CAUSALITY BETWEEN FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN NIGERIA

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Abstract: The study analyzed the causality between financial development and economic growth in Nigeria using annual time series data from 1981 to 2023. The study used money supply to GDP ratio, private sector credit to GDP ratio, market capitalization to GDP ratio, banking sector assets to GDP ratio, and savings to GDP ratio to measure financial development while real GDP was used to measure economic growth. The analysis based on the Granger causality test revealed that unidirectional causality existed between financial development and economic growth, as real GDP Granger caused the banking sector assets to GDP ratio, money supply to GDP ratio, and private sector credit to GDP ratio, which implied evidence of the demand-following hypothesis of financial development. There was a long-run relationship between financial development and economic growth where it was found that an increase in the private sector credit-to-GDP ratio, market capitalization-to-GDP ratio, and banking sector assets-to-GDP ratio had diminishing influence on economic growth. It was also found that, in the short run, the private sector credit-to-GDP ratio and banking sector assets-to-GDP ratio had a negative influence on economic growth while other financial development

indicators emerged with positive coefficients. It was recommended, among other things, that a higher macroeconomic stability level be sustained towards accelerating growth, which is useful in enhancing the level of financial development in Nigeria.

Keywords: Financial Development, Economic Growth, ARDL, Bounds Test, Nigeria.

1.   INTRODUCTION

Early authors have written extensively about the ways in which financial development influences economic progress and the varying opinions regarding the causality between the two (Kuznets, 1955; Patrick, 1966). The possible direction of causality between financial development and economic growth was labeled by Patrick (1966) as the supply-leading and demand-following hypothesis. The standpoint of the supply-leading hypothesis is that financial development drives economic growth. This implies that the development of financial institutions and markets stimulates economic growth. Numerous theoretical and empirical literature on the subject has shown that financial development is important and causes economic growth (Sambo, Sulong & Sambo, 2021). On the other hand, the demand-following hypothesis postulates a causal relationship running from economic growth to financial development. An increase in demand for financial services would induce an expansion in the financial sector as the real economy grows (Mittal, 2017).

According to the monetary transmission mechanism and Schumpeter's theory of development, economic growth might result from an unrestricted movement of credit within the economy. Credit circulation would support inclusive economic growth if it were sufficiently widespread to reach low-income earners. According to Kuznets (1955), financial markets only start to expand as the economy gets closer to the middle stage of growth and continue to do so as the economy reaches maturity. Lewis (1956), on the other hand, said that financial markets emerge as a byproduct of economic expansion and then propel actual economic activity. Without a doubt, the financial sector is the lifeblood of every economy since it creates resources that can be invested in, which in turn spurs economic expansion.

Financial development entails the ability of financial institutions to effectively and efficiently mobilize savings for investment purposes towards sustainable economic growth. Based on the perceived relationship between

financial development and economic growth, the economy of every nation requires a sophisticated and efficient financial system to succeed. According to Peprah, Ofori and Asomani (2019), financial development is crucial to economic growth because it connotes the establishment and expansion of institutions, instruments, and markets that facilitate investments and growth. Hence, a well-developed financial system facilitates the exchange of goods and services, savings mobilization, resource allocation, and aids risk diversification (Odili & Onyele, 2021). Based on this premise, many developing countries, particularly Nigeria, have adopted development strategies that prioritize modernization of their financial systems. For instance, since the 1980s, Nigeria has implemented reforms and policies within the context of structural adjustment programme (SAP) in 1986 as proposed by the Bretton Woods institutions. According to Soludo (2007), the essence of initiating these reforms is to create a more efficient and stable financial system for sustainable economic growth and development.

Since the Structural Adjustment Programme (SAP) in 1986, Nigerian monetary authorities have embraced measures aimed at developing the financial system and reducing the level of financial repression. These reforms led to changes in Nigeria's financial sector to foster competition, strengthen the supervisory role of the regulatory authority, and streamline the relationship between the public and financial sectors of the economy. Many new financial instruments/assets and techniques have been developed, and existing ones have been modified towards enhancing financial development. Unfortunately, the positive influence of financial development on economic growth is yet to be felt in Nigeria. The Nigerian financial system is fragile and has been exposed to financial crisis, as witnessed in 2008 when the Nigerian stock market capitalization trended downwards from ₦12.395 trillion as of March 2008 to ₦6.957 trillion by the end of 2008. The all-share index (indexed in 1984 at 100), which had risen to 66,371 as of March 5, 2008, equally diminished drastically by the end of 2008. Figure 1 shows the trend of market capitalization from 2007 to 2023.

