

Macroeconomic Determinants of Financial Sector Development in Nigeria: 1986-2024

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Abstract

Financial sector development is crucial for economic growth, enabling capital movement, enhancing consumption and investment, and promoting job creation. However, the optimization of the relationship between the real economy and the financial sphere require a stable macroeconomic environment. Thus, this paper investigated the macroeconomic factors that influence the growth of the financial sector development in Nigeria from 1986 to 2024., focusing on macroeconomic variables such as GDP per capita, interest rate spread, inflation and exchange rate. This study employed the Dynamic Ordinary Least Squares (DOLS) technique. The estimation of the DOLS regression revealed that gross domestic product per capita is positively and significantly related to the growth of financial sector development in the long run. Consequently, one percentage increase in gross domestic product per capita will lead to an increase in financial sector development in Nigeria by 5.93 percent in the long run. Furthermore, the estimated impact of interest rate spread on financial development is negative in the long run. By implication, one percentage change or increase in interest rate spread will lead to -0.41% increase in financial development. On the other hand, the findings indicated that inflation rate appears to affect financial sector development significantly and negatively in the long-run. Controlling for other factors, for instance, a 1 percent increase in inflation rate will decrease financial sector development by -0.17% in the long run. Also, the estimated impact of exchange rate on financial sector development is negative and significant in the long run. By implication, one percentage change or increase in exchange rate will lead to -0.03% decrease in financial sector development in the long-run respectively. Therefore, this paper recommended that to promote sustained growth in GDP per capita, the Federal Ministry of Education and Health should invest in human capital (education and skills development) to sustain long-term income growth and financial deepening. Also, the Central Bank of Nigeria (CBN) should strengthen competition in the banking sector by reducing entry barriers and encouraging fintech participation to drive down lending rates. Further, to maintain low and stable inflation rates in Nigeria, the Central Bank of Nigeria should adopt a credible inflation-targeting framework anchored by disciplined monetary policy. Additionally, the Central Bank of Nigeria should adopt a more transparent and market-reflective exchange rate regime to reduce volatility and uncertainty.

Keywords: Exchange Rate; JEL Codes, Lending Rate; Monetary Policy

I. Introduction

Financial sector development permits the movement of capital. It boosts consumption and investment, promoting employment, lifting individuals out of poverty, and enhancing economic performance. It is considered a vital element for building a resilient, diverse, and robust economy (Tchamyau & Asongu, 2017). Additionally, it supports Small and Medium-sized Enterprises (SMEs) by providing access to credit. Since SMEs are often labour-intensive and create more jobs than larger firms, they significantly support economic growth in emerging economies (Zulham *et al.*, 2025).

Theoretically, financial system increases the availability of funds by mobilising idle savings, facilitating transactions and attracting foreign investments. A developed financial system can help achieve improved allocation of financial resources and enhanced risk management, transparency and corporate governance practices (McKinnon, 1973., & Shaw, 1973). Thus, financial development does not only improve growth prospects, it also enhances better distribution of economic opportunities amongst economic agents. This affords new businesses, such as first-time or low-income (with potentially low collateral) borrowers or small- and medium-sized enterprises (SMEs) easy access to financing through the process of financial intermediation (Abdulraheem *et al.*, 2019).

Financial sector development, which includes the rehabilitation of the banking system and financial market restructuring, aims to optimize choices and economic financing, optimal allocation of resources and diversification of risk. Conversely, an immature and vulnerable financial system reduces the chances of financing the economy, strengthens financial repression and encourages speculation. But the optimization of the relationship between the real economy and the financial sphere and the preponderance of the financial sphere which stimulates economic growth requires a strong and effective banking and financial system, a stable macroeconomic environment and an adequate legal and institutional framework. However, macroeconomic environment differs from one country to another according to conditions and characteristics of each country such as the degree of the development of banking services, the stage of economic development, the degree of financial liberalization, and the degree of economic, political and legislative stability.

For instance, GDP per capita influences economic growth through the production of investment information and efficient allocation of capital to productive activities; supervision of investments and exertion of good corporate governance; promotion of trade, and exchange of goods and services; improved resource mobilisation and allocation; and enhancement of management of risk and diversification (Levine, 2005). While volatility in interest rates increases the banking spread, which, in turn, suppresses financial intermediation (Maudos and Guevara, 2004). In general, high real interest rates reduce deposits and loans, as it increases bank lending–deposit spread. Thus, high and volatile interest rates may negatively impact financial sector development in Nigeria. Furthermore, high inflation as an indicator of macroeconomic instability has a negative effect on finance due to the devaluing of outstanding portfolios, interest rate effects and reduction of return on equity, consequently resulting in credit rationing (Boadi, 2016; Ghosh, 2018; Imran and Nishat, 2013). Also, exchange rates are another macroeconomic variable that influences financial sector development. For instance, the classical trade theory emphasises that the real exchange rate significantly affects cross-border trade and capital flows, whereby devaluation of domestic currency improves trade balance while its appreciation impedes exports.

