

Effect of Selected Macroeconomic Variables on Financial Sector Development in Nigeria

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Abstract

This study examined the effect of selected macroeconomic variables on financial Sector Development in Nigeria from 1990 – 2022. It provided a comprehensive understanding of the dynamics between BMS, IRS, CRR and FSGDP in Nigeria. The Auto-regressive distributed lag model (ARDL) and Error Correction Model techniques were used to estimate the model. Furthermore, a cointegration Bounds test was conducted to determine if there exists a long-run relationship among the variables. The variables exhibited significant relationships and cointegration, emphasizing their interconnectedness in the long run. The findings of the study revealed that: The p-value of 0.0303 is less than 5% (0.05) suggesting that broad money supply has significant effect on financial sector development in Nigeria. Secondly, the findings revealed a non-significant coefficient for IRS and CRR which underscores the complexity of these relationships and the need for caution in drawing definitive conclusions, this also suggest the need for further research and consideration of additional factors influencing the financial sector. Based on these findings; the study recommended that Policymakers may consider reassessing the level and structure of interest rate, and cash reserve requirements to ensure that they do not inadvertently impede the financial sector development.

Keywords: *Macroeconomics variables; Financial sector development, Money supply*

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Background to the Study

Globally, Macroeconomic policy and financial sector development are two separate phenomena in economics; one probably can complement the other. While the financial sector might be a channel to achieve macroeconomic policy objectives, macroeconomic policy, on the other hand, can set the path to developing the financial sector. In many economies, the performance of the financial sector is the gauge for assessing the effectiveness of macroeconomic policies (Mordi, Bandele, Amoo, Emeka, Odey, and Matthew, 2014). The financial sector could represent an appropriate outcome or target of macroeconomic policy.

The financial sector has gradually gained a very important position in terms of the development of economies in recent years and operates through a financial system; where a collection of certain people, institutions, financial markets, financial instruments, and organizations coexist to fulfill various functions. (Tahsin & Gülşah. 2018). And the financial sector development is a process of establishing and expanding the provision of financial services to satisfy the requirements of households and financial institutions in a proficient manner (South African Reserve Bank, 2014). (Kapingura et al., 2022)

Recently, various global and domestic economic financial developments have impacted macroeconomic policies of nations, Nigeria inclusive. These developments include geopolitical tensions, macroeconomic concerns related to the Russia-Ukraine crisis, the Israeli and Hamas war, and repercussions from the COVID-19 pandemic. Factors such as tightening external financial conditions, Russian sanctions, disruptions in the global supply chain due to the Ukraine invasion, and vulnerabilities arising from the rapid growth of global debt portfolio and financial stability risks also affect the situation. Also, major financial markets face greater uncertainty, while central banks grapple with the risk of rising prices resulting from extensive monetary and fiscal stimulus measures. These developments pose challenges to macroeconomic policies. (Iwedi 2023).

Moreso, the Nigerian macroeconomic indicators indicate a slow development of the country's economy in most of 2022-2023. In the Nigerian story, growth is hindered by rising energy prices, tighter external financial conditions in Advanced Economies, ongoing insecurity, high debt burden and infrastructure challenges etc. Nonetheless, ongoing macroeconomic policy stimuli are expected to aid the recovery until growth risks decrease and inflation risks diminish significantly.

Problem of the Study

Nigeria is going through several macroeconomic challenges, money supply issues, continuous fall in the Nigerian naira, high rate of inflation, high interest rates, high cash reserve ratio, a demoralizing debt burden, the list is endless. Including so many other issues like insecurity, terrorism, high cost of food and transportation to mention a few. This prevailing situation currently presents a significant challenge to macroeconomic policy makers in the Nigeria nation. Immediate measures need to be taken to cushion this negative trend. This prevailing crisis has prompted an increased focus on the effect of macroeconomic policies and the financial sector development. However, the empirical studies on the subject matter are yet few,

and until there is solution to the prevailing situation more work needs to be done. Hence this work intends to contribute to existing literature by presenting new evidence on, the effect of macroeconomic variables on the financial sector development. This will be done by analyzing time series data on the financial sector contribution to GDP in Nigeria, the data for broad money supply, interest rate, and cash reserve ratio, spanning the period of 1990 -2022.

Objectives of the study

The broad objective of the study is to investigate the effect of Selected Macroeconomic Variables on the Financial Sector Development in Nigeria. While the specific objectives include: to examine the effect of Broad Money Supply on Financial Sector Development in Nigeria; to assess the effect of Interest Rate on Financial Sector Development in Nigeria; to determine the effect of Cash Reserve Ratio on Financial Sector Development in Nigeria.

Hypothesis of the Study

The study put forth the following hypothesis:

Ho: Broad money supply has no significant effect on financial sector development in Nigeria.

Ho: Interest rate has no significant effect on financial sector development in Nigeria.

Ho: Cash reserve ratio has no significant effect on financial sector development in Nigeria.

Literature Review

There have been diverse views regarding the link between macroeconomic variables and the financial sector development in Nigeria by previous scholars, some of which are reviewed below.

Financial Sector Developments

Financial sector development connotes improvements in the functioning of the financial system. These include increased access to financial intermediation, greater diversification of opportunities and options, improved information quality, and better incentives for prudent lending and monitoring and improved risk management practices. The sector's importance in accelerating economic growth and financial sector development has attracted keen interest of governments of most countries in the performance of their financial systems. In modern economies, growth thrives on an efficient financial sector that pools domestic savings and mobilizes foreign capital for productive investments, (Abdulrahman *et al.* 2019).

