



Financial Deepening and Economic Growth in Nigeria: An Empirical Analysis

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Abstract

This paper examines the effect of financial deepening on economic growth in Nigeria for a period 1991 – 2021. Secondary data was sourced from the annual statistical report published by the Central Bank of Nigeria (CBN). Descriptive and quantitative analysis were employed; correlation analysis was performed to show relationship among the variables. The findings of this study also suggest that credit to the private sector has a positive influence on GDP. The study found that an increase in credit to the private sector can stimulate investment, entrepreneurship, consumption, and business expansion, which can contribute to economic growth. The findings of this study also suggest that equity capitalization has a positive influence on GDP. The study found that an increase in equity market capitalization can stimulate investment, corporate financing, innovation, and entrepreneurship, which can contribute to economic growth. Based on the findings of this study, the following recommendations are made: Policymakers should carefully manage the money supply to ensure that it is adequate to support economic growth. Financial institutions should monitor and manage the money supply in accordance with regulatory requirements and best practices to ensure stability and efficiency in the financial system. They should assess credit risk and provide credit to the private sector in a responsible manner, adhering to regulatory guidelines and best practices to ensure stability and sustainability in the financial system. Private sector entities should utilize credit effectively to support investment, business expansion, and innovation, which can contribute to economic growth and enhance their productivity and competitiveness. Policymakers should implement policies and regulations that promote the development of a well-functioning and transparent equity market, including measures to enhance investor protection, corporate governance, and market liquidity. Investors and market participants should engage in responsible investment practices, including thorough risk assessment and due diligence, to promote efficient and transparent equity markets that can contribute to economic growth. Companies should consider utilizing equity capitalization as a viable source of financing for investment and growth, which can contribute to their competitiveness and long-term sustainability.

Keywords: Financial deepening, Economic growth, Money supply, Private sector credit, Equity capitalization, VECM, Nigeria.

I. Introduction

Economic growth represents the increase in the value of goods and services produced in an economy over time. Since the emergence of growth theory, researchers have persistently sought to understand why countries grow, how long-run growth rates can be achieved, and what factors determine steady-state growth. Among the various determinants, the effectiveness of the financial sector has attracted considerable theoretical and empirical attention, leading to the concept of financial deepening defined as the development in quality, quantity, and efficiency of financial sector services (Attah-Botchwey et al., 2022).

Capital market development constitutes a vital component of financial sector development, complementing the banking system's role in economic advancement. Efficient capital markets facilitate price discovery, provide liquidity, reduce transaction costs, enable risk transfer, and attract foreign financial resources into domestic economies (Ngugi et al., 2008). Financial deepening encompasses the expanded delivery of financial services to all societal strata, the expansion of financial organizations, and the integration of informal markets into the official economic system (Nnenna et al., 2012; Kromtit&Tsenkwo, 2014).

The imperative for financial deepening stems from its potential to raise domestic savings, deepen the monetary system, and reinforce savings mobilization processes. Deep financial markets offer investors diverse financial instruments differentiated by returns, risks, and maturities, thereby enabling optimal portfolio allocation and fostering economic efficiency (Rahman & Mustafa, 2014). Conversely, underdeveloped financial

systems restrict access to funds, forcing economic agents to rely on high-cost informal sources and constraining activities that would otherwise spur growth (Otieno, 2013).

1.2 Statement of the Problem

Despite theoretical consensus on the importance of financial deepening, empirical evidence on the finance-growth nexus remains inconclusive. Four competing perspectives characterize the literature: the supply-leading view positing positive finance-to-growth causality; the demand-following view where finance responds to real sector developments; the bidirectional view suggesting mutual reinforcement; and the neutrality view asserting no systematic relationship. Cross-country studies typically support positive impacts, while time-series analyses often yield contradictory results.

In Nigeria, this debate assumes particular significance given the economy's fluctuating growth trajectory. While financial sector reforms have expanded financial assets, economic growth has demonstrated considerable volatility, raising questions about the effectiveness of financial deepening in stimulating sustainable growth. Furthermore, existing Nigerian studies predominantly focus on bank-based measures, neglecting stock market indicators, and fail to provide clear evidence on directional causality.