Given that theoretical evidence suggests that poor macroeconomic performance might impede the expansion of the financial sector, it is imperative to comprehend the relationship between macroeconomic variables and financial sector development. Though existing empirical studies identify trade openness and foreign direct investment as key driver of financial and equity market development (Ikpesu, 2025; Ozili, 2025; and Mtar & Belazreg, 2023). However, this paper focus on specific Nigerian macroeconomic variables including GDP per capita, interest rate spread, inflation, and exchange rate influencing financial sector development in Nigeria that has largely been overlooked. This could result in biased findings from these kinds of studies, which would have disastrous consequences for the nation's financial sector development plans. To fill this knowledge gap, this paper investigated the macroeconomic factors that influence the growth of the financial sector development in Nigeria from 1986 to 2024 using time series data.

II. Literature Review

A. Theoretical Framework

The theoretical framework of this paper is rooted in the McKinnon-Shaw (1973) hypothesis which suggests that interest rate in the case of financial repression negatively affect financial sector development. The vital tenet of this hypothesis is that a low or negative real interest rate will discourage saving. They associate low or negative interest rates with financial repression and posit that a liberalized financial system will induce an increase in saving, thereby promoting financial intermediation and development of banking sector.

Hence, the McKinnon-Shaw model of financial repression points out that a lower deposit rate of interest discourages households from holding deposits that would be used to finance productive investment. This implies that government's repressive policy towards financial systems such as interest rate ceilings will retard financial development. However, when the financial sector is deregulated, competition among banks will cause a rise in deposit rate of interest and encourage savings. Thus

generally, a rise in interest rate spread difference between lending rate and deposit rate, will cause a fall in savings and a decline in financial development.

However, For Shaw (1973), investment (I) is a decreasing function of real interest rate (r) and the saving is an increasing function of economic growth rate (g) and real interest rate (r). i.e.,

$$I = I(r) \quad (1)$$

$$S = S(r, g) \quad (2)$$

Where

$$\frac{\partial(I)}{\partial(r)} < 0, = \frac{\partial(S)}{\partial(r)} > 0, \text{ and } \frac{\partial(S)}{\partial(g)} > 0 \quad (3)$$

Shaw (1973) further argued that increased financial intermediation provided the impetus for growth more directly. Liberalization would result in an expanded, improved and integrated financial sector that would lead to an increase in the savings rate, an increase in the rate of investment (by facilitating more-lumpy investment); and a direct enhancement to growth (by improved financial technologies).

B. Empirical Review

Various studies on the macroeconomic determinants of financial sector development have been conducted across both developed and developing economies with varying outcomes and conclusion. This paper therefore reviews some of these works with focus on currency, relevance and appropriateness of empirical studies as follows:

Abdissa (2025) examined the determinants, trends, and regional progress of financial sector development in seven East African countries from 1990 to 2023. The study employs dynamic heterogeneous panel estimators, including mean group, pooled mean group, dynamic fixed effect, fully modified ordinary least square, canonical co-integration regression, feasible generalized least square, along with augmented mean group and common correlate effect mean group estimators to analyze both short-run and long-run relationships with economic and institutional factors. Results revealed significant disparities, with Kenya recording the highest index (0.72) and Sudan the lowest (0.22); followed by Burundi (0.66), while Rwanda, Ethiopia, Uganda, and Tanzania exhibit moderate development (0.49–0.30). In the long run, financial development is positively influenced by government consumption, bank deposits, gross domestic savings, corruption control, and remittances, whereas high lending interest rates constrain growth. In the short run, economic growth and bank deposits remain key contributors. The study suggested promotion of domestic savings and investment, strengthening governance and anti-corruption measures for sustainable financial sector across East Africa.

Ikpesu (2025) identified key macroeconomic drivers of equity market development in Sub-Saharan Africa (SSA) and ascertain if banking sector development complements equity market development in the SSA region. The study employed the dynamic panel data approach using the pool mean group (PMG). The sample covered is twenty-seven (27) SSA countries between the period 2000 to 2020. The result suggests that banking sector development, economic growth, migrant remittance and trade openness are the key drivers of equity market development in the SSA region. The study also revealed that banking sector development complements equity market development in the SSA region. Ozili (2025) examined the macro determinants of global financial inclusion using world data from 1999 to 2023 period. The study data were analysed using the fully modified ordinary least squares regression estimator, the two-stage least squares regression estimator and the robust least squares regression estimator. The determinants examined are total domestic investment, macroeconomic management frameworks, international trade openness, total population size, consumer spending, and economic growth rate. The findings revealed that population size and trade openness have a positive effect on global financial inclusion through a higher financial inclusion index and commercial bank branch expansion. Total domestic investment and sound macroeconomic management have a negative effect on global financial inclusion through a decrease in the financial inclusion index and a reduction in the number of bank branches and the negative effect is more pronounced in the post-financial crisis

years. However, total population size remains a positive determinant of global financial inclusion in the post-financial crisis years. Trade openness and consumer spending increase global financial inclusion during periods of economic prosperity while total domestic investment and sound macroeconomic management decrease global financial inclusion during periods of economic prosperity.

