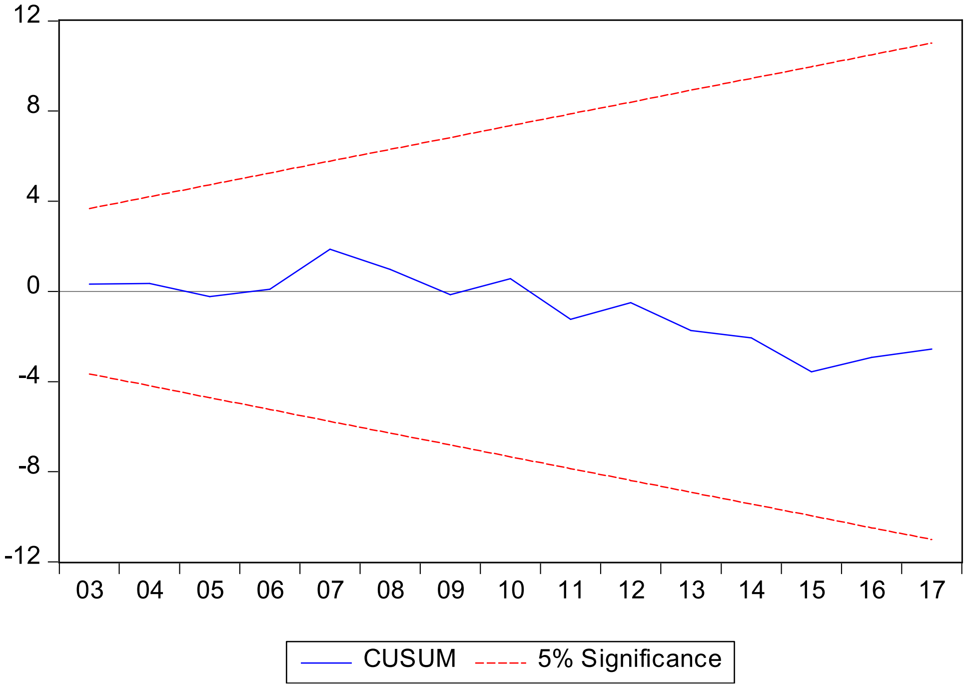

Figure 4a

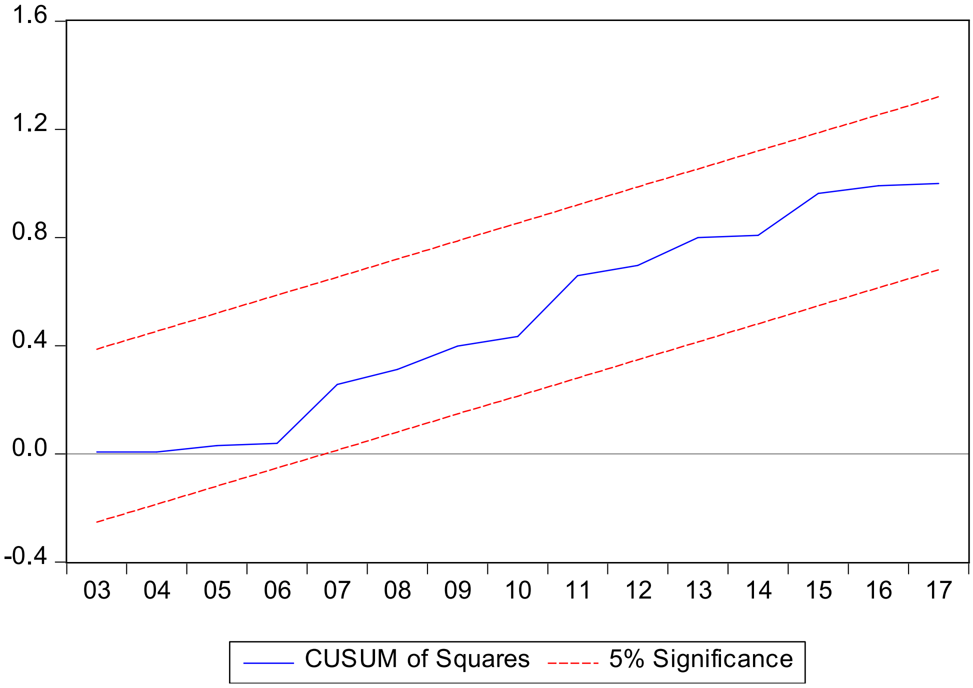

Figure 4b

4.2 Discussion of results

The negative error correction coefficient (-1.09) further assures the existence of cointegration of the variables and eventual return to long-run steady state. Though the speed of adjustment to long-run steady state appears rather high, the diagnostic tests in Table 6 validate the results of the regression and stability of the model. Hence, we can safely make an inference from the results of the regressions. The short-run dynamics show that all the explanatory variables and their various lags offer a significant explanation for changes in the level of gross fixed capital formation, except for the current period and lag 2 of domestic credit to the private sector (*DCR*), as well as the current period index of structural transformation (*STD*). The significant drivers of gross fixed capital formation in the short-run are its own first lag, the first lag of index of structural transformation, and the current levels of GDP and gross domestic saving. Specifically, domestic credit to the private sector appears remotely related to changes in the economy's stock of fixed capital. This may be attributable to the well-documented low volume and short-term nature of bank lending to the modern sector where fixed capital accumulation actually takes place. Evidence provided by the short-run dynamics regarding gross domestic saving (GDS) is that of an inverse relationship between GDS increase and investment in fixed capital. The negative significant coefficients of the first and second lags of GDS suggests that the effect of investment of domestic saving in fixed capital dissipate after the current period when the investment takes place. The current period level of GDP and the first lag of the index of structural transformation (STD) provides the strongest and significant stimulus for growing the fixed capital formation.

In order of magnitude and statistical significance fixed capital formation, in the long-run, grows significantly in response to increases in the level of the GDP, domestic credit to the private sector, gross domestic saving, and the real rate of interest. Appropriate interest rate regime that promotes the mobilisation and sustenance of large domestic saving as well as provides an incentive for private sector borrowing will provide a strong push for GDP growth which drives fixed capital formation. Long-run capital formation in Nigeria has been due principally due to GDP growth and not necessarily the growth of the modern sector which typifies structural transformation. As agriculture value added in the GDP increase relative to the combined value-added contribution of the modern sectors, fixed capital formation declines representing that a large mass of the GDP is non-capital intensive.

5. Conclusion and recommendations

Our analysis in section 1.1 of the structural transformation and capital formation in Nigeria throw up a number of findings including that there is thus a strong negative correlation between structural transformation and capital formation. The ratio of agriculture value added to modern sectors' value added in the GDP has trended upward from 1981 to 2017 while capital formation has trended downward in the same period. On the other hand, there is a moderate positive correlation between structural transformation and economic growth. These findings are consistent with the results of our long-run regression. If the pattern of structural transformation is capital formation depressing in the long-run, then GDP expansion results principally from non-capital intensive activities. Hence, neither transformation toward the modern sectors nor capital formation is the source of GDP expansion in Nigeria. The industrial structure is thus weak comprising largely low-capital intensive industries.

Fixed capital accumulation is an integral part of the development process and may be driven by policy targeted at shifting productive resources from agriculture to the modern sectors with a deliberate focus on export orientation. Nigeria can achieve this by mapping its areas of comparative and competitive advantages and seek to exploit them with medium and high technology processes. Medium to high technology processes naturally requires the accumulation of fixed capital and the associated human capital that enhances the productivity of capital.

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