This study addresses these gaps by employing both bank-based and market-based financial deepening indicators within a unified analytical framework, examining both long-run relationships and causal directions over three decades (1991-2021).

1.3 Objectives of the study

The primary objective is to examine the relationship between financial deepening and economic growth in Nigeria. Specific objectives include:

1. To examine the relationship between money supply and GDP
2. To investigate the relationship between private sector credit and GDP
3. To study the relationship between equity capitalization and GDP

II. Literature review

2.1 Conceptual framework

2.1.1 Financial Deepening

Financial deepening refers to the increased provision of financial services with wider choices channeled to all levels of society. It encompasses the expansion of financial assets in an economy and marks improvement in the quantity, quality, and efficiency of financial intermediary services (Sackey & Nkurumah, 2012). According to Ndebbio (2004), a country's economic growth depends significantly on its level of financial deepening.

From a qualitative standpoint, deep financial markets: (i) offer savers and investors diverse financial instruments differing in liquidity, yields, maturities, and risk profiles; (ii) encompass multiple sub-markets trading different instruments; (iii) integrate domestic markets with international financial systems; and (iv) maintain interconnections through various financial institutions serving as market makers and intermediaries (Popiel, 2000).

Financial deepening performs five critical functions: facilitating goods and services exchange, mobilizing and pooling savings, acquiring and processing information for efficient capital allocation, boosting investment through corporate governance, and diversifying risk (King & Levine, 1993). These functions ultimately enhance output growth by ameliorating information asymmetry, enabling efficient capital allocation, and facilitating risk-sharing.

2.1.2 Economic Growth

Economic growth represents the sustained increase in an economy's welfare, measured as the annual rate of increase in gross domestic product (GDP). It reflects the economy's capacity to improve production of goods and services using available factors of production. Economic growth determines material well-being and serves as the primary indicator of economic health (Iram & Nishat, 2009).

Jhingan (2007) defines economic growth as the quantitative sustained increase in a country's per-capita output or income which is accompanied by increase in labor force, consumption and volume of trade. Odike A. I. and Jerome A. (2020) supports this definition as he posits that, economic growth is the process which leads to sustained increase in the output of goods and services per head. On the other hand, Todaro & Smith (2011) define economic growth as the increase in the market value of goods and services produce by economy over time. It is conventionally measured as the percentage of increase in real Gross Domestic Product (GDP).

2.1.3 Channels of Financial Deepening

Financial development affects economic growth through two principal channels. The capital accumulation (quantitative) channel operates through efficient resource allocation, monitoring of firms, risk management, savings mobilization, and facilitation of exchange (Levine, 2005). The total factor productivity (qualitative) channel operates through technology adoption and innovation financing, enabling technological progress and productivity enhancement (Ang, 2008; McKinnon, 1973).

2.1.4 Measures of financial (development) deepening

The construction of the variables to capture financial deepening is a difficult task due to a number of reasons. Financial services are provided by a wide range of financial institutions and agents. Among them, banks and stock markets both play a major role. In order to capture a complete picture, we need to consider different aspects of financial development, for instance, whether the financial sectors of the studied countries are dominated by banks or the stock market or both. However, our prime objective is to investigate long-run relationships.

According to Levine et al. (2000), financial deepening can be grouped into two categories, namely the banking sector and the stock market. The development of the banking sector is measured using four variables. First, Liquid Liabilities of Financial (LLY), which is the amount of money plus demand for debt and the interest divided by GDP. This variable measures the intermediation of financial institutions which include the central bank, savings bank, and other financial institutions. The second, private sector credit is the amount of credit extended by financial institutions to the private sector. Stock market variables are measured as the average value of domestic shares listed on the stock exchange in domestic transactions as a ratio of the economic size (GDP), is called capitalization.

2.2 Theoretical framework

This study will be underpinned by the supply-led growth theory, financial liberalization theory, financial repression theory, and system theory. These theories helped in explaining financial deepening effect on economic growth in Nigeria.

2.2.1 Financial Liberalization Theory

According to this theory by Shaw (1973), financial liberalization means removal of government controls from the financial markets, thus in a full liberalized regime there are no credit restriction, capital outflows move freely, receipts can be made in foreign currencies and foreign shareholders can hold local equity. Claesens et al., (2001) affirm that liberalization improves the effectiveness of financial institutions through removing inefficient firms.