Zulham *et al.* (2025) investigated macroeconomic variables that impact financial development in Malaysia. This study focuses on key indicators such as economic growth, real interest rates, and inflation, analysing their effects on financial development. It also considers control variables like Trade Openness (TO) and Human Capital (HC) to prevent biased results. Using ARDL estimation on 42 years of annual data from 1980 to 2022 shows that economic growth (LNGDP), real interest rates (LNRIR), and human capital (LNHC) positively influence financial development (LNFD). Conversely, inflation (LNINF) has a significant negative effect. Policymakers are encouraged to maintain a stable macroeconomic environment that supports growth, such as low inflation, manageable interest rates, and a sound banking system.

Tou and Diarra (2025) identified the main macroeconomic determinants of financial inclusion in the WAEMU over the period 2007-2020. Estimation results from GLS and RE revealed that income per capita, education, mobile phone access and gross fixed capital formation positively and significantly affect financial inclusion in WAEMU. However, results showed that final household consumption expenditure and the share of the population living in rural areas have a negative and significant impact on financial inclusion in WAEMU. This suggests the need to strengthen the financial education of populations, as well as investment in adequate infrastructure in rural areas, likely to attract investors from the financial system.

Alkhalidi *et al.* (2025) investigated the determinants of financial development and explore the impact of population and GDP on financial development in Saudi Arabia. Annual time series data covering the period from 2000 to 2022 were used, focusing on variables including the number of listed companies (NLC) and bank Z-score (BZS) as financial development indicators, and urban population (UP), rural population (RP), and Gross Domestic Product as determinants. Auto Regressive Distributed Lag (ARDL) bound technique was used to find the long-run co-integration relationship of the model. The Vector Error Correction (VEC) technique detects short-run relationships. Granger causality analysis is employed to examine the causal relationships between the variables. The results indicated that population and GDP significantly affect the NLC and BZS in the long term, and a negative short-term relationship is observed between the financial indicators and explanatory variables. Granger causality suggests unidirectional causality from population to NLC and BZS, while NLC and BZS are found to be Granger causes of GDP.

Bhagirath and Devanshi (2025) examined macroeconomic determinants of financial inclusion in India by employing a uniquely composed financial inclusion index while also modelling its determinants. Time-series data on diverse macroeconomic forces such as output growth, inflation, financial services cycle, and financial infrastructure are causally juxtaposed with financial inclusion. A reduced-form single-equation econometric framework is employed. Findings indicate that the macroeconomic forces have shown prominence in shaping financial inclusion, challenging the predominance of microeconomic factors in literature.

Sanga and Aziakpono (2025) investigated the heterogeneous effects of macroeconomic and financial factors across various distributions of financial deepening in 22 African countries over the past two decades (2000–2019). The paper uses a recent method of moments quantile regression, which accounts for the often-overlooked heterogeneity effects. The analysis focuses on the banking sector, which is predominant in Africa, using a broad range of macroeconomic and financial indicators. The findings showed that gross domestic product per capita positively and significantly impacts financing deepening with an increasing marginal benefit as depth increases. Trade openness positively and substantially affects only high financial deepening. Real interest rate, real exchange rate and inflations negatively and significantly affect financial deepening, especially at higher than lower levels. Financial stability positively and substantially influences financial deepening with an increasing marginal benefit

as the depth increases. Bank lending interest rate, bank lending–deposit rate spread, bank concentration and return on equity negatively and substantially impact higher levels of financial deepening than lower levels.

Yue *et al.* (2024) analyzed the determinants of financial stability in China using the method of Ordinary Least Squares (OLS). The results indicate that economic growth, inflation, and interest rates have a significant impact on financial stability in China. Government policy, including regulatory measures and fiscal stance, also plays an essential role in promoting financial stability. Additionally, the study found that external factors, such as global economic conditions, can also affect financial stability in China.

Esan and Okunrobo (2024) investigated the macroeconomic determinants of banking sector development in Nigeria. The Ordinary Least Squares (OLS) analysis technique was adopted for the study's analysis. Findings revealed that economic growth has no significant impact on banking sector development at $p\text{-value} > 0.05$, inflation rate has no significant impact on banking sector development at $p\text{-value} > 0.05$, trade openness has no significant impact on banking sector development at $p\text{-value} > 0.05$ while that monetary policy rate has a significant impact on banking sector development at $p\text{-value} < 0.05$. The study recommended that policymakers should strive to pursue growth and development of the banking sector in Nigeria by efficient usage of the monetary policy rate.

Ashour *et al.* (2024) examined the macro determinants of financial development in the Middle East and North Africa (MENA) region, with the use of Panel EGLS Cross-Section Random Effects Models (REMs). Findings revealed that FF, TO and corruption index had a positive relationship with PCGDP. PS had an adverse effect on PCGDP. The second – Panel EGLS Cross-Section Random Effects Model showed that, while PS and TO had a positive effect on stock market performance, the corruption index and FF had an adverse effect on stock market performance.

Ayman (2024) evaluates the effect of macroeconomic variables on the development of the Omani stock market using quarterly data from 2010 Q1–2022 Q4. Specifically, the impact of the inflation rate, the development of the banking sector, liquidity of the stock market, trade openness, economic growth, and oil prices on Muscat Stock Exchange development were investigated. The autoregressive distributed lag (ARDL) model was employed, and the macroeconomic variables and Omani financial market development were found to be cointegrated. The long-term determinants were the liquidity of the stock market, oil prices, and the development of the banking sector. In the short term, the drivers were economic growth, the stock market's liquidity, and the development of the banking sector.

