

# Financial Deepening and Sustained Economic Growth in Nigeria

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**Abstract** The growth-finance nexus in Nigeria is investigated in this research. Prior studies used time-series data and classical linear regression mainly, as well as various financial deepening indexes and methodologies. These studies produced a mixed bag of results. This study is unique as it adopts quarterly data from the three arms of the financial industry (banks, stock markets, and insurance companies) which most previous studies neglected to focus solely on the banking sector. The Autoregressive Distributed Lag (ARDL), Error Correction Model, and the Granger causality test were used to examine the convergence and divergence technique. Prior researches overlook a variety of pre-and diagnostic tests. The findings revealed a long-short run co-integrating nexus. Financial indices respond to economic growth in a linear fashion. The insurance industry has a 28% impact on economic growth. The short-run finding demonstrates a 74% speed of convergence from explanatory variable-induced disequilibrium to long-run equilibrium. Economic growth reacts more quickly to the financial climate's shocks and dynamics. A bi-directional association was discovered using causality testing. Recapitalization of the banking and insurance sectors, as well as a review of the Monetary Policy Rate to enhance lending to the private sector and boost savings and investment, is among the recommendations.

**Keywords** Finance, Insurance Companies, Banking Industry, Economic Growth, Nigeria

**JEL Classification:** E44, E51, G3, C12, F43, O16, C12, C22, O1.

## 1. Introduction

The finance-growth link has sparked debate in both emerging and industrialized nations for decades. Following the global financial crisis of 2008-2010, along with the 2015-2017 recession in Nigeria, GDP declined by 2.06% between April and June 2016, stock market capitalization declined by 63.7%, and share price declined by 67.2%. The stages of financial system development vary per country and unquestionably determine the amount and type of capital that may be mobilized and allocated to productive sector investment. Before the 1986 "Structural Adjustment Program" (SAP) and the 2003–2007 "National Economic Empowerment and Development Strategy" (NEEDS), the negative real interest rates, high tax burden on financial earnings, financial misallocations, and reserve requirement ratios, among other factors, can be accredited to the Nigerian financial climate authoritarianism. The government searched for methods to avert future recessions and financial repression while also nurturing the financial sector and economy. The shift to SAP policy in 1986 forecasted expected financial and economic growth. Nigeria's economic and financial climate has however remained underdeveloped, despite all hopes, creating a path for alternative financial deepening tactics.

Financial deepening is a multi-pronged strategy that simplifies payment services, financial intermediation, diversification, liquidity crisis mitigation, and inter-temporal risk, among other things [1]. It is also a strategy whose implementation affects development by promoting larger investments, increasing money supply

ratio to GDP, and improving the standard of living and income.

According to financial theory, the resourceful financial intermediation process is free of restriction and serves to promote and stimulate economic progress. Credit availability, accessibility, and affordability by productive sectors of an economy at a pace that is not damaging to their inclusive growth are vital, according to extant economic literature.

Financial shallowness as a function of an unproductive financial system weakens the economic, business, and financial climate [2]. According to World Bank data on financial sector activity, credit to the private sector “% of GDP” in Nigeria falls below par compared to other emerging economies in Africa. The report indicated that credit to the private sector in 2013 stood at 12.59%. Its highest (lowest) values over the past 48 years stood at 38.35% and (3.86%), recorded in 2007 and (1970).

In a bid to stabilize and fast-track the pace of economic and financial development in Nigeria, various economic policies were adopted, including the banking sector consolidation which boosted banks capitalization geometrically from ₦2 billion to N25billion in 2004 to ensure the dependability of the financial sector.

The presence of a developed financial market encourages capital accumulation efficiency, higher savings, and investment rates [3], and reduces systemic risk, among other things [4]. It also reduces poverty and inequality.