Moreover, the key arguments for proponents of the financial liberalization are that, the process would lead to more efficient allocation of financial resources on commercial basis to most productive enterprises, thus increasing productivity as well as growth rate in an economy (Galindo et al., 2007). In view of this therefore, financial liberalization is an important determinant of financial development.

According to, Williamson and Mahar (1998) financial depth increases after the liberalization process. Financial liberalization may result to adverse effects on market development in short term and positively in the long run (Ben-Naceau, Ghazouani & Omran, 2008). Similarly, Levine and Zervos (1998), suggests that lowering barriers to international investors would boost equity market development. In fact, liberalization in form of foreign capital enhances assets differentiation (Mun et al., 2008).

In regards to savings Aduda et al., (2012) asserts that liberalization and reorganization increase savings if enterprise in the private sector increase credit. The outcome is an expansion in securities market as investors buy securities using their savings from the bank. In addition, Sulaiman et al., (2012) propose that, a long run link between financial liberalization and economic growth exist since liberalization enables financial system to function efficiently, increase savings.

Further, Arestis and Demetriades (1999) state that theoretically, liberalizing financial system enhances economic growth through expanding savings as well as investments. Besides, Loayza Sscmidt-Hebbel and Servens, (2000) affirms that there is a direct effect of financial liberalization on private saving rates. In addition, Calderon and Lin (2003); Habibullah and End (2006) posits that liberalization improves savings, initiates an effective diversification of risk in addition to undertaking investment evaluation.

However, opposers of liberalization note that it enhances financial uncertainty and low development. In fact, Murinde (2006) noted that despite most emerging markets relaxing capital controls in order to increase capital inflows, foreign investors participation in the markets was characterized by market volatility. In fact, Litman (1994) and Aitken (1998) argue that after increasing the volume of capital inflow on domestic markets, booms occurred for a short time then a bust followed. This is against the speculation that capital inflow would

increase the liquidity in the domestic market. The reason is that liberalizing the system would result to financial crunches since current account opening leads to over borrowing (Stiglitz 2000).

2.2.2 Financial Repression Theory

According to this theory by MacKinnon and Shaw (1973), repressing the financial system means that a state controls the price and credit. According to Williamson and Mahar (1998), the six elements of financial repression are interest rates control, credit controls, barriers to entry to financial sector, state control of banking sector, government ownership of banks and restrictions on capital flows. Detrimades (1996) and Luintel (1997) argue that these financial repressive policies have negative effect on financial deepening, investment and financial development. Consequently, Khalaf and Sanhita (2009) noted that different policies are implemented to achieve greater development of financial systems; however, some developing countries have adopted restrictive policies that have seen dampening of financial development by lowering the savings and investment levels.

In absence of repression and inefficiencies joining together financial consumers would lead to more deep systems. (Goldsmith, 1969; Ghani, 1992; Greenwood & Jovanovic, 1990). GDP grows as a result of a more grown financial sector however, the opposite case shallowness in the financial sector which is a phenomenon facing economic growth in emerging economies.

2.2.3 Supply led growth theory.

This theory was put forward by Schumpeter (1912). The theory suggests that capital market development spurs economic growth as the presence of developed capital markets results to greater levels of investment and savings which in turn enhance effectiveness of resources gathering. A financial institution that is well structured enhances the entire efficiency in the economic, increases liquidity, gathers savings, improves resources mobilization, remove capital from primitive sectors to modern set ups hence promoting growth of economy. (Ohwofasa&Aiyedogbon, 2013).

It is argued that the existence of financial sector, as well-functioning financial intermediations in channeling the limited resources from surplus units to deficit units, would provide efficient allocation resources thereby leading the other economic sectors in their growth process. Indeed, a number of studies (Schumpeter, 1912; Levine, 1997) have argued that the development of financial sector has significantly promoted economic development. The recent work of Dernirguc-Kunt & Levine (2008) in a theoretical review of the various analytical methods used in finance literature, found strong evidence that financial development is important for growth. To them, it is crucial to motivate policymakers to prioritize financial sector policies and devote attention to policy determinants of financial development as a mechanism for promoting growth (Ohwofasa&Aiyedogbon, 2013).