Mtar and Belazreg (2023) used a system of Generalised Method of Moments (GMM) as well as panel Vector Autoregression (VAR) techniques to examine the interconnections among innovation, financial development, Trade Openness (TO), as well as economic growth in 11 European countries from the year of 2001 to 2016. Their findings revealed a unidirectional, positive link from economic growth to financial development, indicating that economic growth strengthens investor confidence. This stimulates investment and influences financial arrangements, thereby fostering financial development.

Appiah-Otoo and Song (2022) determined new insights in Ghana, where the causality analysis for the period of 1990-2017 has a unidirectional causality where causality flows from economic growth to indicators like domestic credit provided by the financial sector, liquid liabilities as a percentage of GDP, and the life insurance premium volume regarding GDP. The research also highlighted the impact of shocks to domestic credit supplied by the banking sector, credit granted to the private sector, and the assets owned by deposit money banks as a percentage of GDP, which harmed Ghana's economic growth.

Belazreg and Mtar (2020) examined interactions between innovation, trade openness, financial development, as well as economic growth across 27 Organisation for Economic Cooperation and Development (OECD) countries during the period 2001 to 2016. Utilising a panel VAR model, the author explores a four-way interaction among the variables. The results revealed a neutral relationship between economic growth and innovation, innovation and financial development, as well as innovation

and trade. In contrast, the study identifies a one-way (unidirectional) relationship from economic growth leading to financial development as well as from financial development facilitating trade.

Yang and Shafiq (2020) investigated the determinants of financial development using regression analysis and correlation methods in Pakistan. The empirical findings indicated that inflation, trade openness, market capitalization, investment rate, and interest rate have a significant impact on financial development.

Abubakar and Kassim (2018) investigates the institutional and macroeconomic determinants of financial development in 50 OIC member countries from 2003 to 2011. Dynamic panel approach-system-GMM is employed. The results revealed that overall level of income positively influences financial development, and exchange rate encourages financial depth and lending activities. Financial openness is found to promote financial depth only, while institutional quality promotes lending activities. On the other hand, inflation stimulates private bank credit and reduces the depth of the financial sector. These mixed results implied that, policy makers in the OIC countries shall adopt hybrid economic and financial policies as well as implement political, legal and governance reforms to enhance financial development and hence promote economic growth.

Tsaurai (2018) explored the determinants of banking sector development in Southern African Development Community (SADC) countries using the dynamic Generalised Methods of Moments (GMM) estimation technique with panel balanced data ranging from 1994 to 2014. The findings of this study revealed that the lag of banking sector development and GDP positively and significantly influenced banking sector development in line with theoretical predictions. Trade openness negatively and significantly impacted on banking sector development whilst inflation had a marginally positive impact on banking sector development in SADC countries.

Using the Principle Component Analysis (PCA) approach, Badeeb and Lean (2017) found that inflation is the most significant factor influencing financial development in Yemen. However, the effect of inflation depends on the specific proxy utilised to represent financial development. Whether inflation has a positive or negative impact is determined by the financial development indicator selected. For instance, while inflation negatively correlates with Private Sector Credit (PSC), it shows a positive relationship with M2 and bank deposits. Consequently, the mixed long-term relationship between inflation and financial development indicators may be influenced by a third factor, such as the interest rate.

Mbulawa (2015) used annual panel data (1996-2010) for 11 SADC countries to establish the determinants of credit to private sector and financial development. The contribution made by institutional quality is investigated using both the fixed effects and dynamic model based on GMM estimations. Financial development was significantly and positively influenced by credit to the public sector, per capita gross domestic product, gross fixed capital formation, financial openness, interest rates and institutional factors while savings and government debt have a negative influence. Financial development is enhanced by keeping corruption at low levels, increasing government accountability, improving regulation quality, maintaining rule of law and low levels of political violence.

III. Data and Method

This paper depended on secondary data sourced from Central Bank of Nigeria Statistical Bulletin, 2025 and Development Indicators (World Bank, 2025) from 1996 to 2024. In this paper, the selected research design is the ex-post facto design. The ex-post facto design is particularly suited for studies aiming to decipher statistical associations between dependent and independent variables, primarily to establish cause-and-effect relationships.

A. Model Specification

The model for the study is based on the theoretical framework and model that was adapted from the work of Zulham *et al.* (2025) that investigated macroeconomic variables that impact financial development in Malaysia. The log-linear specification model applied in the study is of the form:

$$\ln FD = \beta_0 + \beta_1 \ln GDP + \beta_2 \ln RIR + \beta_3 \ln INF + \beta_4 \ln TO + \beta_5 \ln HC + \varepsilon_i \quad (4)$$

Where,

In: Natural logarithm; FD = Financial development., GDP =Gross domestic product., RIR = Real interest rate., INF = Inflation., TO = Trade openness., HC = Human capital (HC)., ε_t = Error term and β_0 = Constant or intercept term

However, the above model was modified by including some important macroeconomic variables which determine financial sector development in Nigeria. These variables include GDP per capita, interest rate spread, inflation and exchange. Thus, the semi-log linear modified model is presented as follows:

$$FD_t = \beta_0 + \beta_1 \ln GDPPC_t + \beta_2 IRS_t + \beta_3 INFR_t + \beta_4 EXR_t + \varepsilon_t \quad (5)$$

