

Financial Intermediation and Economic Performance in Nigeria: An ARDL Approach

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Abstract

The persistence of frictions and imbalances and the role finance plays to even out instabilities necessitates financial intermediation. Consequently, attentions of scholars are drawn on how it sways economic growth but it appears there is this begging for answers on how the intermediations could influence economic performance beyond economic growth. This paper adopting Auto-Regressive Distributed Lag bounds testing approach reflected on financial intermediation in an attempt to assess how it has affected economic performance (proxied by output per capita). The empirical results denoted that funds to the private sector are trapped in the incessant risks prevalent in developing economies; the implication is that any increase in per capita output could have emanated from seldom-productive sources like sales of natural resources that rarely have intersectoral links. The study thus recommends that there should be a consistent fight from the demand and supply side plus political approach to ensure adequate monitoring.

Key Words: Economic Performance; Output per Capita; Long-Run; Short-Run; Financial Intermediation; ARDL Model

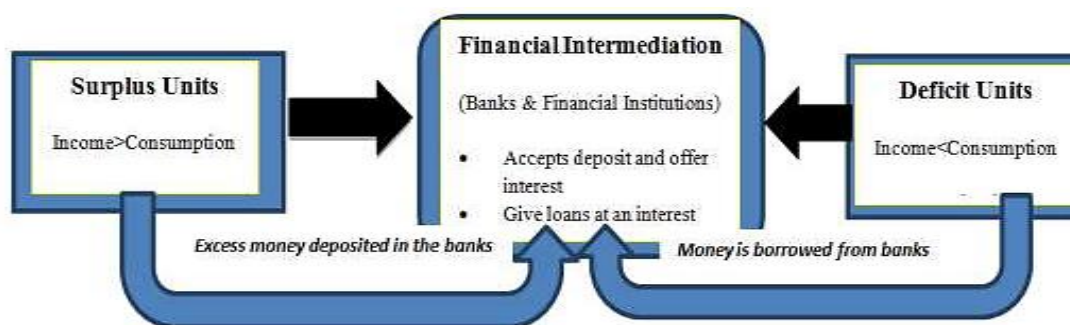
1. INTRODUCTION

Background to the Study

Finance apparently is an important lubricant needed on the wheels of an economy to drive on an even keel. Finance traditionally is seen as a useful tool for expanding and enhancing the productive capacity and potential of an economy. Hence it can be asserted that finance appears as the tool that could help to accelerate the achievement of macroeconomic objectives which include equitable distribution of income, stimulating indigenous entrepreneurship especially micro small and medium scale enterprises (MSMEs), full employment, technological development and equilibrium balance of payment. There is a symbiotic relationship as posited by Onodugo, Kalu and Anowor (2013) existing between needed funds to the real sector and the speed of growth of an economy. The essential task of the financial system is to reposition financial resources from the surplus spending economic units to the deficit spending economic units in order to bring into being goods and services and as well to make investments in new equipment and facilities so as to stimulate the growth of the economy and improve the standard of living of citizens (see: Onodugo, Kalu&Anowor, 2013). Financial development connotes advancement in the performance of financial intermediation, greater diversification opportunities, enriched information quality and better incentives for prudent lending and monitoring (Ewetan&Okodua, 2013; Alege&Ogunrinola (2008);

Acemoglu&Zilibotti, 1997).

Theoretically, the assumption of a simple financial intermediation is typical of households (surplus spending units) having financing capacity and firms (deficit spending units) having financing needs. Therefore financial intermediation is an act of mobilizing financial resources from depositors (savers) by banks and non-banks financial institutions and channeling (lending) same to eligible borrowers over a specified period at specified rate. It involves making payments for customers, transfer and guarantees on behalf of their customers. The institutions according to Central Bank of Nigeria (CBN, 2018) that carry out the intermediaries are banks, micro-credit firms, insurance firms, pension funds, leasing companies, etc. The informal has no formalized institutional framework, no formal structural rates and comprises of local Money Lenders, Thrifts, Savings and Loans associates and all forms of Thrift associations (Onodugo, Anowor&Ofoegbu, 2018).