In determining the impact of finance on growth and establish their causal linkage in Nigeria, the following four basic hypotheses are investigated: (i) finance-led (ii) growth-led (iii) bi-directional causality finance-growth (feedback hypothesis); and (iv) no causal relationship finance-growth (neutral hypothesis)

Using linear regression, studies on the nexus spanning decades show a wide range of findings across countries and periods. Previous research [5,6, 7, 42], for example, focused on financial conglomerates, banking, and stock market development while disregarding the insurance industry.

This research adds to the body of knowledge by investigating the insurance industry, as well as the banking and stock market. Also, it adopts Zivot and Andrews test for structural breaks and causality test for directional causality [8] using the baseline model's methodologies.

## 2. Literature Review

The causal relations between financial system development and economic growth were originally articulated in 1911 by Schumpeter [33] utilizing the finance-led hypothesis of financial sector expansion through capital accumulation. This linkage was further reinforced by [1] on that theoretical foundation of investment, financial instruments, domestic savings, boosting growth through financial system stability [9].

Empirical findings of [10] in 28 African countries, from 1970-2012, [11] in 27 medium-income countries used the finance-led growth to confirm that financial sector growth drives growth in these countries. In cross-sectional studies of finance impacting growth in Nigeria and growth affecting finance in Cote D'Ivoire, [12] revealed a variety of results. In high-income economies, [13] observed supply-led growth rather than demand-led growth.

In contrast to Schumpeter's 1911 finance-led-growth hypothesis, Robinson (1952) proposed the growth-led-finance hypothesis, which theorizes that growth is the stimulant for financial system development via GDP per capita growth rate [14]. [15] found a positive relationship between trade openness as a growth proxy, industrial production, and financial sector indicators in Jordan.

Finance-led growth was designated by Patrick (1966) as "supply-led growth and growth-led growth as a demand-led finance model" [16]. Internal and external economic and financial shocks, as well as financial sector stability, are cushioned by directional causality. The gap in cross-sectional studies can be attributed to unique countrywide stages of growth, according to [18; 19].

As a result, a country-specific study would address the nexus while taking into account country-specific stages of development. Patrick (1966) presented the "phases of development model," based on the idea that finance boosts economic growth in the early stages of expansion, then decreases to spur financial sector development [16, 38, 39].

The Casino Neutrality hypothesis is supported by financial and economic statistics. In 2011, the Middle East and North Africa (MENA) countries were found to be neutral [20]. [21] also noticed a lack of neutrality in the Gulf Cooperation Council (GCC) reporting that growth is driven by things other than financial statistics. Previous research's empirical evidence is shown in (table 1) below.

**Table 1.** Empirical Review

Author	Scope	Objective	Methodology	Findings
[22]	Middle-Eastern countries of Saudi Arabia, Turkey, and the United Arab	Financial deepening on economic growth	Multivariate framework	Positive relationship
[5]	Nigeria 1985-2014	Financial deepening on economic growth	Ordinary Least Square (OLS)	Positive relationship
[23]	Nigeria 1981-2012	Capital market and financial deepening on economic growth	Ordinary Least Square (OLS)	Positive relationship
[24]	Nigeria 1997-2016	Financial deepening on economic growth	Two-staged Least Squares Regression	Positive relationship
[25]	Turkey1984:01-2014:12.	Financial deepening on economic growth	Granger Causality	A positive relationship, supporting the demand-led growth hypothesis.
[26]	Jordan (1992-2014)	Financial deepening and economic growth	Granger causality and Johansen-Juselius cointegration	There is a bi-directional nexus between bank credit and economic growth
[27]	Nigeria 1981-2012	Financial deepening on economic growth.	Engle-Granger Cointegration technique and Error correction model	Money supply positively impact on economic growth.
[28]	European transition economies (ETE) 2000-2010	Financial deepening in ten European transition economies (ETE)	Vector Error Correction Model (VECM)	Countries with lower GDP per capita benefit significantly from financial deepening in the short-run and financial deepening indicators Granger causes real output in the long run.
[18]	Nigeria 1999-2019	Financial Development on Employment Rate	Autoregressive Distributed Lag Model (ARDL), and Error Correction Model (ECM),	Credit to the private sector and bank lending-deposit spread positively influence employment by reducing the unemployment rate.