Mansur *et al* (2019) observed that the role of any efficient financial system is to channel funds from surplus to deficit units to finance the best firms and investment projects. But in practice this is not always the case because mostly large firms tend to get funds while small and medium sized enterprises (SMEs) are left to rely on informal sources of finance. The predominant view on financial development is that it increases the accessibility to financial instruments and institutions which decreases transaction cost thereby channeling funds to efficient economic agents who can use it to invest in both human and physical capital thereby stimulating economic growth. Furthermore, it also enables the poor to rely on accumulated savings or to spend in income enhancing assets. Several reforms have been implemented in the financial

sector, some of these reforms are ongoing. Though the objectives of these reforms were to build a more efficient, robust, and deeper financial sector, yet the sector seems not to have reached the desired dream, all the efforts seem to meet brick walls.

Broad Money Supply

Money supply is the amount of money within a specific economy available for purchasing goods and services (ECOWAS, 2009). Money Supply is defined as the total quantity of coins, bills, credit, liquid instruments, and loans in the economy of a country. Money supply is categorized into different sections based on the size and kind of account in which it has been kept. Money supply can be broken down into categories, including M1, which is circulating currency that's immediately available to purchase goods and services: cash, checking accounts, and traveler's cheques. M2 is M1 plus deposits or balances such as savings accounts or money markets that can quickly be converted into the M1 category. While M3 is M2 plus money that cannot be accessed immediately, such as that held by institutions. The Central Bank of Nigeria adopts the M2 definition which it refers to as total money aggregate.

According to economists, money supply plays an important role in exercising control over inflation. According to Buya (2015), it's the total stock of money circulating in an economy. Currency, printed notes, money in deposit accounts, and other liquid assets are all examples of circulating money. Economists and policymakers can use valuation and analysis of the money supply to assist them to formulate or change existing policies of increasing or decreasing the amount of money in circulation. The value is significant because it has an impact on the business cycle and, as a result, the economy. Furthermore, Keynesian proponents believed a real output can be influenced by the discretionary change in the money supply.

The Apex Bank can curtail the money supply by reducing the power of participants, (Deposit Money Bank), by increasing interest rates, while in the case of an expansionary monetary policy, the reverse will be the case. (Akomolafe, Danladi, Babalola & Abah, 2015). There is an excess money supply when the amount of money in circulation is higher than the level of total output of the economy. When money supply exceeds the level, the economy can efficiently absorb, it dislodges the stability of the price system, leading to inflation or higher prices of goods. Money Supply is the life wire of all economic activities and so has powerful effects on the economic life of any nation. An increase in Money Supply puts more money in the hands of producers and consumers thereby stimulating increased investment and consumption. Consumers increase purchases and business firms respond to increased sales by ordering raw materials and other resources to achieve more production, the spread of business and capital goods.

Interest Rate

The concept of interest rate has also been explained by a lot of scholars in different ways; according to Marshall, interest is the price paid for the use of capital in any market. John M. Keynes termed interest as a reward for parting with liquidity for a specified period. Adegboyega et al., (2023) define interest as the price paid for the hire of loan capital. Interest is

the income which goes to the lender of capital under its productivity as a reward for its abstinence. Interest rate is the amount charged on borrowed money, expressed as a percentage of the principal, by a lender to a borrower for the use of money. It is often expressed as a percentage of the amount borrowed (principal) for one year or any other period – month, week, day etc., as agreed by the lender and borrower at the time of contracting the loan. Specifically, the interest rate is the percentage of the principal that is paid as a fee over a specified period. It can also be described as the rental payments for the use of credit by borrowers and return for parting with liquidity by lenders over time. (Carver Federal Savings Bank). Interest rates can be expressed in either nominal or real terms depending on whether changes in the price level (inflation) are accounted for in their computations. If there is no adjustment for the changes in the price level, then the interest rate is expressed in nominal terms. A nominal interest rate is an interest rate that does not take inflation into account. It is practically the simplest type of interest rate, the type of rate quoted/stated by banks and other financial institutions for a given bond or loan.

Cash Reserve Ratio

Cash Reserve Ratio refers to a certain percentage of total deposits that Deposit Money Banks are required to maintain in the form of cash reserve with the central bank (Uju & Ugochukwu, 2021). The objective of maintaining the cash reserve is to prevent the shortage of funds in meeting the demand of the depositor. The amount of reserve to be maintained depends on the bank's experience regarding the cash demand by the depositors. If there had been no government rules, the deposit money banks would keep a very low percentage of their deposits in the form of reserves. Since cash reserve is non-interest bearing, i.e. no interest is paid on the deposits, therefore, the deposit money banks often keep the reserve below the safe limits. This might lead to a financial crisis in the banking sector.

Thus, to avoid such uncertainty, the central bank imposes a cash reserve ratio or CRR on deposit money banks. The central bank has the legal power to change the CRR at any time at its discretion. The cash reserve ratio is a legal requirement and therefore it is also called a Statutory Reserve Ratio (SRR). Through a cash reserve ratio, the central bank can change the money supply in the economy. Such as, when the economy demands a Contractionary Monetary Policy, the central bank will raise the CRR. On the other hand, when the economic conditions demand an Expansionary Monetary Policy, the central bank cuts down the CRR. Cash Reserve Ratio is one of the components of the monetary policy of the Central Bank of Nigeria which is used to regulate the money supply, level of inflation and liquidity in the country.