These developments in the financial system might continue to spur the lack of financial accessibility and restrict economic units to low-return, capital-intensive activities. Already, there have been profound fluctuations in total savings and investments in Nigeria, implying that domestic production, a measure of economic growth, will follow the same pattern. Again, literature is
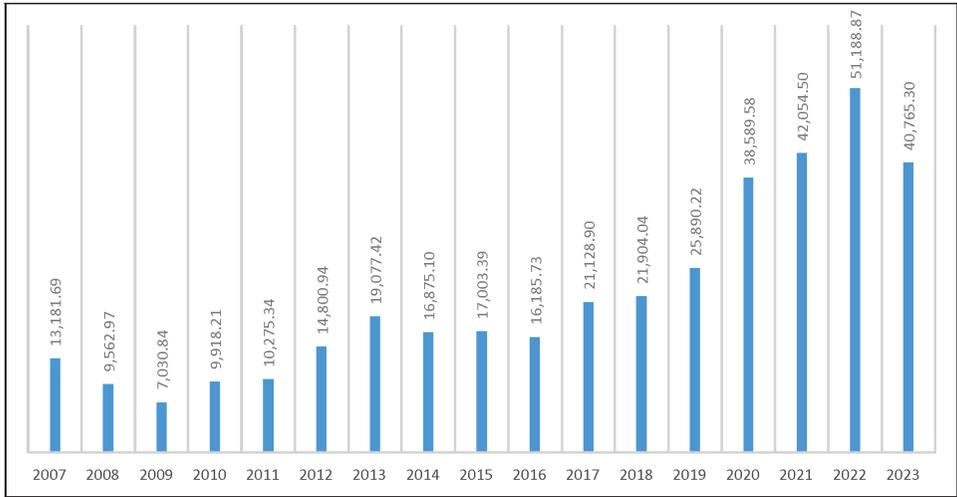
Figure 1: Trend of Market Capitalization (2007-2023)

faced with the puzzle as to whether financial development influences economic growth or vice versa. For instance, prior empirical works such as Haan, Pleninger, and Sturm (2021); Karimo and Ogbonna (2017); Bidemi and Abidemi (2014) found a one-way causal flow from components of financial development to economic growth, while studies like Nwakoby, Oleka, and Ananwude (2019) found a one-way causal flow emanating from economic growth to financial development. Similarly, empirical studies such as Mittal (2017) found evidence of a bidirectional relationship between components of financial development and economic growth, while Bassey, Okoi, and Imoh (2021) found no causal flow between the two variables. Furthermore, Kapaya (2020) explained that the actual causal flow between financial development and economic growth is dependent on the measure of financial development. These discrepancies in the findings of prior studies motivates the need to trace the direction of causality between financial development and economic growth in Nigeria.

After the introduction, the literature evaluation in the field of research is presented in Section 2, and the stylized facts in the Nigerian financial sector. The study's methodological approach is presented in Section 3, and its findings and outcomes were covered in Section 4. The analysis is concluded in Section 5, which also makes some policy recommendations aimed at enhancing the connection between Nigeria's economic growth and financial developments.

2. LITERATURE REVIEW

2.1. Conceptual Framework

In the finance-growth literature, financial development is frequently referred to as the increase and persistent availability of financial services aimed at developing the entire economy. The concept of financial development indicates the soundness of the financial system coupled with its capacity to create credit based on lending and deposit rates (Owhofasa & Aiyedogbon, 2013). According to Levine (1997), financial development refers to greater financial resource mobilization in the formal financial sector, the ease in liquidity constraints of banks, and the enlargement of funds available to finance projects. As such, the theory of financial development is based on the positive influence of financial sector activities on economic growth. Similarly, Valickova (2012) acknowledged that financial development captures the deliberate effort aimed at developing the financial system, evidenced in the upsurge of financial instruments/assets in the financial markets aimed at economic expansion. By implication, this means that more intermediary activities would propel the efficient allocation of resources to various sectors of the economy.

The necessity of capital market development has also been identified by theories and empirical research. According to Bencivenga, Smith and Starr (1996), for example, a more developed financial sector may offer liquidity that reduces the cost of the foreign capital necessary for development goals, particularly when it comes to low-income nations that are unable to accumulate enough domestic savings. Because of its intermediation operations, the financial sector's growth can also be considered a factor in the decrease of poverty (Manasseh et al., 2021). The availability of credit has helped small businesses grow, which has increased revenue and created jobs.

The direction of causality between financial development and economic growth has remained a vital discussion in finance and economic literature. This has remained a crucial factor underlying the disparity between income levels of countries. Thus, before a detailed study of the subject of the finance-growth nexus, it is expedient to explain concepts that are popular in discussing this relationship. These concepts are discussed under financial development, economic growth, and the responsibilities of a financial system.