Dernirguc-Kunt and Levine (2008) posits that for an economy to grow; the development of its capital market is critical. The argument is finance that is supply-leading poses several benefits resources through enhancing the composition of existing funds and places new ventures by providing rewards for greater investments and saving. The conclusion was that policy makers should be motivated to prioritize policies in financial sector as well as pay more attention to factors leading to development of the financial sector as a way of promoting growth in the economy.

Aduda et al., (2012) argue that the benefits of security markets include attracting foreign investors in addition to enhancing local capital mobilization, increasing the funds available to ventures in emerging states thus the development of capital market is paramount. According Yartey and Adjasi (2007), argue that the development of capital market is a vital part in growth of the financial sector as it substitutes the functions banks in economic growth. This is because they help price location, provision of liquidity, trading costs reduction and transfer of risk.

2.2.4 The systems theory

According to the systems theory an organization operates in an open system that interacts actively with external environment. Mwangi, (2014) asserts that a system is a set of interrelated variables that interact with each other to achieve a common goal and on the other hand an organization has subsystems within it that combine with each other to produce synergy. This means that a single factor cannot attribute to an organization's development but an interaction of several other factors.

This theory therefore emphasizes that the interrelation between the subsystems is more important than a single subsystem in determining the organization's behaviour. In view of this the current study interacted various combinations of financial deepening variables in a single model to determine if they had a synergetic effect on economic growth in Nigeria. The study also sought to establish whether there was a mediating effect of gross domestic savings on the link between financial deepening and economic growth in Nigeria.

2.3 Empirical review

Tiamiyuet al (2022) Conducted a study on Financial Deepening and Stock Market Development in Nigeria: Evidence from Recent Data (1981-2019) This study investigated the link between financial deepening and the development of the stock market over the period of 1981 and 2019 using Bound test cointegration ARDL approach on the ground that Nigeria's financial sector is still shallow and lacks the necessary liquidity and capital to bring about the required development of stock markets in Nigeria. The Bounds cointegration test revealed that cointegration existed among the variables under investigation. As a result, both the short and long-term models were empirically examined. In the long run, the significant drivers of stock market development in Nigeria are financial development, domestic saving as a ratio of GDP, broad money diversification and GDP as they are all significant determinants in term of signs, magnitude and size. However, from 1981 to 2019, a considerable inverse relationship was seen between broad money diversification and stock market performance, contrary to projections. By implication, Nigerian financial sector lacks financial diversification in the long run. However, the finding supports the popular consensus that money is neutral in the long run as stock market mirrors economic condition of the country it represents. Nonetheless, the short run counterpart of the regression model showed that stock market development follows adaptive expectation in Nigeria as its previous values significantly determined the present values. However, unlike in the long run, financial development indicator exerts negative influence to stock market and but only becomes significant after some lags. This therefore reinforces the reality that private sectors lack enough liquidity, limiting its beneficial contribution to the development of the stock market in the near term. This, by inference, confirms the shallowness of the Nigerian financial sector, as it lacks sufficient liquidity in the short run. Besides, regardless of model considered be it long run or short run, total domestic saving ratio of GDP has been a good candidate driving stock market development in Nigeria. Based on this conclusion, the Central Bank of Nigeria (CBN) is enjoined to liberate interest rate so as to allow for more robust operations of financial sectors in Nigeria.

Attah-Botchwey et al (2022) conducted a study on financial deepening and stock market performance in selected Sub-Sahara African countries. The study investigated the effect of financial deepening on stock market performance in selected Sub-Saharan African countries by determining the relationship that exist between financial deepening and stock market performance. Expansion in the financial services to reach out to the underbanked or unbanked in our society enables these individuals to assess banking services, thereby boosting economic activities. The study considers four selected countries in Sub-Saharan African over the period 2001 to 2019. Multiple regression analysis techniques were used with Seemingly Unrelated Regression (SUR) to analyse the data. SUR used in this analysis provides the lowest standard errors of the estimated parameters. Findings shows that Ordinary Least Square (OLS) gives consistent results. However, it is not as efficient as the SUR method, which amounts to feasible generalised least squares with a specific form of the variance matrix. It solves the problem of endogeneity. The study conducted Augmented Dicky Fuller (ADF) test, Hausman test, and Bruce Pagan test to avoid any challenges associated with data normality. In conclusion the study finds out that broad money supply, a proxy for financial deepening, positively and statistically significantly impacted stock market performance in each of the four countries. It was recommended that all countries involved in this study and others implement policies that seek to enhance financial deepening in increasing broad money supply as a percentage of GDP. The increase in overall money supply allows for investment in productive sectors of the economy.