From the above, credits from the financial intermediaries should enhance the productive capacity of firms and strengthen their potentials to help grow the economy. This ideally captured the supply-led hypothesis which argued that the activities of financial institutions as financial intermediaries serve as useful tool for increasing the productive capacity of an economy (See: Olowofeso, Adeleke, &Udoji, 2015; Onodugo, Anowor, Ukwani, &Ibiam, 2014; Gerschenkron, 1962). This implies that the role of the financial system through financial intermediaries predicted on the fact that it acts as an engine of growth by broadening domestic production base, expanding the export base, narrowing the inequality gap, reducing the unemployment rate, abetting the escape from poverty trap and sustaining the growth process.

The ability of an economy as argued by Mahran (2012) to mobilize financial resources to ensure easy access by investors has much to do with sustaining long-term economic growth. However, Nigerian economy in the past six decades after independent has been experiencing distortions especially in the ability of boasting of a robust financial system. This sounds axiomatic going by the reality that the link between financial sector development and economic growth in Nigeria appears vague. One of the reasons for the above as contended in Agbarakwe, Anowor and Ikue (2018) is that bulk of investments in Nigeria and other developing economies are in form of private foreign investments consisting of investors who sourced investment funds from home countries and these funds displace host/domestic financing. Another reason as presented by Mahran (2012) is caused by the under-developed financial system in developing economies often accompanied by structural institutional changes which makes it very problematic to separate the impact of each on economic growth. In addition, scholars like Alege and Ogunrinola (2008), Alenoghena, Enakali-Osoba and Mesagan (2014) argued that the much growth experienced in Nigeria could have emanated from seldom-productive sources like sales of natural resources that rarely have intersectoral links. More so credits to the private sector seems considerably low and could be one of the reasons for this gap.

The strength of Schumpeter's (1911) hypothesis on economic growth hinges on the assumption that real sectors are held back by scarcity of financial resources that are needed for productive activities that can stimulate the economy and push the aggregate production possibility frontier outward. This involves that vibrant financial system, armed with bulk of capable financial intermediaries, is an essential determinant

of economic growth which goes along with enhance and efficient production process. The propositions above were sustained by Shaw (1973), Mckinnon (1973), Bencivenga and Smith (1991) as they asserted that financial institutions stimulate economic growth by assisting investors to capitalise on investment opportunities through deposit mobilisation and lending function. These scholars argued that financial deepening and savings enhance investment particularly in the industrial and manufacturing sectors which generates a positive impact on economic growth. Financial deepening according to these scholars enhances financial sector development which is usually accomplished by relaxation of the credit access on constraints facing domestic firms, especially small and medium industries. Theoretically, financial institutions mobilise investment funds and ensure their efficient allocation, reduce risk by providing liquidity insurance, allow an efficient risk pooling among various investment projects and enrich information asymmetries to achieve efficiency in screening and monitoring investment projects.

Some scholars forthrightly disagreed with the theoretical postulations that the activities of financial intermediaries in the financial system spur economic growth. Levin, Loayza and Beck (2000), Allen and Ndikumana (1998) and Korkmaz (2015) particularly questioned the status and role of financial intermediaries in spurring and stimulating economic growth. Robinson (1952) argued that financial system do not impel economic growth rather it simply respond to development in the real sector. Shan (2005), Zang and Kim (2007) found in separate studies that financial sector has insignificant influence on economic growth and that there is no evidence of strong causal link between them. On the contrary, there is considerable evidence that financial intermediation could be essential for growth. For instance, Hassan, Sanchez and Yu (2011), Bangake and Eggoh (2011) found in individual studies that there is a strong long-run connection between financial intermediation and economic growth. Hassan, Sanchez and Yu (2011) further found out that there exist bi-directional causality between financial intermediation and economic growth among Sub-Saharan African countries.

The nexus between financial intermediation and economic growth has long been a subject of intense scrutiny. However, it is too hasty to uphold any of the views either for financial intermediation spurring economic growth or against. The major concern of this paper is that whatever change resulted from financial intermediation should be reflected in the economic performance of the said economy. Apparently there are yet to be studies that had examined how financial intermediation affects output per capita (as a proxy for economic performance) as well as the direction of casualty between them. Given these concerns, this study therefore is an attempt to explore the empirical nature of the linkage between financial intermediation and economic performance in Nigeria.