Empirical Review

Broad Money Supply on Financial Sector Development

Iwedi & Bekweri, (2023) explored how monetary policy impacts the growth of the financial sector in Nigeria. Financial data spanning from 1981 to 2021 was collected from both the Central Bank of Nigeria and the National Bureau of Statistics. The dependent variable was financial sector liquidity, while the independent variables were monetary policy rate, treasury bill, inflation rate, and exchange rates. Analytical tools including unit root tests, co-integration

tests, regression techniques, and Granger causality tests were employed for analysis. The outcomes of the regression analysis demonstrated that both the monetary policy rate and Treasury bill rates have a detrimental effect on the development of Nigeria's financial sector. Conversely, the exchange rate and inflation rate were found to have a positive influence on the growth of the financial sector. As a result, the study concluded that elements such as money supply, treasury bill rates, monetary policy rate, and exchange rate play a significant role in shaping the development of the financial sector during the study period. Considering these findings, the study suggests that maintaining exchange rate stability is vital for fostering economic growth. They also recommended that both governmental authorities and monetary institutions should prioritize exchange rate stability by adopting effective exchange rate policies to ensure a steady and reliable exchange rate. The study under review analyses monetary policy on the financial sector, while this current study, will specifically use broad money supply for analysis on the financial sector development, which may give us a different result.

Also, Kapingura et al., (2022) examined the effect of financial sector development on macroeconomic volatility in the Southern African Development Community (SADC) region for the period 1980–2018. employing the Cross-Sectionally Augmented Autoregressive Distributed Lag (CS-ARDL) model. The empirical findings show that banking variables have a negative and significant effect on growth volatility in the SADC countries. Also, stock market capitalisation, which is a measure of capital market development, was also found to have a negative effect on macroeconomic volatility when looking at the whole financial sector. The results suggest that a well-developed capital market where both the stock market and banking sector are thriving mitigates macroeconomic volatility. The empirical results, however, reveal that when the stock market is dominant, there is bound to be macroeconomic volatility. The results imply that pursuing the development of the overall financial system reduces macroeconomic volatility in a country as well as the region. Authorities should therefore ensure that policies geared towards development of the entire financial system are pursued. The study under review was carried out in Southern African Development Community (SADC) and the data spanning 1980 – 2018, while the current study is done in Nigeria with data spanning 1990 - 2022.

In another study Mansur *et al* (2019) evaluated the effect of macroeconomics variables on financial sector development in Nigeria from 2007 - 2018. The dependent variable was financial sector development in Nigeria, while the independent variable was inflation rate and per capital income. The study employed the descriptive research design using ordinary least square method of regression on time series data for the period of twelve years spanning through 2007-2018. It was found that, per capital income is positively related to financial development with statistical significance. However, a significant negative effect of inflation on financial development was revealed. The study recommended that efforts should be made by the government to ensure that income per head is increased. It also recommends that the government should make policies that will reduce inflation rate to enhance financial development. The study under review employed data spanning 2007 – 2018, and the OLS was used for analysis, while the study under review employed data spanning 1990 – 2022 and the ARDL was used for the data analysis.

Interest Rate on Financial Sector Development

Oyadeyi (2023) examined the interest rate operations and processes in Nigeria and the role of financial sector development in incentivizing central bank monetary policies from the monetary policy rate to the money market rates, lending rates, and deposit rates. The analysis covered the period 1981 to 2021 with sub-samples for 1981 to 2011 and 1991 to 2021 to test the consistency of the findings. The findings confirmed that interest rate pass-through is incomplete for Nigeria, albeit to a lower degree in the short run compared to the long run. The reasons for this may be due to interest rate stickiness, problems of asymmetric information, and bank switching costs. Also, the findings confirmed that financial development weakens the impact of monetary policy on the interest rate pass-through process, while the analysis of the asymmetric mean adjustment lags confirmed that changes in the policy rate are transmitted to the deposit and lending rates within the year it was announced. The analysis confirmed that the results across each sub-sample and the robustness tests are consistent with the main analysis. Therefore, it is imperative that policymakers should account for financial development when designing monetary policy effectiveness since it can hinder or strengthen the interest rate monetary policy channel.