Where, In: Natural logarithm; FD = Financial development measured by credit to private sector of the economy. This paper used credit to the private sector as its primary measure for financial development as widely used in literature. GDPPC =Gross domestic product per capita to capture output size., IRS = Interest rate spread., INFR = Inflation., EXR = Exchange rate., β_0 = The intercept or autonomous parameter estimate, β_1 to β_4 = Parameter estimate representing the coefficient of GDPPC, INR, INFR, and EXR respectively, and ε_t - other variables not explicitly included in the model. Further, this research apriori expectations of the parameters to be estimated are as expressed below:

$\beta_1 > 0$; The coefficient of GDP per capita is expected to have a positive impact on financial development; as vibrant economic growth creates a favourable business environment and opportunities, consequently increasing the demand for credit by the private sector

$\beta_2 < 0$; The coefficient of interest rates is expected to have a negative impact on financial development. This is because increase in the real interest rate increases the cost of funds to the banking sector, consequently reducing the supply of bank credits

$\beta_3 < 0$; The coefficient of inflation is expected to have a negative impact on financial development; as high inflation reduces financial intermediation and lending activities.

$\beta_4 < 0$; The coefficient of exchange rates is expected to have a negative impact on financial development. For example, a decrease in the real exchange rate increases trade volumes, which sparks demand for bank credit and vice versa. This study expects the exchange rate to adversely affect financial sector development in Nigeria due to the volatility of the exchange rate.

In analysing the macroeconomic determinants of financial sector development in Nigeria, the Engle and Granger (Residual Based) Cointegration Test was employed. The Engel and Granger method is a two-step procedure that begins with estimating a long-run equilibrium relationship (or cointegrating regression) between the non-stationary variables under investigation. Assuming Y represents financial sector development and X_i represents macroeconomic variables (GDPPC, IRS, INFR, and EXR), the first step involves estimating the regression:

$$FD_t = \beta_0 + \beta_1 \ln GDPPC_t + \beta_2 IRS_t + \beta_3 INFR_t + \beta_4 EXR_t + \varepsilon_t \quad (6)$$

Where β_0 is the intercept, β_1 to β_4 are the coefficients for each macroeconomic variables and ε_t is the error term at time t .

The second step assesses the stationarity of the regression residuals, ε_t . The essence here is to determine whether the residuals from the cointegrating regression are stationary. If the residuals are found to be stationary, it implies that despite the individual series being non-stationary, they move together over time, maintaining a stable long-term relationship, thus they are cointegrated.

The decision rule in the Engel and Granger method is straightforward: if the test statistic from the unit root test on the residuals is more negative than the critical value at a chosen significance level, the null hypothesis of non-stationarity is rejected, confirming cointegration. This means there is evidence of a long-run equilibrium relationship among the variables. The Engel and Granger method of Co-integration makes sure that even non-stationary individual series can have stationary linear combinations, indicating a constant long-term association between them.

In order to further investigate the impact of macroeconomic variables on financial sector development in Nigeria, this study adopted the Dynamic Ordinary Least Squares (DOLS) estimator engineered by (Stock & Watson, 1993). The DOLS method, developed by Stock and Watson (1993), incorporates leads and lags of the differenced independent variables into the regression to correct for any potential endogeneity and serial correlation in the error term. This feature makes DOLS particularly suitable for time-series data where these issues are common.

Mathematically, the DOLS model extends the traditional OLS regression by including leads and lags of the first differences of the independent variables. This is formulated as:

$$Y_t = \alpha + \beta X_t + \sum_{i=-k}^k \phi_i \Delta X_{t-i} + \varepsilon_t \quad (7)$$

Where, Y_t is the dependent variable (in this study, FD); X_t is the vector of independent variables (GDPPC, IRS, INFR, EXR); ΔX_{t-i} represents the first differences of the independent variables at leads and lags to control for serial correlation; k is the number of lags and leads; ε_t is the error term; and α and β are parameters to be estimated.

Thus, building equations (3.4) into the DOLS model, we have:

$$\begin{aligned} FD_t = & \beta_0 + \beta_1 \ln GDPPC_t + \beta_2 IRS_t + \beta_3 EXR_t + \beta_4 EXR_t + \sum_{i=1}^n \Delta \beta_1 \ln GDPPC_{t-i} + \sum_{i=1}^n \Delta \beta_2 IRS_{t-i} \\ & + \sum_{i=1}^n \Delta \beta_3 INR_{t-i} + \sum_{i=1}^n \Delta \beta_4 EXR_{t-i} + \varepsilon_t \end{aligned} \quad (8)$$

Equation (8) represents the long-run relationship between FD and the explanatory variables using the DOLS methodology. The coefficients $\beta_1 - \beta_4$ give insights into how each of the explanatory variables impacts financial sector development in Nigeria.

The DOLS approach is particularly useful because it introduces dynamics in the model specified while allowing for simultaneity bias. Thus, the DOLS estimator of the cointegrating regression equation incorporates all variables in levels, in addition to leads and lags of values of the explanatory variables. To overcome the problem associated with the non-normal distribution of the standard errors of the cointegrating regression equation, the specified model was estimated by OLS using the Newey and West (1994) Heteroscedastic and Autocorrelation Consistent (HAC) covariance matrix estimator, whose standard errors are robust, ensuring the validity of the inferences about the coefficients of the variables entering the regressors in levels.