Authors' Computation (2020)

### 3. Methodology

An empirical technique employing data sets from 1999:Q1-2019:Q4 was derived from the Nigerian economic and financial environment [37]. Various indices of financial deepening, including bank-based, market-based, and insurance-based activity, were investigated. Banking Sector Development (BSD) is proxied by the Ratio of Credit to the Private Sector to Economic Growth (CPS/GDP) and Ratio of Broad Money Supply to Economic Growth (M3/GDP), Stock Market Deepening (SMD) by financial market capitalization to GDP and Insurance Sector Deepening (ISD) by total insurance assets to GDP. Gross Domestic Product (GDP) measures the level of economic growth.

The use of Nigerian data clarifies the stages of growth in a developing economy whose structure and institutional characteristics differ from those of other countries in the same region. The formation of a new line of debate and proof on the finance-growth nexus are two of our core expectations.

The baseline ARDL was chosen per the [29] framework, to evaluate the nexus in hitherto unimaginable ways. To avoid specification bias, pre-tests are critical tools in determining the best estimating approach and model.

When structural breakdowns in the dataset are taken into account, typical unit root tests are inefficient. The endogenized break tests of Zivot and Andrews (1992), as well as other structural break tests that exogenously pick the break date, were used [8]. Diagnostic tests are run on the model estimations to ensure that the underlying econometric techniques are not being violated.

#### 3.1. Model Specification

Not only does the ARDL model provide long-short run correlations, but it also shows the Error Correction Model. This means that new evidence based on the ARDL, Error Correction Model (ECM), and Granger Causality model is being sought to fill in the gaps in the extant research in this domain. (eq) 1: The baseline relationship:

$$GDP_t = \delta_0 + \delta_1M3GDP_t + \delta_2CPSGDP_t + \delta_3SMCGDP_t + \delta_4TNGDP_t + \mu \tag{eq} 1$$

The data set of this study was transformed using the nature log to take care of the outliers for a meaningful analysis. The baseline relationship is further expressed as:

$$LGDP_t = \delta_0 + \delta_1LM3GDP_t + \delta_2LCPSGDP_t + \delta_3LSMCGDP_t + \delta_4LTNGDP_t + \mu \tag{eq} 1$$

**Where: GDP:** Gross Domestic Product, a proxy for Economic Growth

**LM3GDP:** Ratio of Broad Money Supply to Economic Growth (M3/GDP),

**LCPSGDP:** Banking Sector Development (BSD) measured by the Ratio of Credit to the Private Sector to Economic Growth;

**SMCGDP:** Stock Market Deepening (SMD) measured by market capitalization to GDP

**TNGDP:** Insurance Sector Deepening (ISD) measured by total insurance assets to GDP

**μ:** Error term.

**The Stationarity Properties of the Series**

The regression model with an endogenous break date selection design was used to carry out the Augmented Dickey-Fuller sequential technique for unit root test that utilizes the entire sample. The endpoint values were not recognized as break dates because of the break date selection and trimming processes.

As a robustness check on the unit root processes, Zivot and Andrews (1992) introduced the structural break test for endogenizing the break date.