The first building block for this study is the fact that financial system is expected to facilitate the efficient distribution of funds across sectors of

the economy. The financial system, which encompasses financial markets, financial intermediaries, and financial instruments, is mainly bordered by the channelling of excess funds from economic units that have a budget surplus to the ones that have a budget deficit. An efficient financial system discharges this important function by mobilizing savings and then allocating them to viable investment activities, diversifying risk, increasing liquidity, and monitoring to ensure that savings are being used well. Thus, a viable financial system creates productive investments and high returns while stimulating economic growth (Kapaya, 2020; Onyele, Ene & Umezurike, 2025).

The distribution of funds has two fundamental channels: direct finance via financial markets and indirect finance via financial intermediaries. Regarding direct finance, borrowers obtain funds from lenders in financial markets by selling securities, which are financial instruments. This way, funds are transferred from savers to the borrowers who have productive activities; hence, production and economic efficiency are ensured. Contrarily, indirect finance involves a financial body that drives the allotment of financial resources to their best possible uses (Onyele, Ikwuagwu & Umezurike, 2025). As a result, it is said that a well-functioning financial intermediary plays a crucial role in driving economic efficiency, which is required to accelerate aggregate productivity and attract foreign investments.

The significance of economic growth is vital. Its nexus with income, economic development, and poverty, *inter alia*, is well documented in the literature. The main focus of growth economics has been to identify major determinants of economic prosperity (Matei, 2020). Notwithstanding, there is no agreement as to the variables to be captured in the economic growth model. One contentious issue is whether finance is a prominent determinant of economic growth. Bassey, Okoi and Imoh (2021), for instance, argued that the development of financial sectors does not enhance economic growth, but rather, an increase in finance is due to demands for financial services as the economy progresses. Following earlier arguments advanced by Schumpeter (1934), Gurley and Shaw (1967), Goldsmith (1969), and McKinnon (1973), a substantial amount of theoretical and empirical literature has shown that services provided by the financial hub exert a first-order impact on long-run economic growth.

Besides these dual propositions, the stage of development hypothesis (SDH), which identified a two-way causality between economic growth and

financial development, was supported by some studies. For instance, Imaogwu and Ezeanyeji (2019) showed that financial development spurs economic growth in the nascent stage while the reverse holds in the future as the economy grows. This is because economic growth facilitates the establishment of financial institutions, which in turn creates financial instruments and related services to meet the demands of the economy.

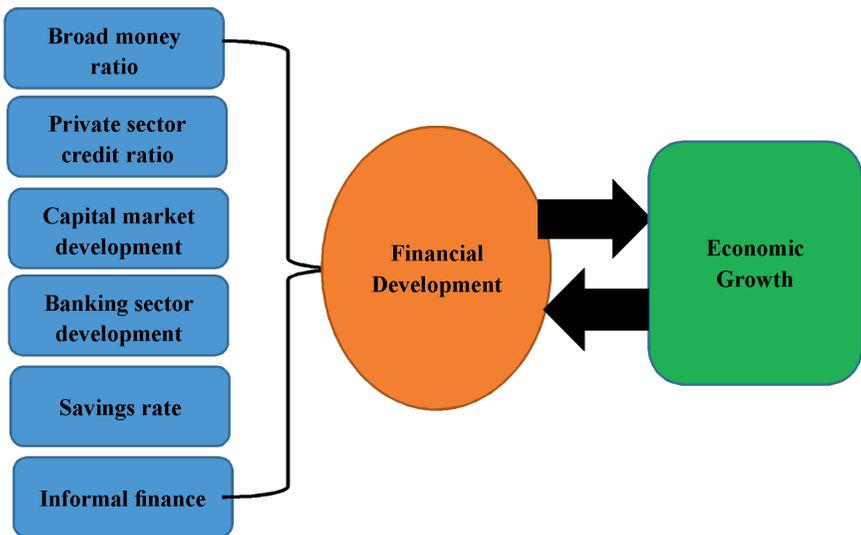The conceptual framework of this study is presented by Figure 2.

Figure 2: Conceptual Framework

2.1.1. Measures of financial development

Further into the study, the measurement concepts of financial development contained in Figure 2 are described under the headings; financial depth, bank ratio and financial activity. . The Database of Financial Development and Structure (2009) of the World Bank cited in Valickova (2012) identified various proxies of financial development based on the size, activity, efficiency, and stability of financial intermediaries and stock markets. However, empirical studies have frequently focused on financial depth, bank ratio, and financial activity.