Joining the conversation, Ogunlokun & Oguntuase (2023) investigated the behavioral effect of interest rates on the financial sector from 1987 to 2020. The proxies were the real Gross Domestic Product of the sector as the dependent variable, while, lending interest rate, deposit interest rate, monetary policy rate and treasury bill rate were the independent variables. The Philip-Peron approach was used to test for unit root, and the test revealed that the variables were integrated of I(0) and I(1), Autoregressive Distributed Lags model was specified and estimated with cointegration bound test which revealed evidence of long run relationship among the variables. The result showed that lending interest rate, with coefficient -0.1391 LIR and $p\text{-value} = 0.0268 < 0.05$ was the most significant influencer of the growth in the financial sector while deposit interest rate with -0.0076 coefficient and $p\text{-value} = 0.7410 > 0.05$, monetary policy rate with 0.0077 coefficient and $p\text{-value} = 0.2626 > 0.05$ and treasury bill rate with -0.3533 coefficient and $p\text{-value} = 0.4889 > 0.05$ were not weak in influencing the growth of the financial sector in the long run, although the relationships exhibited by these variables differ slightly in the short run. In addition, the error correction mechanism revealed that any temporary deviation from the equilibrium experienced by the interest rate proxies adjusted quickly to the equilibrium in the long run at the speed of 35%. Also, the post-estimation test revealed that the residuals were homoscedastic while the autocorrelation test revealed that the residuals were uncorrelated. Hence, the study concluded that lending interest rate was a significant determinant of the growth in the financial sector and recommended that since the financial sector is deregulated already, lending interest rate should be naturally allowed to be dictated by the market forces of demand and supply rather than being artificially fixed by the banks which often take advantage of this to extort customers; this will weaken the current significant negative effect which lending rate has on the growth of the financial sector. The study under review used lending interest rate, deposit interest rate, monetary policy rate and treasury bill rate as independent variable while the current study will use broad money supply, interest rate and cash reserve ratio as the independent variable hence the results is likely to differ.

Furthermore, Oluwole & Ushie (2022) evaluated the effect of interest rate liberalization on investment in Nigeria using time series data obtained from the Central Bank of Nigeria statistical bulletin, between 1986 and 2020. The study adopted Autoregressive Distributed Lag (ARDL) and bound test for the long run Co-Integration. The result of the ARDL showed that interest rate had an insignificant and negative effect on domestic investment while savings had a positive and significant effect on domestic investment in Nigeria. It was also discovered that the savings rate had a positive and significant effect on domestic investment in Nigeria. Finally, the lending rate had a positive and significant influence on domestic investment in Nigeria. The study concluded that interest rate had a significant role in the economy because it determined the allocation of financial resources and that for an economy to achieve sustainable growth and development, the investment position of the nation must be adequately enhanced.

Cash Reserve Ratio on Financial Sector Development

Faykuzzaman *et al* (2023) analyzed how banks profitability responds to fluctuations in cash reserve ratio in Bangladesh. Basically, its purpose is to examine the effects of Bangladesh Bank practices of employing cash reserve ratio on banking intermediation activities and as a result its profitability, particularly in conventional commercial banking sector. Coefficient of Correlation is used to find out the relation between cash reserve ratio and banks profitability while t-test is utilized for testing hypothesis. Quantitative time series data for 5 years' period of 2017-2021 was collected for the study. The researcher selects ten leading conventional commercial Bank as sample. This study highlights the consequences of movement in CRR on banks profitability by using secondary data. The finding of the study is that CRR has a negative relation with banks profitability where Return on Assets (ROA) and Return on Equity (ROE) are studied as profitability indicators. It can be concluded that movement in CRR has inverse impact on conventional commercial banks profitability in the long run by influencing the banks intermediary work. This paper helps the banks to stand strongly and strategically at the time of tight monetary policy when CRR rate increases by informing the inverse impact of this monetary too. The study under review was conducted in Bangladesh and the focus was on the banking sector alone, while the current study is done in Nigerian, and concentration is on the entire financial sector.

In another development, MacCarthy (2016) studied the effect of cash reserve ratio on the financial performance of banks and their level of engagement in corporate social responsibility. The paper adopted a mixed research technique that comprises of quantitative and qualitative research approaches. Data on banks' cash reserve ratios from Bank of Ghana and data on corporate social responsibility engagement and return on investment from the 2013 annual reports of 20 commercial banks in Ghana are used. It is found that cash reserve ratio positively relates to the financial performance of commercial banks, but it negatively relates to banks' level of engagement in corporate social responsibility. Also, the cash reserve ratio significantly and strongly predicts financial performance of commercial banks in terms of return on investment. It is recommended that banks enhance their engagement in corporate social responsibility activities that improve bank-customer relationship and customer patronage. The study under review adopted a mixed research technique that comprises

quantitative and qualitative research approaches, while the current study adopted the quantitative research approach.

Bawa et al., (2018), examined the effect of cash reserve ratio and money supply on the profitability of DMBs in Nigeria. Data for the study were extracted from the annual reports and accounts of the DMBs for the study period (2002-2012). Descriptive statistics and regression analysis technique were used to analyse the data. The results reveal that cash reserve ratio has negative and insignificant impact on the earnings of DMBs in Nigeria. Money supply has a positive significant effect deposit money banks volume of loans and advances, interest rate and interest income. The study recommends that the CBN should redefine monetary policy instruments; Cash Reserve Ratio (CRR) by setting CRR at an equilibrium level to make more funds available to DMBs for advancing loan and investing in the economy for growth and development. In addition, the government through the CBN should set lending rate an optimum level as these would help to boost credit expansion, money supply and invariably returns and profitability of deposit money banks in Nigeria. Most of the literature reviewed on cash reserve ratio focused on the banking sector while the current study extends to the entire financial sector.