2. MATERIAL AND METHOD

From the pre-estimation tests conducted, not all the specified variables are stationary at order zero $I(0)$ or at order one $I(1)$. Interest rate (INTR) is stationary at $I(0)$ while the rest of the variables, Gross Domestic Product Per Capita (GDPPC), Credit to Private Sector (CPS) and Liquidity Ratio (LR) are stationary after differencing once. This study is focused on modeling the dynamic relationship that exists between existing variables by adopting an Auto-Regressive Distributed Lag (ARDL) bounds testing approach. This approach solves the problems of testing the existence of a level relationship between regressors and regresand especially when it is not known with certainty whether the underlying regressors are trend- or first-difference stationary.

This study mainly aimed to investigate the short-run and long run impact of financial intermediation on GDPPC in Nigeria under the framework of ARDL. The approach as mentioned earlier has some econometric advantages over the Engle-Granger (1987) and maximum likelihood based approach proposed by Johansen and Juselius (1990) and Johansen (1988, 1991) cointegration techniques.

3. DATA AND SOURCE

The scope of this study is limited to Nigeria straddling on data within the time period of 1970–2018,

which is duly informed by data availability consideration. The dataset is from Central Bank of Nigeria (CBN).

Improving upon the theoretical postulations, economic performance (ECP) is expressed as a function of financial intermediation (FINT). This is expressed by equation (1):

$$ECP = f(FINT) \tag{1}$$

In this study, the ratio of the aggregate output per population reflected in gross domestic output per capita (GDPPC) is used as a measure of and as a proxy for economic performance. Financial intermediation is captured through Credit to Private Sector (CPS) and Liquidity Ratio (LR), Interest rate (INTR) was added in the model as relevant variable in the financial sector. According to Alenoghen, Enakali-Osoba, and Mesagan (2014) a major determinant of money supply is interest rate.

Dependent Variable: Gross Domestic Product Per Capita (GDPPC) Proxy for economic performance

Independent Variables: Credit to Private Sector (CPS); Liquidity Ratio (LR) and Interest Rate (INTR)

Model Specification:

$$\Delta \ln GDPPC_t = \beta_0 + \sum_i = 1\beta_1 \Delta \ln GDPPC_{t-1} + \sum_i = 1\beta_2 \Delta \ln CPS_{t-1} + \sum_i = 1\beta_3 \Delta \ln LR_{t-1} + \sum_i = 1\beta_4 \Delta \ln INTR_{t-1} + \pi ECM_{t-1} + \lambda CPS_{t-1} + \lambda LR_{t-1} + \lambda INTR_{t-1} + \varepsilon_{t-1} \tag{1}$$

4. PRESENTATIONS OF RESULTS AND DISCUSSION

Unit- Root Test:

We conduct unit root tests using the Augmented Dickey-Fuller (ADF) tests as well as the Phillips-Perron test, to ensure that none of the variables are integrated of order 2, i.e., I (2), because, in case of a variable integrated of order 2 I(2) or more, ARDL procedures makes no sense. The Phillips Perron test is also used to test the unit root in order to take care of the dynamics omitted by the ADF estimates.

: Table 1: Results of Unit Root Tests

Variable	Augmented Dickey-Fuller (ADF)			Phillip Perron (PP)			Decision
	Level	First Difference	I(d)	Level	First Difference	I(d)	
GDPPC	-1.5862	-3.5826**	I(1)	-2.0690	-5.7960***	I(1)	I(1)
CPS	-1.9497	-4.9409***	I(1)	-1.7485	-4.7478***	I(1)	I(1)
LR	-2.6478	-5.8550***	I(1)	-2.0426	-6.2042***	I(1)	I(1)
INTR	-3.3022**	NIL	I(0)	-5.9410***	NIL	I(0)	I(0)

Source: Computed by Authors with Eviews 9

Note: *** = 1%, 5% and 10% level of significance; ** = 5% and 10% level of significance; and * = 10% level of significance.