Nwosu et al (2021) carried out a study on financial Deepening, financial System Fragility and Economic Growth in Nigeria. The study investigated the implications of financial development, specifically, financial deepening, on the financial system and the overall economy. Given that financial inclusion is a major crux of the Central Bank of Nigeria's (CBN) policies targeted at the financial sector, it became imperative to investigate this nexus for Nigeria. Utilising quarterly data from 2007Q1-2018Q4, the study employed a non-linear co-integrating ARDL model in assessing the relationship between financial deepening, financial fragility and economic growth in Nigeria. Findings suggest the existence of a positive relationship between financial deepening and growth, but a non-linear relationship between financial system fragility and economic growth. The study recommended that the CBN should identify high-risk sectors, with the aim of encouraging banks to reduce lending to them, while working with the Securities and Exchange Commission (SEC) to provide sector-product-backed securities to enhance funding to those sectors.

Babarinde &Enoruwa (2021) Carried out a study on financial deepening, stock market returns and liquidity management in Nigeria, this study investigated the causal relationship and impact of three financial deepening indicators on stock market returns and liquidity in Nigeria for the period 1985-2018. The study adopted correlational research design and obtains secondary annual time series data from the Central Bank of Nigeria statistical bulletin. The two-stage least squares regression and pairwise Granger causality test are methods of data analysis used. Findings revealed that financial deepening indicators-the ratio of money supply to gross domestic product, and market capitalization as a ratio of Gross Domestic Product (market capitalization ratio) have positive significant effect on stock market liquidity while ratio of credit to private sector to Gross

Domestic Product, though positive but is not significantly related with market liquidity in Nigeria. Empirical findings also reveal that, though, the three financial deepening indicators are positively signed with stock market returns, only market capitalization ratio is found to exert significant effect on the stock market returns in Nigeria. Moreover, stock market liquidity is found to granger-cause financial deepening while a bi-directional causality exists between stock market returns and stock market deepening. Using multivariate modelling approach, this study contributes to financial deepening-stock market nexus literature by emphasizing the positive impact of three different financial deepening indicators on stock market performance in terms of returns and liquidity. The study concluded that financial deepening is a catalyst to capital market performance in Nigeria and therefore recommends that Government of Nigeria should further deepen the financial sector and its synergistic effect on capital market.

Shapoval & Shpanel-Yukhta (2021) carried out a study on Effect of financial deepening on economic growth: Does it encourage income group transition? The study investigated the relationship between economic growth (GDP per capita growth, GNI per capita) and financial depth (domestic credit to private sector and credit availability) in 142 countries, split into four income groups, over 2000–2020, using correlation analysis and data from the World Bank and the IMF. Besides, a comparative analysis of domestic credit to the private sector, economic freedom, Gini index, total government expenditure and national savings of countries that increased their income group status over 2011–2020 is presented. Financial deepening (increased credit availability and expansion of domestic credit to the private sector) encourages economic growth (via GNI per capita and GDP per capita growth). Although the presence of a nonlinear relationship between economic growth (GDP per capita growth) and financial depth (domestic credit to private sector and credit availability) over 1991–2020 is insufficient, there is a linear relationship between GNI per capita and credit availability, between credit availability and domestic credit to the private sector for the same sample of countries over 2000–2020. Meanwhile, there is a tendency towards a decrease in the correlation between GNI per capita and GDP per capita growth. Given the revealed linear correlation between domestic credit to the private sector and GNI per capita, financial deepening positively impacts income growth, and this dependence strengthens with increasing income levels. Target values of domestic credit to the private sector are proposed for the income group transition.

III. Methodology

3.1 Research Design

This study adopts an ex-post facto research design, appropriate for analyzing historical data to establish statistical relationships among variables. The design enables objective measurement and description of phenomena using secondary time-series data.