Theoretical Framework

The Financial liberalisation theory

The Financial liberalisation theory as pioneered by Mackinnon (1973) and Shaw (1973), forms the bedrock of this study because it has justified that liberalized financial sector as in the case of Nigeria would cause efficient allocation of financial resources by the financial intermediaries (which are equally the financial institutions operating in the financial sector) as the market-determined interest rate encourages savings and investments and in turn produces improved growth (performance) in the overall economy which includes financial sector as its constituents. By implication therefore, liberalized financial sector spurs high interest rate and this encourages those with excess liquidity to save more with the financial institutions; through this, the financial institutions would be able to lend more to productive investments (and earn more income in form of interest). The foregoing, as advocated by this theory produces improved performance of the financial sector in terms of increase in interest earnings and by extension, overall productivity. By implications, the theory affirms a direct and linear relationship between the interest rate and the growth of the financial sector.

Methodology

The research design that was adopted in this study is the *ex-post facto* research design. Two main criteria were taken into consideration when selecting the study design. First, the Central Bank of Nigeria Statistical Bulletin, 2022, provided historical accounting data for the study. Because of this, the occurrence being studied had already happened, and the goal of the study is not to alter or control the independent variables. The study acquired time-series data for Nigeria from 1990 to 2022, specifically for the following variables: Financial Sector Development (FSGDP) as the Dependent variable while, Broad Money Supply (BMS), Interest Rate (IRS), and Cash Reserve Ratio (CRR) are the independent variables. The

method of data analysis employed in this study includes descriptive statistics, correlation analysis and unit root test. The unit root test (the Augmented Dicky Fuller) was conducted to avoid spurious regression results. Auto-regressive distributed lag model (ARDL) and Error Correction Model techniques were used to estimate the model. Furthermore, cointegration Bounds test was conducted to determine if there exists a long-run relationship among the variables.

Model Specification

The study followed Jie and Shamshedin (2019) econometric model.

$$INDUS_t = \beta_0 + \beta_1 TOP_t + \beta_2 FDI_t + \beta_3 GFCF_t + \mu_t$$

Where:

INDUS is industrialization, TOP is trade openness, FDI is foreign direct investment, GFCF is gross fixed capital formation (domestic capital), β_0 is the intercept, the coefficients β_1 - β_3 are the parameters of the respective variables, t is the time, and μ is the error term. Subsequently modified to obtain the asymmetric model for the study.

$$FSGDP = f(BMS, IRS, CRR)$$

$$FSGDP = \beta_0 + \beta_1 BMS_t + \beta_2 IRS_t + \beta_3 CRR_t + \mu_t$$

Where: FSGDP is Financial Sector Development, BMS represents Broad Money Supply, IRS is Interest Rate and CRR is Cash Reserve Ratio. β_0 is the intercept, the coefficients β_1 - β_3 are the parameters of the respective variables, t is the time, and μ is the error term.

Estimate the ARDL-ECM Model:

Based on the results of the cointegration test, the Autoregressive Distributed Lag with Error Correction Model (ARDL-ECM) model estimated takes the following form:

$$\Delta FSGDP_t = \beta_0 + \sum_{i=1} \beta_i \Delta BMS_{t-i} + \sum_{i=1} \gamma_i \Delta IRS_{t-i} + \sum_{i=1} \delta_i \Delta CRR_{t-i} + \varepsilon_t$$

where:

$\Delta FSGDP_t$ is the first difference of Financial Sector Development at time t .

ΔBMS_{t-i} , ΔIRS_{t-i} , and ΔCRR_{t-i} represent the first differences the independent variables at time $t-i$ respectively.

β_0 is the intercept term.

β_i , γ_i , and δ_i are the coefficients corresponding to the lagged values of the independent variables.

ε_t represents the error term.

Diagnostic Tests:

In addition to the test for the ARDL-ECM model, tests for autocorrelation, multicollinearity and heteroskedasticity was also conducted.

Result and Discussion

Table 1.

Descriptive Statistics	FSGDP	BMS	IRS	CRR
Mean	1543.265	11173.63	18.23875	1281.733
Median	1467.185	3217.91	17.965	312.74
Maximum	3009.35	43342.3	29.8	3405
Minimum	785.4	47.42	11.5	0.94
Std. Dev.	566.0707	13773.41	3.785291	1391.885
Skewness	0.585832	1.038409	0.805119	0.392275
Kurtosis	2.717929	2.693108	4.627016	1.347485
Observations	32	32	32	32

Source: Researcher's EViews 2024

Table 1 displays the descriptive statistics for the key variables in the study. The mean Financial Sector Development (FSGDP) value of 1543.27 indicates the average level of financial sector development in the sample. Median values, such as 3217.91 for Broad Money Supply (BMS), suggest potential skewness in the data. The range (maximum and minimum values) provides insights into the variability of each variable. Notably, the high standard deviation of 13773.41 for BMS signals significant variability in money supply. Skewness and kurtosis values offer hints about the shape of the distributions, with FSGDP showing a slight positive skew and IRS exhibiting heavy-tailedness.

Table 2.

Correlation Analysis				
	FSGDP	BMS	IRS	CRR
FSGDP	1			

BMS	0.919595	1		
	0.0000	-----		
IRS	-0.65892	-0.62569	1	
	0.0000	0.0001	-----	
CRR	0.853555	0.900456	-0.59957	1
	0.0000	0.0000	0.0003	-----

Source: Researcher's EViews 2024

Table 2 presents the correlation matrix, providing insights into the relationships between Financial Sector Development (FSGDP) and the independent variables: Broad Money Supply (BMS), Interest Rate (IRS), and Cash Reserve Ratio (CRR). The correlation coefficients range from -1 to 1, where values closer to 1 indicate a strong positive correlation, values closer to -1 indicate a strong negative correlation, and values around 0 suggest a weak or no correlation.