The DOLS allows for a robust estimation of the long-term macroeconomic variables on financial sector development in Nigeria. By using this approach, the study addressed the potential distortions caused by simultaneous relationships and autocorrelation, common challenges in time-series analysis. For example, DOLS can effectively capture the dynamic impact of the selected macroeconomic variables such as GDPPC, IRS, INFR and EXR on financial sector development, ensuring that the estimated relationships are not spurious but reflective of the underlying economic dynamics.

Additionally, the use of DOLS in this study is significant as it enhanced the credibility and reliability of the study findings. It provided a more accurate estimation of how selected macroeconomic variables are likely to influence Nigeria's financial sector development in the long run. This methodological choice underscores the study's commitment to rigor and precision in examining the nexus between macroeconomic variables and financial sector development in Nigeria.

IV. Results and Discussions

A. Descriptive Statistics

Table 1 presents the descriptive statistics for the paper.

Table 1: Descriptive Statistics

FD	GDPC	IRS	INFR	EXR
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Mean	9.531196	1562.831	6.963105	19.93024	190.4123
Median	8.461664	1632.725	7.203185	13.00000	129.3600
Maximum	19.62560	3189.813	11.06417	72.80000	1535.000
Minimum	4.957522	465.4881	0.724167	5.400000	3.760000
Std. Dev.	3.356209	896.6154	2.208588	17.05432	263.4250
Skewness	1.224915	0.238925	-0.882657	1.677746	3.676755
Kurtosis	4.411494	1.674577	4.465699	4.676234	18.73886
Jarque-Bera	12.99021	3.225769	8.554993	22.86227	490.4020
Probability	0.001511	0.199312	0.013877	0.000011	0.000000
Observations	39	39	39	39	39

Source: Author's Computation, 2026 (Eviews-12)

From Table 4.1, Financial development (FD) has an approximate average of 9.53% and it ranges from 4.957522 (minimum) to 19.62560 (maximum), with a standard deviation of 3.36%. While Gross domestic product per capita (GDPPC) has a mean value of US\$ 1562.831, with the standard deviation of \$896.6154, minimum and maximum values of 465.4881 and 3189.813 respectively. Similarly, Interest rate spread (IRS) has an approximate average of 6.96% and it ranges from 0.724167 (minimum) to 11.06417 (maximum), with a standard deviation of 2.21 percent. Also, Inflation rate (INF) has an approximate average of 19.93% and it ranges from 5.400000 (minimum) to 72.80000 (maximum), with a standard deviation of 17.05%. Further, Exchange rate (EXR), has an approximate average of ₦190.4123 and it ranges from 3.760000 (minimum) to 1535.000 (maximum), with a standard deviation of ₦263.4250.

Furthermore, Table 4.1 displayed the skewness coefficient, a measure of how far a distribution deviates from symmetry, with all the variables having skewness values greater than one, except GDPPC and IRS variables with skewness value less than one. The entire data series are not platykurtic (not having negative values), as confirmed by the kurtosis result, which measures a distribution's degree of peakedness in relation to a normal distribution. Additionally, majority of the variables are not nominally distributed, since the accompanying Jarque-Bera probability values of these variables have a significance level less than 5%. However, GDPPC corresponding Jarque-Bera statistics are nominally distributed. Since the accompanying Jarque-Bera probability values of this variable have a significance level greater than 5%, it may be concluded that the variable has a normal distribution.

B. Correlation Analysis

Correlation analysis provides valuable insights into how each variable such as Gross domestic product per capita (GDPPC), Interest rate spread (IRS), Inflation rate (INFR), and Exchange rate (EXR) relates to the dependent variable, financial development (FD). The correlation coefficients in this analysis help to identify whether these variables move together in a positive or negative direction and the strength of these relationships.

Table 2: Correlation Matrix Result

	FD	GDPPC	IRS	INFR	EXR
FD	1				
GDPPC	0.513268	1			
IRS	0.158273	0.342207	1		
INFR	-0.349601	-0.365471	-0.088060	1	
EXR	0.152911	0.289285	0.068200	-0.005401	1

Source: Researcher's Computation Using EViews-12 (2026)

The correlation coefficients presented in Table 2 are considerably below 0.8, indicating that there is no serious multi-collinearity in the model. By implications, all the variables are free from the problem of multicollinearity. Additionally, the correlation coefficients presented in Table 2 indicated a negative association between financial development (FD) and macroeconomic variables such as

Inflation rate (INF) in Nigeria. While the correlation between financial development (FD) and Gross domestic product per capita (GDPPC), Interest rate spread (IRS), and Exchange rate (EXR) was positive. Further, the correlation between financial development (FD) and Gross domestic product per capita (GDPPC) was found to be the strongest at 51%.