The results of Augmented Dickey Fuller (ADF) unit root tests as presented in table 1 corroborate that of the Phillip Perron (PP) tests. All the results are stationary at First Difference I(1) except interest rate (INTR) which is stationary at level I(0). Since the order of integration of the variables are mixed; and none of the variables is stationary at second difference, it becomes justifiable to employ the ARDL model. Therefore we can test for the long run or cointegration relationship using the ARDL.

Table 2:ARDL-Bound test for Cointegration

Test Statistics	Value	K	Level of Significance	Critical Value Bounds	
				I(0)	I(1)
F-Statistics	5.986417	3	10%	2.72	3.77
	5.986417	3	5%	3.23	4.35
	5.986417	3	1%	4.29	5.61

Source: Authors computation with Eviews 9

From the results in table 2, it is clear that there is a long run relationship among the variables, since the F-statistic is higher than the upper bound critical value at 1%, 5%, and 10% level of significance. This implies that the null hypothesis of no cointegration among the variables is rejected.

Short-run and long run impact of financial intermediation on performance of Nigerian economy (Proxy by gross domestic product per capita in Nigeria)

Table 3: Regression Results for the impact of financial intermediation on performance of Nigerian economy

Selected ARDL (3, 3, 3, 3) Model Based on AIC				
Short Run Results				
Variable	Coefficient	Std. Error	t-Statistics	Probability
DLN(CPS)	0.053311	0.149340	0.356976	0.7255
DLN(CPS(-1))	-0.245903	0.171978	-1.429850	0.1709
DLN(CPS(-2))	0.321399	0.124910	2.573044	0.0197
DLN(LR)	0.454501	0.195049	2.330192	0.0324
DLN(LR(-1))	0.299680	0.334522	0.895847	0.3828
DLN(LR(-2))	-0.550218	0.246460	-2.232481	0.0393
D(INTR)	0.007138	0.004054	1.760968	0.0962
D(INTR(-1))	-0.002832	0.004829	-0.586428	0.5653
D(INTR(-2))	-0.011634	0.005051	-2.303274	0.0342
ECM (-1)	-0.519197	0.143513	-3.617762	0.0021
Long Run Results				
L(CPS)	-0.049599	0.354495	-0.139915	0.8904
L(LR)	0.853391	0.403428	2.115347	0.0495
INTR	0.045959	0.017522	2.622980	0.0178
C	2.705660	0.277834	9.738396	0.0000
Diagnostic Tests				
Jarque-Bera Normality Test	Obs* R-squared	Prob value	Conclusion	
	0.363598	0.840031	Normally Distributed	
Breusch-Godfrey Serial Correlation	Obs* R-squared	Prob value	Conclusion	
	3.510957	0.1928	No Serial Correlation	
Heteroscedasticity Test	Obs* R-squared	Prob value	Conclusion	
	12.08763	0.5013	No Heteroscedasticity	
Ramsey RESET Test	F-statistics	Prob value	Conclusion	
	0.406743	0.5372	Correctly Specified	
R-squared = 0.830571		Adjusted R-Squared = 0.689849		
Durbin Watson Stat = 2.405581				
F-Statistic = 4.652701		Prob(F-Statistics) = 0.001634		
Akaike Info Criterion = -1.412983		Schwarz Info Criterion = -0.775832		

Source: Authors computation with Eviews 9

The short-run and long-run ARDL results on the impact of financial intermediation on economic performance of Nigeria are presented in Table 3. In the short-run, credit to the private sector showed to have negative and statistical significant impact on gross domestic product per capita even in the current period. The probability value (i.e., 0.0197) of the second period lag of credit to the private sector is less than 5%. Intuitively, a 1% growth in credit to the private sector increases gross domestic product by 32% in the short run, at least in the second period lag. This finding is in line with that of (Onodugo, Kalu&Anowor, 2013) who found that credit to the private sector seems explained the variation in

economic growth. Liquidity Ratio (LR) in the short-run has positive and statistically significant impact on gross domestic product per capita even also in the current period. The probability value (i.e., 0.0324) of LR in the short-run is less than 5%; this therefore suggests that a 1% growth in liquidity ratio in this period led to 45% rise in gross domestic product. The interest rate with probability value of 0.0342 especially in the second period lag in the short-run has an expected negative impact on the gross domestic product per capita. The interest rate coefficient showing -0.011634 indicated that a 1% growth in interest rate decreases gross domestic product per capita by 1.16% in the short run. This finding is also in line with that of (Onodugo, Kalu&Anowor, 2013) who found that interest rate in the form of lending rate has negative impact on economic growth.