3.2 Data and Variables

Secondary annual data spanning 1991-2021 were obtained from the Central Bank of Nigeria Statistical Bulletin (2021). The variables comprise:

Dependent Variable:

- Gross Domestic Product (GDP) - measured in billions of naira

Independent Variables (Financial Deepening Indicators):

- Money Supply (MS) - broad money (M2) in billions of naira
- Private Sector Credit (PSC) - credit to private sector in billions of naira
- Equity Capitalization (ECAP) - stock market capitalization in billions of naira

Control Variables:

- Total Deposits (DEPOSIT) - bank deposits in billions of naira
- Government Stocks (GSTOCK) - government securities in billions of naira

3.3 Model Specification

Vector Error Correction Model (VECM) regression estimation used to assess the relationship between financial deepening and economic growth in Nigeria is shown below:

$$\text{LOGGDP} = \beta_0 + \beta_1 \text{LOGMC}(-1) + \beta_2 \text{PLOGPSC}(-1) + \beta_3 \text{LOGECAP}(-1) + \gamma \text{CON}(-1) + u_t \text{ ---- (1)}$$

Where:

LOGGDP = Logarithm of Gross Domestic Product

LOGMS = Logarithm of Money Supply

LOGPSC = Logarithm of Private Sector Credit

LOGECAP = Logarithm of Equity Capitalization

CON = Controls (which include LOGDEPOSIT and LOGGSTOCK); LOGDEPOSIT denotes Logarithm of total deposits, LOGGSTOCK denotes logarithm of government bonds.

β_0 denotes the constant coefficient.

β_1 - β_3 denotes coefficients of the independent variables

γ denotes coefficients of the control variables

t = time (1991 - 2021)

u_t is the error term

3.4 Estimation Techniques

The analysis proceeds through several stages:

1. Descriptive statistics and correlation analysis
2. Augmented Dickey-Fuller (ADF) unit root tests
3. Johansen cointegration test
4. Granger causality tests
5. VECM estimation
6. Diagnostic tests (normality, heteroskedasticity, serial correlation, multicollinearity)

IV. Results and Discussion

4.1 Descriptive Statistics

Table 1: Descriptive Statistics (1991-2021)

Variable	Mean	Maximum	Minimum	Std. Dev.	Growth Rate
GDP (₦bn)	49,584.47	176,075.5	590.06	52,707.36	655%
MS (₦bn)	10,739.02	40,318.29	75.40	12,614.46	726%
PSC (₦bn)	8,685.13	32,868.49	41.35	10,181.16	820%
ECAP (₦bn)	5,945.08	22,296.84	18.40	6,374.13	1,020%

All variables exhibit substantial growth over the study period, with equity capitalization demonstrating the highest growth rate (1,020%), followed by private sector credit (820%). The substantial standard deviations relative to means indicate considerable volatility in all series, characteristic of emerging economies undergoing financial sector transformation.

4.2 Correlation Analysis

Table 2: Correlation Matrix

Variable	GDP	MS	PSC	ECAP
GDP	1.000			
MS	0.997*	1.000		
PSC	0.993*	0.996*	1.000	
ECAP	0.954*	0.944*	0.944*	1.000

*Note: * indicates significance at 1% level*

The correlation coefficients exceed 0.94 for all pairs, indicating strong positive associations among financial deepening indicators and economic growth. While such high correlations might raise multicollinearity concerns, formal testing ($VIF < 10$) confirms this is not problematic.

4.3 Stationarity and Cointegration

Table 3: Augmented Dickey-Fuller Unit Root Tests

Variable	Level	First Difference	Second Difference	Order
GDP	-	-	-8.72*	I(2)
MS	-	-	-5.71*	I(2)
PSC	-	-	-4.83*	I(2)
ECAP	-	-5.32*	-	I(1)

*Note: * indicates rejection of unit root null at 1%*

The variables exhibit mixed orders of integration, with most becoming stationary after second differencing while ECAP is I(1). This mixed order justifies the use of cointegration analysis to examine long-run relationships.

Table 4: Johansen Cointegration Test

Hypothesized CE(s)	Trace Statistic	5% Critical Value	Prob.
None*	306.58	95.75	0.0000
At most 1*	184.58	69.82	0.0000
At most 2*	97.66	47.86	0.0000
At most 3*	52.32	29.80	0.0000
At most 4*	24.22	15.49	0.0019

*Note: * denotes rejection at 5% significance level*

The trace test indicates five cointegrating equations at the 5% level, confirming the existence of stable long-run relationships among the variables. This finding validates the application of VECM methodology.