**The ARDL Model**

This study adopted the ARDL technique due to its numerous benefits over other techniques which include: Efficiency in the face of small samples, ability to combine linear variables with different orders of integration, I (0), I (1), and being dynamic and less prone to autocorrelation

ARDL model is defined as following Pesaran and Shin (1999):

$$\Delta GDP_{qt} = \alpha_0 + \sum_{i=1}^p \alpha_i \Delta GDP_{qt-i} + \sum_{i=0}^p b_i \Delta L_n LCPSGDP_{qt-2} + \sum_{i=0}^p c_i \Delta L_n LM3GDP_{qt-3} + \sum_{i=0}^p d_i \Delta L_n SMCGDP_{qt-4} + \sum_{i=0}^p e_i \Delta L_n TNGDP_{qt-5} + \delta_1 GDP_{qt-1} + \delta_2 L_n LCPSGDP_{qt-2} + \delta_3 L_n LM3GDP_{qt-3} + \delta_4 I_n SMCGDP_{qt-4} + \delta_5 I_n TNGDP_{qt-5} + \mu_{qt} \quad eq(2).$$

Where; Δ = first difference operator

**Decision Rule:**

The null hypotheses:  $H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$  (There is no long-run relationship).

The alternative hypotheses:  $H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$  (There is a long-run relationship)

The F test determines whether there is a long-run relationship between the variables.

- (a) Long-run nexus (F-statistic > the upper bound value).
- (b) No long-run nexus (F-statistic value < the lower bound value).
- (c) Inconclusive results (F-statistic value falls within the range of upper and lower bounds values).

**4. Data Presentation and Analyses**

**4.1. Descriptive Statistics**

The mean, median, minimum, maximum, and standard deviation are the fundamental descriptive statistics shown in (Table 2). The kurtosis, as well as the skewness, are indicators of normality. The variable(s) are less platykurtic with their respective kurtosis less than 3 (<3), producing fewer risky outliers than normal.

**Table 2.** Basic Descriptive Statistics

Variable(s)	InGGDP	InCPSGDP	InSMCGDP	InTNGDP	M3GDP
Mean	10.526	14.537	8.622	12.233	18.651
Std. Dev.	1.007	5.320	1.394	0.916	4.744
Skewness	-0.474	-0.229	-0.796	-0.119	-0.242
Kurtosis	1.970	1.2177	2.208	1.467	1.373

Authors' Computation (2020)

**Table 3.** Unit Root Test

Variable(s)	Traditional ADF (Trend and Intercept)			ZAU Stat	Zivot and Andrews Unit Root Test (Trend and Intercept)			
	ADF Stat	Critical Value (0.05)	Order of Integration		Critical Value (0.05)	Break Date	Order of integration	Inference
InGDP	9.058	-4.568	0	-7.526	-5.08	2004Q1	1	Stationary
CPSGDP	-9.044	-3.465	1	-6.781	-4.590	2005Q2	0	Stationary
InSMCGDP	-8.054	-4.434	0	-5.936	-4.936	2007Q1	1	Stationary
InTNGDP	-9.014	-4.568	0	-4.930	-2.450	2009Q4	0	Stationary
M3GDP	-9.072	-3.465	1	-6.902	-3.672	2015Q4	1	Stationary

Authors' Computation (2020)

**4.2. Unit Root**

Following different test methodologies of study variables, the result in (Table 3) indicates the stationarity and integration levels of variables at I (1) and I (0). As p-values are (0.05), the combination of I (1) and I (0) orders of integration justified the adoption of the ARDL model. The unit root null hypothesis is rejected. The test results show the break dates were endogenously chosen following the techniques of estimation. The break dates are majorly in the new decade 2000s. A thorough survey of Nigeria’s economic and financial climate indicates that these were periods of thrilling volatility and economic oscillations instigated by lack of fiscal discipline, budgetary inadequacies, political instability, unimaginable

public-sector misappropriation, corruption among others.

The 2015 recession in Nigeria significantly impacted on resource mobilization and allocation for investment purposes in the (M3) money supply.

**4.3. Estimation**

The goodness of fit, 99% variation in the endogenous variable as accounted for by the exogenous variables are all presented in (table 4) by the R<sup>2</sup> of 0.99. The model is stable, with an F-statistic of 10509.09 and a p-value of 0.000. The Durbin Watson Stat of 0.752 suggests that a first-order positive autocorrelation is likely to exist.