The long run result supplements that of the short run. We found that the only variable that conformed to a priori sign is the liquidity ratio. It has the expected positive sign and with probability value of 0.0495, the variable is statistically significant such that a unit increase in it will bring about 85 units increase in gross domestic product per capita. The negative sign of credit to the private sector does not conform to a priori expectations. More so, credit to the private sector failed the statistical significant test in the long-run. This outcome can be attributed to the structural defect of Nigerian economy where the private sector appears to be crowded out. Funds to the private sector are trapped in the incessant risks prevalent in the economy (See: Anowor&Nwanji, 2018; Onodugo, Obi, Anowor, Nwonye, &Ofoegbu, 2017) Interest rate though with a probability value of 0.0178 appeared to be significant but the sign does not conform to theoretical expectation and this also is not far from structural defects. The economic implication is that the increase in GDPPC could have emanated from seldom-productive sources like sales of natural resources that rarely have intersectoral links.

The coefficient of the error correction model (ECM) is negative and significant. The result of the ECM suggests that 51.9% of deviation from the long-run equilibrium level of gross domestic product per capita is corrected annually. The diagnostic tests confirm that the estimated model satisfied all the required properties. The residual series are normally distributed as suggested by the Jarque–Bera statistics. The model has no serial correlation as indicated by the Breusch–Godfrey LM test, and the residuals are homoscedastic as suggested by the heteroscedasticity test. Furthermore, the Ramsey RESET test shows that the model is well specified with the correct functional form. The R squared is 68%, suggesting that the estimated model has a good fit.

Pairwise Granger Causality

Table: 4Granger Causality Test

Pairwise Granger Causality Tests

Date: 19/02/2020 Time: 19:05

Sample: 1970 2018

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LN(CPS) does not Granger Cause LN(GDPPC)	49	1.03590	0.3677
LN(GDPPC) does not Granger Cause LN(CPS)		4.74297	0.0165
LN(LR) does not Granger Cause LN(GDPPC)	49	3.54504	0.0419
LN(GDPPC) does not Granger Cause LN(LR)		3.23974	0.0537
INTR does not Granger Cause LN(GDPPC)	49	4.07226	0.0276
LN(GDPPC) does not Granger Cause INTR		1.91598	0.1654
LN(LR) does not Granger Cause LN(CPS)	49	8.81626	0.0010
LN(CPS) does not Granger Cause LN(LR)		1.11342	0.3421

INTR does not Granger Cause LN(CPS)	49	0.15027	0.8611
LN(CPS) does not Granger Cause INTR		1.40889	0.2607
INTR does not Granger Cause LN(LR)	49	0.72015	0.4952
LN(LR) does not Granger Cause INTR		4.10660	0.0269

The Granger causality test in table 4 shows the direction of causality between the variables and also indicates how the behaviour of a variable in the current period can forecast the growth of another in the long run. From the table, the direction of causality is based on the probability values and this study uses 5% level of significance in deciding the direction of causality. Credit to the private sector does not cause the gross domestic product per capita but gross domestic product per capita does cause credit to the private sector. Liquidity ratio does cause gross GDPPC but GDPPC does not cause liquidity ratio. Interest rate does cause GDPPC but GDPPC does not cause interest rate. Liquidity ratio does cause credit to the private sector but credit to the private sector does not cause liquidity ratio. There is no causal relationship between interest rate and credit to the private sector. Interest rate does not cause liquidity ratio but liquidity ratio does cause interest rate.

The outcomes above are in consonance with the results of ARDL model adopted in this study.

5. STABILITY TEST SUMMARY

The cumulative sum (CUSUM) test and cumulative sum (CUSUM) of squares test were adopted to test the stability of the model. The results of the test are shown below in figures 1 and 2 respectively.