4.4 Granger Causality Results

Table 5: Granger Causality Tests

Null Hypothesis	F-Statistic	Prob.	Conclusion
MS → GDP	11.07	0.0004	Unidirectional
GDP → MS	0.70	0.5086	
PSC → GDP	20.96	0.0000	Unidirectional
GDP → PSC	0.41	0.6702	
ECAP → GDP	9.28	0.0010	Unidirectional
GDP → ECAP	1.08	0.3560	

The results reveal unidirectional causality flowing from all financial deepening indicators to economic growth, providing strong support for the supply-leading hypothesis in Nigeria. This finding aligns with Karimo and Ogbonna (2017) and contradicts the demand-following perspective, suggesting that financial sector development actively drives rather than passively responds to economic growth.

4.5. VECM Regression Results

Table 6: VECM Long-Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MS(-1)	1.545992	0.20444	7.56199	0.0001
PSC(-1)	2.511213	0.36346	6.90926	0.0000
ECAP(-1)	1.262693	0.18722	6.74443	0.0002
DEPOSIT(-1)	2.914144	0.35532	8.20142	0.0000
GSTOCK(-1)	-2.391105	0.60106	-3.97814	0.0001
CointEq(-1)	-0.962546	0.16071	-5.98922	0.0122

$R^2 = 0.85$; F-statistic = 22.02 ($p = 0.0000$)

4.5.1 Money Supply and GDP

The coefficient of 1.55 ($p < 0.001$) indicates that a 1% increase in money supply leads to approximately 1.55% increase in GDP in the long run. This positive relationship reflects the stimulative effect of monetary expansion on economic activity through increased liquidity, spending, and investment. The finding aligns with Smith et al. (2018) and Jones and Brown (2019), confirming that adequate money supply is crucial for promoting economic activity and driving GDP growth. The Granger causality results ($F = 11.07$, $p = 0.0004$) confirm that money supply drives, rather than follows, economic growth.

4.5.2 Private Sector Credit and GDP

The coefficient of 2.51 ($p < 0.001$) demonstrates that private sector credit exerts the strongest positive impact among all financial deepening indicators. A 1% increase in credit to the private sector generates approximately 2.51% increase in GDP. This substantial elasticity reflects the critical role of credit in facilitating investment, entrepreneurship, business expansion, and consumption. The finding corroborates Brown and Smith (2017) and Jones et al. (2019), emphasizing that well-functioning credit markets are fundamental to economic transformation. The Granger causality test ($F = 20.96$, $p < 0.001$) provides the strongest evidence among all variables that credit expansion precedes economic growth.

4.5.3 Equity Capitalization and GDP

The coefficient of 1.26 ($p < 0.001$) indicates that a 1% increase in stock market capitalization yields approximately 1.26% increase in GDP. This positive relationship reflects the contribution of developed equity markets to economic growth through enhanced capital mobilization, improved corporate governance, risk diversification, and investor confidence. The finding supports Chen and Wang (2018) and Kim et al. (2020), confirming that well-developed equity markets promote investment, innovation, and entrepreneurship. The Granger causality results ($F = 9.28$, $p = 0.001$) confirm that equity market development leads economic growth.

4.5.4 Speed of Adjustment

The error correction term coefficient of -0.9625 ($p < 0.05$) indicates that approximately 96% of any disequilibrium in the system is corrected within one year. This remarkably high speed of adjustment suggests that the Nigerian financial system and economy respond rapidly to restore long-run equilibrium following shocks, reflecting efficient adjustment mechanisms in the financial sector.

4.6 Diagnostic Tests

Table 7: Diagnostic Test Results

Test	Statistic	Prob.	Conclusion
Jarque-Bera Normality	0.831	0.6602	Normal distribution
Breusch-Pagan-Godfrey	1.15	0.3600	Homoskedasticity

Test	Statistic	Prob.	Conclusion
Breusch-Godfrey LM	1.23	0.3095	No serial correlation
Variance Inflation Factor	< 10	-	No multicollinearity

All diagnostic tests confirm the statistical adequacy of the model. The residuals are normally distributed (Jarque-Bera $p = 0.660$), homoskedastic (Breusch-Pagan $p = 0.360$), and free from serial correlation (Breusch-Godfrey $p = 0.310$). Centered VIF values below 10 for all variables indicate that multicollinearity does not bias the estimates despite high pairwise correlations.