The correlation coefficient of 0.92 between FSGDP and BMS indicates a strong positive correlation, suggesting that as the broad money supply increases, there is a corresponding increase in financial sector development. The negative correlation coefficients of -0.66 between FSGDP and IRS and -0.60 between FSGDP and CRR suggests inverse relationships. As interest rates and cash reserve ratios increase, financial sector development tends to decrease. These relationships are statistically significant, as indicated by the p-values (all p-values are less than 0.05).

Table 3.

<i>Unit Root Test</i>						
Variable	at levels			at 1st difference		
	t-statistic	5% level	p-value	t-statistic	5% level	p-value
FSGDP	-2.703714	-3.568379	0.2422	-8.887511	-3.580622	0.0000
BMS	0.495240	-3.557759	0.9988	-7.026428	-3.562882	0.0000
IRS	-5.369764	-3.557759	0.0006	-6.399382	-3.568379	0.0001
CRR	-3.315976	-3.557759	0.0818	-5.868400	-3.568379	0.0002

Source: Researcher's EViews 2024

Table 3 presents the unit root test results for the variables at both levels and first differences. The unit root test helps determine whether the variables are stationary over time. For Financial Sector Development (FSGDP), the t-statistic at levels is -2.70, which is greater than the critical value at the 5% level, suggesting that FSGDP is not stationary. However, after taking the first difference, the t-statistic becomes -8.89, well below the critical value, indicating stationarity. This suggests that FSGDP is likely integrated of order one, or I(1).

Broad Money Supply (BMS) shows a t-statistic of 0.50 at levels, indicating non-stationarity. However, after differencing, the t-statistic is -7.03, well below the critical value, suggesting that BMS becomes stationary in first differences. Interest Rate (IRS) and Cash Reserve Ratio (CRR) both exhibit non-stationarity at levels, with t-statistics of -5.37 and -3.32, respectively. After differencing, the t-statistics for both variables become highly negative (-6.40 for IRS and -5.87 for CRR), indicating stationarity.

Table 4.

Johansen Cointegration Test				
Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.971008	132.9307	40.17493	0.0000
At most 1 *	0.660572	40.87139	24.27596	0.0002
At most 2 *	0.307153	12.77853	12.3209	0.0419
At most 3	0.117094	3.237955	4.129906	0.0852
Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.971008	92.05936	24.15921	0.0000
At most 1 *	0.660572	28.09285	17.7973	0.0010
At most 2	0.307153	9.54058	11.2248	0.0975
At most 3	0.117094	3.237955	4.129906	0.0852

Source: Researcher's EViews 2024

Table 4 shows the results of the Johansen Cointegration Test, which assesses the presence of cointegration among the variables. The test results suggest that there is evidence of cointegration among the variables. The Trace test indicates that at most 2 cointegrating equations are significant, as the test statistic (12.78) is greater than the critical value at the 5% level (12.32). Similarly, the Maximum Eigenvalue test also supports the presence of at most 2 cointegrating equations, with a test statistic of 9.54 surpassing the critical value of 11.22 at the 5% level.

These findings imply that there are two cointegrating relationships among the variables, suggesting a long-term connection between Financial Sector Development (FSGDP), Broad Money Supply (BMS), Interest Rate (IRS), and Cash Reserve Ratio (CRR).

Table 5.

F-Bounds Test				
Test				
Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.733713	5%	2.79	3.67

Source: Researcher's EViews 2024

The test results from table 5 suggest that the F-statistic (4.73) is greater than the critical value for I(0) but less than the critical value for I(1). Therefore, the null hypothesis of I(0) is rejected, indicating that the variables are integrated of order 1, or I(1). This aligns with the earlier findings from the unit root test, reinforcing the notion that taking the first differences of the variables is necessary to achieve stationarity for the time-series analysis.

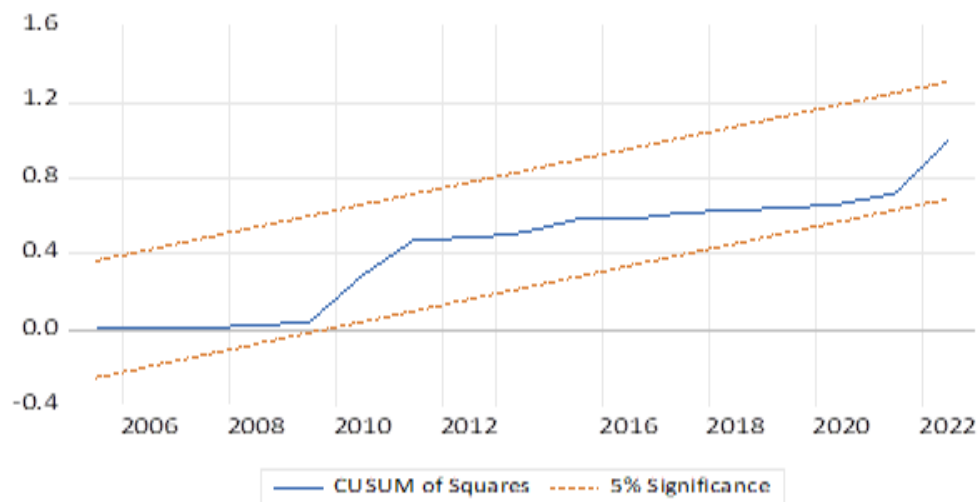
Table 6.