C. Unit Root Results

A unit root test, such as the Augmented Dickey-Fuller (ADF) test, is a common statistical method used to determine whether a time series data set is stationary. Stationarity implies that the statistical properties of the series such as mean, variance, and autocorrelation are constant over time. Non-stationary data, on the other hand, can have properties that change over time, which can lead to spurious results in regression analysis. The Augmented Dickey-Fuller (ADF) unit root test results are displayed in Table 3 as follows:

Table 3 Traditional Unit Root Test Results

Variable	Method	Level Stat. (Prob.)	First Diff. Stat. (Prob.)	Order of Integration
FD	ADF	-3.128342 (0.1149)	-5.753137*(0.0002)	I(1)
GDPPC	ADF	-1.529666 (0.8014)	-4.457877*(0.0056)	I(1)
IRS	ADF	-2.540805 (0.6492)	-7.0994981*(0.0000)	I(0)
INFR	ADF	-3.138991 (0.01122)	-4.100895**(0.0147)	I(1)
EXR	ADF	-1.513948 (0.9990)	-5.743941*(0.0000)	I(1)

Note: *, ** Indicates stationary at the 1% and 5% level.

Source: Researcher's Computations using E-Views 12

Results in Table 4.3 revealed that all the variables were integrated at order one 1(1). This implies that they were not stationary at the level until they were differenced once and they were said to be integrated of order one 1(1).

D. Cointegration Test

Co-integration makes sure that even non-stationary individual series can have stationary linear combinations, indicating a constant long-term association between them. To determine whether the relevant variables have a long-term relationship, the Engle and Granger (Residual Based) Cointegration Test was employed. Table 4 summarizes the findings of the Co-integration test utilizing the Engle and Granger (Residual Based) Cointegration Test, building on this paper discussion of time series analysis and the investigation of the direct influences of macroeconomic variables on financial sector development in Nigeria.

Table 4: Result of Engle and Granger (Residual Based) Cointegration Test

	Residual	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic @ (Levels)		-4.047525	0.0002
	1% level	-2.628961	
Test critical values:	5% level	-1.950117	
	10% level	-1.611339	

Note: * significant at 1%

Source: Authors Computation, 2026 (Eviews-12)

The ADF Test Statistic for the residuals in "Table 4 is -4.047525, exceeding the critical value at the 1% significance level of -2.628961, suggesting co-integration. This indicated that the null hypothesis of no cointegration is rejected at the 1% level, meaning that a significant long term equilibrium relationship exists amongst the variables under review. This is highly significant because it indicated that macroeconomic variables and financial sector development in Nigeria have an equilibrium relationship over the long run. The estimation of DOLS regression was then carried out.

E. Dynamic OLS (DOLS) Regression Results

The Dynamic Ordinary Least Squares (DOLS) Regression findings for the model are shown in Table 5 to provide some intriguing insights into the direct influences of macroeconomic variables such as GDP per capita, interest rate spread, inflation and exchange rate on financial sector development in Nigeria from 1986-2024.

Table 5: Dynamic Ordinary Least Squares (DOLS) Result

Dependent Variable: FD

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPPC)	5.926904	1.481526	4.000539	0.0008
IRS	-0.408365	0.436666	-0.935189	0.3614
INFR	-0.165739	0.055994	-2.959967	0.0080
EXR	-0.030581	0.010210	-2.995347	0.0074
C	-23.42185	9.265781	-2.527779	0.0205
R-squared	0.753201			
Adjusted R-squared	0.735370			
S.E. of regression	2.320992			
Long-run variance	0.497043			

Source: Authors Computation, 2026 (Eviews-12)

From Table 5, all the four explanatory variables used in this study have statistically significant influence on financial sector development in the long run. Further examination of the data revealed that gross domestic product per capita., inflation rate., and exchange rate relates to the dependent variable are important in explaining financial sector development in Nigeria throughout the research period. Suffices to say, all the variables except interest rate spread have statistically significant impact on financial sector development in the long run. Furthermore, gross domestic product per capita., interest rate spread., inflation rate., and exchange rate are in agreement with this study a priori expectations in the long run.

The R-squared value of 0.753201 implies that the model is a good fit as over 75% variation in financial sector development is explained by the explanatory variables. Even after removing the impact of insignificant estimators, the adjusted R-squared value of 0.735370 implies that the model is still very good. Therefore, this study conclusion can be relied upon for formulating policy recommendations. While the long-run variance of 0.497043 provided an estimate of the variability of the residuals over the long term. A relatively low long term variance indicated that the residuals (or errors) in the model are stable over time, suggesting that the model is reliable for predicting the long-term relationship between macroeconomic variables and financial sector development.

F. Post-Estimation Test Results

The study conducted a few diagnostic tests to assess the model's stability and applicability as well as the validity of the results. Results is as presented in Table 6 as follows:

Table 6: Post-estimation Results

Tests		Outcomes	
		Coefficient	Probability
Correlogram Q-Statistics (Serial correlation)	F-stat.	15.72591	0.2265
Normality Test	Jarque-Bera	1.540115	0.462986

Source: Researcher's Computation Using EViews-12 (2026)

The Correlogram Q-Statistics was used to test for serial correlation in the residuals of the model. The F-statistic value of 15.72591, with a corresponding probability of 0.2265, indicated that there is no evidence of serial correlation in the residuals at conventional significance levels. Serial correlation, if present, could bias the results and make the model unreliable. However, since the p-value is well above the common thresholds (0.05 or 0.01), we fail to reject the null hypothesis that

there is no serial correlation. This outcome suggested that the model's residuals are independent over time, confirming that the DOLS estimates are consistent and that the findings regarding the relationship between selected macroeconomic variables and financial sector development.