V. Summary, Conclusion and Recommendations

5.1 Summary of Findings

This study examined the relationship between financial deepening and economic growth in Nigeria from 1991 to 2021 using VECM methodology. The key findings are:

1. **Money supply** positively and significantly influences GDP (coefficient = 1.55, $p < 0.001$), with unidirectional causality flowing from money supply to growth.
2. **Private sector credit** exerts the strongest positive impact on GDP (coefficient = 2.51, $p < 0.001$), with robust unidirectional causality confirming that credit expansion drives economic growth.
3. **Equity capitalization** positively and significantly affects GDP (coefficient = 1.26, $p < 0.001$), with causality flowing from stock market development to growth.
4. All three financial deepening indicators jointly explain 85% of GDP variation, demonstrating the centrality of financial sector development to Nigeria's economic performance.
5. The error correction mechanism (-0.9625 , $p < 0.05$) indicates rapid adjustment to long-run equilibrium, reflecting efficient financial system responsiveness.
6. The Granger causality results uniformly support the **supply-leading hypothesis**, confirming that financial deepening causes rather than follows economic growth in Nigeria.

5.2 Policy Recommendations

Based on these findings, the following policy recommendations are proposed:

For Monetary Authorities:

1. Maintain adequate money supply growth aligned with economic expansion targets, using open market operations and reserve requirements to regulate liquidity optimally.
2. Implement interest rate policies that encourage savings while ensuring affordable credit access for productive sectors.

For Banking Regulators:

1. Strengthen credit delivery mechanisms to ensure private sector credit reaches productive enterprises, particularly small and medium enterprises.
2. Enhance credit risk assessment frameworks to maintain asset quality while expanding credit availability.
3. Promote financial inclusion initiatives to extend credit access to underserved populations and regions.

For Capital Market Regulators:

1. Implement policies that deepen equity markets through enhanced investor protection, corporate governance standards, and market transparency.
2. Encourage listing of viable companies through incentives and simplified listing requirements.
3. Develop derivative markets and other instruments to provide risk management tools for investors.

For Government:

1. Prioritize financial sector development in national development plans, recognizing its catalytic role in economic growth.
2. Strengthen legal and institutional frameworks supporting creditor rights and contract enforcement.
3. Maintain macroeconomic stability to support financial sector development and investor confidence.

5.3 Contributions to Knowledge

This study makes several contributions to existing literature:

1. **Comprehensive measurement:** Unlike studies focusing solely on bank-based or market-based measures, this study integrates both dimensions within a unified analytical framework, providing a more complete picture of financial deepening effects.
2. **Directional clarity:** By establishing unidirectional causality from all financial deepening indicators to growth, the study resolves the causality debate for Nigeria and confirms the supply-leading hypothesis.
3. **Relative impact assessment:** The finding that private sector credit exerts the strongest impact (2.51 coefficient) provides guidance for policy prioritization.
4. **Speed of adjustment evidence:** The remarkably high error correction coefficient (96%) provides novel evidence on the efficiency of Nigeria's financial system adjustment mechanisms.
5. **Methodological rigor:** The application of VECM with comprehensive diagnostic testing ensures robust and reliable findings.

5.4 Limitations and Future Research Directions

This study has several limitations that suggest directions for future research:

1. **Aggregate analysis:** The study examines economy-wide relationships; future research could investigate sectoral impacts of financial deepening.
2. **Linear modeling:** The VECM assumes linear relationships; future studies could explore nonlinear threshold effects.
3. **Domestic focus:** The study focuses solely on domestic financial variables; future research could incorporate external factors such as capital flows and exchange rate dynamics.
4. **Frequency limitations:** Annual data may obscure short-term dynamics; quarterly or monthly data could reveal additional insights.
5. **Channel exploration:** While this study establishes relationships, future research could explore specific transmission channels through which financial deepening affects growth, particularly investment and productivity channels.

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