Variance Inflation Factors			
Variable	Coefficient Variance	Uncentered VIF	Centered VIF
BMS	4.77E-05	9.451283	5.627939
IRS	186.6951	41.49798	1.662238
CRR	0.004441	10.02695	5.346737

Source: Researcher's EViews, 2024

Table 6 provides information on the Variance Inflation Factors (VIF) for each independent variable, which assesses multicollinearity in the regression model. Given the centered VIF for all variables are less than 10, as BMS (5.62), IRS (1.66) and CRR (5.34), this indicates no presence of no multicollinearity.

Fig. 1: CUSUM of Squares



Source: Researcher's EViews, 2024

Figure 1 presents the CUSUM of squares representing the structural break, the CUSUM of squares from 2001 indicates a stable data.

Table 7.

7						
VAR Lag Order Selection Criteria						
Endogenous variables: FSGDP BMS IRS CRR						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-783.812	NA	3.23E+19	56.27231	56.46263	56.33049
1	-678.246	173.4308	5.46E+16	49.8747	50.82627*	50.16561
2	-658.459	26.85329*	4.51e+16*	49.60423*	51.31706	50.12786*

* Indicates lag order selected by the criterion
AIC: Akaike information criterion

Source: Researcher's EViews, 2024

Table 7 presents the results of the VAR (Vector Autoregressive) Lag Order Selection Criteria for the endogenous variables FSGDP, BMS, IRS, and CRR. The AIC (Akaike Information Criterion) suggests a lag order of 1. Choosing the appropriate lag order is essential for accurate model specification.

Table 8.

ARDL Regression Output				
Dependent Variable: FSGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FSGDP(-1)	0.612158	0.216954	2.821604	0.0118
FSGDP(-2)	0.888631	0.267329	3.324113	0.0040
BMS	-1.39236	0.589109	-2.3635	0.0303
BMS(-1)	0.506529	0.153924	3.290765	0.0043
IRS	-14.0625	10.56651	-1.33086	0.2008
CRR	9.753331	6.178004	1.578719	0.1328
DUMMY*BMS	1.411772	0.580623	2.431477	0.0264
DUMMY(-1)*BMS(-1)	-0.52418	0.148034	-3.54096	0.0025
DUMMY*IRS	-25.0531	11.60636	-2.15857	0.0455
DUMMY*CRR	-9.92604	6.172372	-1.60814	0.1262
C	117.1802	545.0152	0.215004	0.8323
R-squared	0.974111			
Adjusted R-squared	0.958882			
Durbin-Watson stat	2.378811			

Source: Researcher's EViews 2024

Table 8 presents the results of the ARDL (Auto Regressive Distributed Lag) regression for the dependent variable FSGDP, considering the lagged values of FSGDP, BMS, IRS, and CRR. Lagged values of FSGDP: Both FSGDP (-1) and FSGDP(-2) have positive coefficients, indicating a positive relationship between the past values of FSGDP and the current value.

These coefficients are statistically significant, with p-values of 0.0118 and 0.0040, respectively.

Lagged values of BMS, the coefficient for BMS (-1) is positive and statistically significant (p-value = 0.0043), suggesting a positive relationship between the past value of Broad Money Supply (BMS) and the current value of FSGDP. However, the contemporaneous BMS has a negative coefficient, indicating a negative relationship. IRS and CRR, the coefficients for IRS and CRR are negative, but they are not statistically significant at conventional levels (p-values are 0.2008 for IRS and 0.1328 for CRR). R-squared (0.9741) and Adjusted R-squared (0.9589) suggest that the model explains a significant proportion of the variation in FSGDP.

Table 9.

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.859426	Prob. F(16,11)	0.6195
Obs*R-squared	15.55597	Prob. Chi-Square(16)	0.4844
Scaled explained SS	2.404727	Prob. Chi-Square(16)	1.0000

Source: Researcher's EViews 2024

Table 9 provides the results of the Breusch-Pagan-Godfrey test, which is a test for heteroskedasticity in the residuals of a regression model. based on the results of the Breusch-Pagan-Godfrey test, there is no strong evidence to reject the null hypothesis of homoskedasticity in the residuals of the regression model.

Discussion of Findings

The ARDL regression analysis provides valuable insights into the relationships between financial sector development (FSGDP) and its key determinants - Broad Money Supply (BMS), Interest Rate (IRS), and Cash Reserve Ratio (CRR). The lagged values of FSGDP reveal a significant and positive relationship with both FSGDP (-1) and FSGDP (-2). This implies a persistent positive effect of past financial sector development on the current level, indicating a potential momentum effect. The lagged values of BMS show an interesting pattern. While the past value of BMS (BMS (-1)) is positively and significantly related to FSGDP, suggesting a positive impact on financial sector development, the contemporaneous BMS exhibits a negative relationship. This dual relationship implies a dynamic interaction between Broad Money Supply and financial sector development, where the short-term impact might differ from the longer-term effect.