**Table 4.** ARDL Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
InGDP(-1)	0.01679	0.038057	0.441361	0.6631
InGDP(-2)	2.39E-11	0.038218	6.26E-10	1.0000
InGDP(-3)	-5.62E-11	0.038218	-1.47E-09	1.0000
InGDP(-4)	0.245031	0.042743	5.732647	0.0000
M3GDP	-0.0352**	0.003010	-1.172536	0.2530
M3GDP(-1)	0.000845	0.003578	0.236042	0.8155
M3GDP(-2)	1.60E-12	0.003583	4.46E-10	1.0000
M3GDP(-3)	-4.07E-12	0.003583	-1.13E-09	1.0000
M3GDP(-4)	0.016952	0.003535	4.795561	0.0001
CPSGDP	0.0538**	0.004004	-13.43832	0.0000
CPSGDP(-1)	-0.000245	0.003009	-0.081354	0.9359
CPSGDP(-2)	9.49E-14	0.003009	3.15E-11	1.0000
CPSGDP(-3)	3.67E-14	0.003009	1.22E-11	1.0000
CPSGDP(-4)	0.049887	0.003373	14.79032	0.0000
InSMCGDP	0.0755**	0.018851	4.008759	0.0006
InSMCGDP(-1)	0.000942	0.016249	0.057945	0.9543
InSMCGDP(-2)	8.08E-12	0.016250	4.97E-10	1.0000
InSMCGDP(-3)	-1.89E-11	0.016250	-1.16E-09	1.0000
InSMCGDP(-4)	0.343340	0.021053	16.30816	0.0000
InTNGDP	0.2763**	0.048424	5.707883	0.0000
InTNGDP(-1)	-0.016004	0.049264	-0.324857	0.7482
InTNGDP(-2)	-3.90E-11	0.049377	-7.89E-10	1.0000
InTNGDP(-3)	9.26E-11	0.049377	1.87E-09	1.0000
InTNGDP(-4)	-0.236232	0.062888	-3.756381	0.0010
C	3.693576	0.326403	11.31600	0.0000
Other Parameters Estimate				
Model selection method:	Akaike info criterion (AIC)	Selected Model: ARDL		(4, 4, 4, 4)
R-squared	0.99	Durbin-Watson stat		0.752
Diagnostic Tests				
F-statistic	10509.09	Prob(F-statistic)		0.0000
BG-LM F-stat	8.9583(0.0215)	Het- BPG F-stat		6.2441(0.0143)
RESET	642.231(0.098)	JB-Normality		2.74651(0.253)

Authors’ Computation (2020)

**Table 5.** The ARDL Baseline Testing

Test Stat.	Value	Signif.	I (0)	I (1)
			Asymptotic: n = 1000	
F-Statistic	22.384			
K	4	10%	2.2	3.09
		5%	2.56	3.49***
		2.5%	2.88	3.87
		1%	3.29	4.37

\*\*\* at 5% level of significance.  
 Authors Computation (2020)

The Lagrange Multiplier Serial Correlation Test of Breusch-Godfrey was used. Its value of 8.9583 and the associated p-value of 0.0215 rule out the possibility of autocorrelation overriding the DW Stat result "with its inherent constraint." The Breusch Pagan and Godfrey (BPG) test for heteroskedasticity reveals that the model is homoscedastic, with no cases of non-constant residual variance.

The RESET test verifies that the model is stable and free of specification errors. Table 5 shows that the F-statistic value of 22.384 is higher than the upper and lower bound critical values at the 5% probability level. The presence of a long-run co-integrating relationship is

confirmed by the Bound test result.

**Error Correction**

The error correction profile of the model was explored when a co-integrating nexus was discovered in the model. Confirm the dependent variable's speed of adjustment to shocks and dynamics of disequilibrium induced by the explanatory variables.