The Jarque-Bera test was used to assess the normality of the residuals. A Jarque-Bera statistic of 0.014618 with a probability of 0.992718 indicated that the residuals are normally distributed. The null hypothesis of the Jarque-Bera test is that the residuals are normally distributed. Given the p-value is significantly higher than 0.05, we do not reject the null hypothesis. Normality in the residuals is important for validating the assumptions underlying the DOLS regression, particularly for ensuring that the estimated coefficients are efficient and unbiased. The normal distribution of the residuals supports the reliability of the model's predictions and the overall significance of the selected macroeconomic variables in explaining financial sector development.

G. Discussion of Findings

From the estimated DOLS regression results in Table 5, Further examination of the data revealed that gross domestic product per capita., inflation rate., and exchange rate relates to the dependent variable are important in explaining financial sector development in Nigeria throughout the research period. Suffices to say, all the variables except interest rate spread have statistically significant impact on financial sector development in the long run. Furthermore, gross domestic product per capita., interest rate spread., inflation rate., and exchange rate are in agreement with this study a priori expectations in the long run.

Upon variable-by-variable analysis, this study found that gross domestic product per capita is positively and significantly related to the growth of financial sector development in the long run. Consequently, one percentage increase in gross domestic product per capita will lead to an increase in financial sector development in Nigeria by 5.93 percent in the long run. This outcome is consistent with the a priori expectations of the investigation as vibrant economic growth creates a favourable business environment and opportunities, consequently increasing the demand for credit by the private sector. Further, this outcome aligns with prior studies such as Sanga and Aziakpono (2025), Tou and Diarra (2025), Abubakar and Kassim (2018) and Mbulawa (2015) who all reported that GDP per capita positively and significantly impacts financial development with an increasing marginal benefit as depth increases.

Furthermore, the estimated impact of interest rate spread on financial development is negative in the long run. By implication, one percentage change or increase in interest rate spread will lead to -0.41% increase in financial development. This outcome is consistent with the a priori expectations of the investigation as increase in the real interest rate increases the cost of funds to the banking sector, consequently reducing the supply of bank credit. However, this finding is not in line with some studies like Zulham *et al.* (2025) and Yang and Shafiq (2020) that argued that real interest rates positively influence financial development. However, the non-significant impact of interest rate spread on financial development suggested that there could more other dominant factors driving more financial development in Nigeria.

On the other hand, the findings indicated that inflation rate appears to affect financial sector development significantly and negatively in the long-run. Controlling other factors, for instance, a 1 percent increase in inflation rate will decrease financial sector development by -0.17% in the long run. This outcome is consistent with the a priori expectations of the research and an indication that high inflation reduces financial intermediation and lending activities. Also, this finding is in agreement with the findings of Badeeb and Lean (2017) and Yang and Shafiq (2020) who all submitted that inflation is the most significant factor influencing financial development.

Also, the Dynamic Ordinary Least Squares estimated impact of exchange rate on financial sector development is negative and significant in the long run. By implication, one percentage change or increase in exchange rate will lead to -0.03% decrease in financial sector development in the long-run respectively. This outcome is consistent with the a priori expectations of the investigation., as exchange rate adversely affect financial sector development in Nigeria due to the volatility of the

exchange rate. For example, a decrease in the real exchange rate increases trade volumes, which sparks demand for bank credit and vice versa. However, this study finding is contrary to the study of Abubakar and Kassim (2018 who suggested that exchange rate encourages financial depth and lending activities.

V. Conclusion and Recommendations

This paper examined the impact of the selected macroeconomic variables on financial sector development in Nigeria from 1986 to 2024; focusing on macroeconomic variables such as GDP per capita, interest rate spread, inflation and exchange rate. The study employed the Dynamic Ordinary Least Squares (DOLS) technique. The estimation of the DOLS regression revealed that gross domestic product per capita is positively and significantly related to the growth of financial sector development in the long run. Furthermore, the estimated impact of interest rate spread on financial development is negative in the long run. On the other hand, the findings indicated that inflation rate appears to affect financial sector development significantly and negatively in the long-run. Also, the estimated impact of exchange rate on financial sector development is negative and significant in the long run. Therefore, the following recommendations were raised from the research findings.

- i. The Federal Ministry of Education and Health should prioritize human capital to sustain income growth.
- ii. The Central Bank of Nigeria (CBN) should strengthen competition in the banking sector by reducing entry barriers and encouraging fintech participation to drive down lending rates.
- iii. The Central Bank of Nigeria should adopt a credible inflation-targeting framework anchored by disciplined monetary policy. Also, there should be improved coordination collaboration between the Federal Ministry of Finance and the Central Bank of Nigeria targeted at avoiding excessive deficit financing that fuels inflation.
- iv. The Central Bank of Nigeria (CBN) should move toward a more transparent exchange rate regime to reduce the volatility that currently hinders the sector. The monetary authority should build and maintain adequate foreign reserves to cushion external shocks.

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