The first hypothesis of the study states that: H_0 1: broad money supply has no significant effect on financial sector development in Nigeria. In this study the coefficient of broad money supply was -1.39236. This suggests that a one-unit increase in BMS is associated with -1.39236 decrease in economic growth. Also, the p-value of 0.0303, which is less than 5% (0.05). Also, the p-value of 0.0303 is less than 5% (0.05) suggesting that broad money supply has significant effect on financial sector development in Nigeria, therefore H_0 1: is rejected.

The second hypothesis of the study states that: $H_0 2$: interest rate has no significant effect on financial sector development in Nigeria. In this study the coefficient of interest rate was -14.0625. This suggests that a one-unit increase in IRS is associated with -14.0625 decrease in economic growth. Also, the p-value was 0.2008, which is greater than 5% (0.05) suggesting that interest rate has no significant effect on financial sector development in Nigeria, therefore $H_0 2$: is accepted.

The third hypothesis of the study states that: $H_0 3$: cash reserve ratio has no significant effect on financial sector development in Nigeria. In this study the coefficient of cash reserved ratio was 9.753331. This suggests that a one-unit increase in CRR is associated with cash reserved ratio increase in economic growth. Also, the p-value was 0.1328, which is greater than 5% (0.05) suggesting that cash reserve ratio has no significant effect on financial sector development in Nigeria, therefore the $H_0 3$: is accepted.

The high R-squared (0.9741) and Adjusted R-squared (0.9589) values signify that the model explains a substantial proportion of the variation in FSGDP. This suggests that the selected lagged variables collectively capture a significant part of the dynamics influencing financial sector development in Nigeria. The mixed relationship with Broad Money Supply, where short-term and long-term effects differ, underscores the need for a nuanced understanding of the role of monetary factors. While interest rates and cash reserve ratios exhibit negative associations with financial sector development, their statistical significance remains uncertain, prompting further investigation. The high explanatory power of the model implies that the selected lagged variables contribute meaningfully to understanding the dynamics of financial sector development. However, the non-significant coefficients for IRS and CRR underscore the complexity of these relationships and the need for caution in drawing definitive conclusions.

Conclusion and Recommendations

In conclusion, the study contributes to the literature on financial sector development in Nigeria by employing an ARDL framework to investigate the dynamic relationships with key macroeconomic variables. The positive effect of past financial sector development and the nuanced relationship with Broad Money Supply provide valuable insights for policymakers and practitioners. The non-significant relationships with interest rates and cash reserve ratios suggest the need for further research and consideration of additional factors influencing the financial sector. While the model explains a significant portion of the variation in financial sector development, there are nuances and complexities that warrant continued exploration. Future research may delve into finer-grained analyses, considering potential structural breaks, non-linear relationships, or other factors influencing the observed dynamics. Overall, this study contributes to the understanding of the determinants of financial sector development in Nigeria and provides a foundation for more nuanced policy considerations in the realm of macroeconomic management. Upon this premise, the study recommends that:

- i. Policymakers and financial authorities closely monitor and manage the growth and stability of broad money in the economy. Adequate liquidity in the financial system appears to contribute positively to the development of the financial sector. However,

- the observed negative contemporaneous relationship suggests the need for a nuanced approach, considering both short-term and long-term impacts.
- ii. Policymakers should carefully weigh the potential trade-offs between monetary policy objectives and the development of the financial sector, seeking a balance that fosters stability and growth.
 - iii. Policymakers may consider reassessing the level and structure of cash reserve requirements to ensure that they do not inadvertently impede financial sector development.

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APPENDIX 1

Year	FSGDP (₦Billion)	BMS (₦Billion)	IRS (%)	CRR (₦Billion)
1990	785.40	47.42	25.50	3.42
1991	816.81	75.40	20.01	3.92
1992	848.16	111.11	29.80	4.22
1993	879.58	165.34	18.32	1.03
1994	905.50	230.29	21.00	0.94
1995	942.01	289.09	20.18	4.47
1996	978.71	345.85	19.74	4.61
1997	1019.11	413.28	13.54	5.71
1998	1068.61	488.15	18.29	25.62
1999	1106.34	628.95	21.32	39.39
2000	1151.59	878.46	17.98	58.71
2001	1202.82	1,269.32	18.29	97.25
2002	1556.69	1,505.96	24.85	132.51
2003	1396.78	1,952.92	20.71	168.52
2004	1442.45	2,131.82	19.18	206.06
2005	1491.76	2,637.91	17.95	419.42
2006	1573.21	3,797.91	17.26	872.51
2007	1660.36	5,127.40	16.94	1560.03
2008	1749.11	8,643.43	15.14	2577.60
2009	1442.61	9,687.51	18.99	1982.33
2010	1908.81	11,101.46	17.59	179.89
2011	1394.70	12,628.32	16.02	2266.76
2012	1687.91	15,503.41	16.79	2216.79
2013	18.33.65	18,743.07	16.72	2395.26
2014	1982.67	20,415.61	16.55	2744.99
2015	2123.90	20,885.52	16.85	3190.86
2016	2027.51	24,259.00	16.87	3405.00
2017	2053.00	28,604.47	17.56	3082.88
2018	2094.68	29,774.43	19.33	3105.92
2019	2148.39	34,257.90	15.53	3128.96
2020	2349.68	36,038.01	12.32	3152.00
2021	2586.28	40,318.29	11.50	3175.04
2022	3009.35	43,342.30	11.74	3198.08

Source: Central Bank of Nigeria Annual Reports from 1990-2022