**Table 6.** Short Run Error Correction Model Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	-0.738	0.018	-40.484	0.0000

Authors Computation (2020)

Table 6 shows that the CointEq(-1) coefficient of -0.74 is statistically significant and directly estimates the short-run pace of adjustment from disequilibrium induced by financial repression and economic growth crises back to long-run equilibrium by 74%. This shows that economic growth and financial deepening indicators adjust to shocks and dynamics in the financial and economic sectors at a fast rate.

The directional causality test of the variables is presented in table 7.

**Table 7.** Pairwise Granger causality tests result.

Pairwise Granger Causality Tests			
Sample: 1999Q1 - 2019Q4			
Null Hypothesis:	Obs	F-Statistic	Prob.
M3GDP does not Granger Cause InGDP	82	0.08805	0.9158
InGDP does not Granger Cause M3GDP		2.33667	0.0005***
CPSGDP does not Granger Cause InGDP	82	0.05949	0.0003***
InGDP does not Granger Cause CPSGDP		1.13141	0.0019
InSMCGDP does not Granger Cause InGDP	82	0.02029	0.0099**
InGDP does not Granger Cause InSMCGDP		1.48058	0.0039**
InTNGDP does not Granger Cause InGDP	50	0.04742	0.9537
InGDP does not Granger Cause InTNGDP		0.93409	0.0004**
CPSGDP does not Granger Cause M3GDP	82	0.61738	0.5420
M3GDP does not Granger Cause CPSGDP		0.00617	0.9938
InSMCGDP does not Granger Cause M3GDP	82	3.50751	0.0348
M3GDP does not Granger Cause InSMCGDP		0.94072	0.3948

\*\*Suggest causality at a given level of Significance  
 Authors Computation (2020)

**The Decision Rule:** The p-value determines the causal link between finance-growth in table 7. There is causation if the P-value of the two variables is less than 5%. It can be deduced that measures of financial deepening and economic growth have a directional relationship.

## 5. Discussion of Results

According to the findings of the study, there is a positive and statistically significant con-integrating relationship between financial deepening and economic growth in Nigeria. Financial deepening indices of stock market capitalization and private sector credit boost economic growth by 75% and 24%, respectively. The total assets of the insurance sector have a 28% influence on economic growth.

The 74% speed of convergence from disequilibrium induced by financial repression and economic growth crises to long-run equilibrium is shown in the short-run nexus.

Economic growth and financial deepening indicators respond to shocks and fluctuations in the financial and economic environment at a very fast rate.

Economic growth and financial deepening indicators react more quickly to shocks and changes in the financial and economic environment. Economic growth and financial deepening have a bi-directional link, according to causality tests. The findings of this study back up those of [30, 31, 3, 25, 36, 39] who found bi-directional causality. The findings break that of [32, 34, 35, 42] reporting a unidirectional causality.

## 6. Conclusion and Recommendations

The stages of Nigeria's economic and financial development influence the causal link between economic growth and financial deepening. Non-economic, economic and non-financial, and financial elements have emerged as a result of the central bank and monetary authorities' policy mix in Nigeria. The inclusion of the insurance sector has a positive impact on this nexus. During the study period, the banking industry had a positive and non-significant impact on Nigeria's economic growth. The long-run link indicated by the co-integrating nexus supports both supply-led and demand-led growth. Patrick's (1966) thesis is supported by the findings of [16].

The policy implications of this conclusion are that to improve Nigeria's economic and financial climate, emphasis must be paid to the level of development of the economy and financial system. According to [40, 41], it may improve capital accumulation efficiency or raise saving and investment rates. The financial system's operational and business activities, including the stock market, insurance, and banking sectors, must be examined holistically to drive growth and development. Through

banking and insurance sector recapitalization, ease of doing business, and access to financial services/ products, to encourage savings and investment, monetary policy rates should be revised to allow financial service providers to lend at a rate that is not detrimental to private sector expansion.

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