Figure 1: CUSUM Test

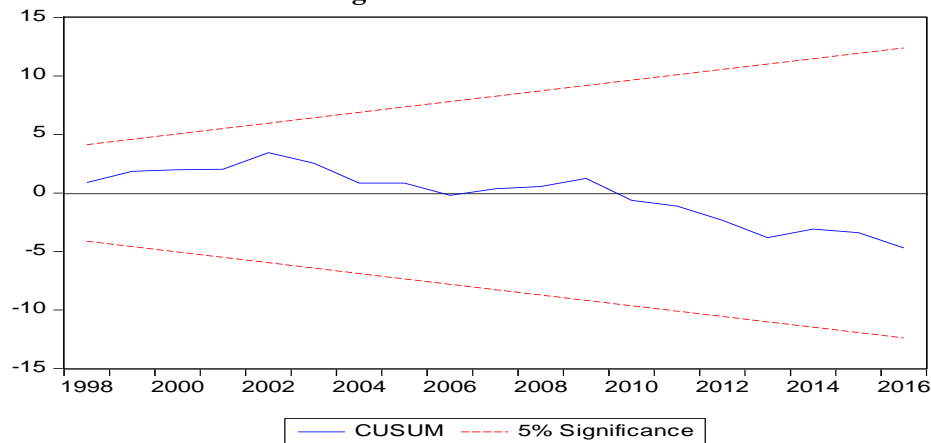
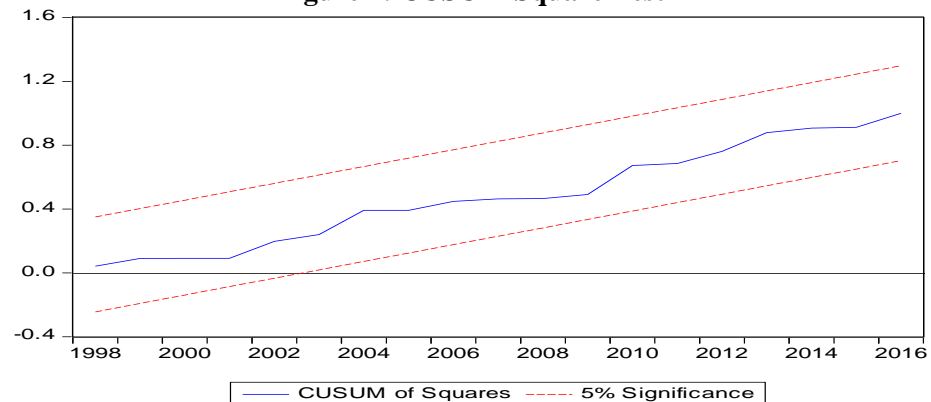


Figure 2: CUSUM Square Test



The existence of parameter instability is established if the cumulative sum of the residuals and CUSUM square go outside the area between the two critical (dotted) lines. From the figures above, it can be seen that the stability of the model is established; since the CUSUM and CUSUM Square lie within the critical lines.

6. CONCLUSION AND RECOMMENDATION

Based on the results of this study, it is concluded that only liquidity ratio appeared to conform to theoretical expectation but it is same time worrisome that liquidity ratio cannot influence the behaviour of interest rate in the current period; it is merely managed with 0.0495 to cross into acceptance region. More so the signs of the other variables do not conform to theoretical expectations which make the Nigerian case a peculiar one. This has been attributed to structural defect. The variables included in the model from the Ramsey Reset Test are correctly specified and the data are found to be normally distributed.

Based on the findings, this study therefore recommends that:

- i) Since the level of financial intermediation has not translated into commensurate impact on gross domestic product per capita, there should be a consistent fight from the demand and supply side plus political approach to ensure adequate monitoring through dedicated private sector investors
- ii) Bank credit should be diversified to improve the fortunes of the real sector.
- iii) Institutional qualities in Nigeria should be strengthened, policies formulated should be reviewed from time to time to take care of changing situations/circumstances and committed efforts should be made to implement adopted policies very effectively.
- iv) New policies or review of existing policies should focus on promoting institutional values, reducing corruption, encouraging good governance system.
- v) The State should also muster the political will to enforce laws that will be beneficial to economic development.

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