By definition, financial depth refers to the ratio of liquid liabilities of the financial system to gross domestic product (GDP). The use of financial depth as an indicator of financial development is premised on the assumption that

there is a positive link between the size of the financial sector and its capacity to provide quality financial services (King and Levine, 1993). Consequently, the use of a broader monetary aggregate (proxied by the M3-to-GDP ratio) is heightened by the notion that the broad money (M2) to GDP ratio may not accurately capture financial development in countries where money is used as a store of value (Valickova, 2012). As a measure of financial depth, diverse authors used the ratio of broad money supply (M2) to GDP (Nkoro & Uko, 2013).

The second measure of financial development identified in the literature is the bank ratio to denote banking sector development. Bank ratio refers to bank credit divided by a sum of bank credit and central bank domestic assets (Fuinhas, Filipe, Belucio & Marques, 2019). King and Levine (1993) pioneered the usage of this measure in their study. The bank ratio aims to appraise the importance of commercial banks versus central banks in allocating excess resources to the economy. By implication, higher values of bank ratio entail better financial deepening given the fact that commercial banks are more likely to perform better intermediation functions than the central banks. Some weaknesses associated with this measure were pointed out by Levine (1997), that non-bank financial institutions perform financial functions as well. Also, bank ratio does not give any information on whom the financial sector is allocating the credit to, and it does not assess the performance of commercial banks in terms of savings mobilization, allocation of resources, corporate control, and risk mitigation.

Furthermore, the literature shows financial development can be measured using some parameters for financial activities. Several measures of financial activities have been identified as proxies for financial development. These measures include private domestic credit provided by commercial banks to GDP; private sector domestic credit provided by deposit money banks and other financial institutions to GDP (De Gregorio & Guidotti, 1995); and the ratio of credit allocated to private enterprises to total domestic credit (Rousseau & Watchel, 2011). These measures provide better indicators of the financial system's size and quality of services as they focus on credit allocation to the private sector (Levine, Loayza & Beck, 2000). It is worthy of note that early research in financial development emphasizes banks more, and thus only indicators of financial intermediaries were used. Nevertheless, with

the emergence of stock markets, more attention has been paid to the role of stock markets in accelerating growth (Mittal, 2017). In this wise, indicators of stock market development are used. Market capitalization ratio is the most frequently used measure of stock market development in the literature (Bidemi & Abidemi, 2014).

2.1.2. Overview of financial system and financial development in Nigeria

Generally, a financial system is a combination and interaction of diverse markets, instruments, operators, and institutions within a definite economy to provide financial services (such as resource mobilization and allocation, financial intermediation, as well as facilitation of foreign exchange transactions). The Nigerian financial system is divided into two (2), namely: the formal and informal sectors. The informal sector comprises local money lenders, thrift and savings associations, etc., while the formal financial system can be broadly subdivided into banks and non-bank financial institutions (Chukwuka, 2012). The mechanisms of the informal financial sector are poorly developed, limited in reach, and not integrated into the formal financial sector, while the formal financial sector is large, which necessitates financial deepening. The bank financial institutions are various commercial banks, microfinance banks, development banks, etc., operating under the legal framework of the banks and other financial institutions decree 25 of 1991 (as amended). The non-bank financial institutions connote the money market, capital market, insurance companies, discount houses, etc.

Since the 1980s, the Nigerian financial system has gone through several reforms. Notable among these reforms is the Structural Adjustment Programs (SAPs) initiated in 1986. The SAP specifically aimed at eliminating all barriers imposed on the financial sector (especially the banking sector), which progressively liberalized the economy by creating a market-based system in which the private sector began to play a crucial role in the local economy. These liberalization moves resulted in the restructuring of the commercial banking system, which was aimed at pushing the banks to be more competitive and to give the banks a free hand to make suitable credit decisions (Akinlo & Egbetunde, 2010). Another step of the SAP was interest rate liberalization, which permitted banks to gain freedom in granting loans and set their lending and deposit rates with certain restrictions. Following these reforms, the number of commercial bank

branches increased significantly (CBN, 2017). This has fostered competition in the financial sector as banks started adopting a variety of innovations (ATMs, credit and debit cards, retail banking operations, etc.). Later, in 2005, the Nigerian banking sector witnessed new events as banks were urged to merge with the sole aim of making the banks stronger in terms of capitalization, which brought the number of commercial banks to 25. Also, the government, in 2005, launched the National Microfinance Policy, which provided the supervisory and regulatory framework that will not only facilitate the growth of privately owned microfinance institutions but also permit and facilitate the participation of mostly the third sector institutions, including market associations, cooperatives, non-governmental organizations, and self-help groups, in the microfinance model (Ikwuagwu & Onyele, 2023; Michael, 2016).

The adoption of these reforms improved the credit conditions considerably as competition between banks intensified. In turn, capital market activities were boosted and credit to private sector to GDP ratio increased. This environment attracted both national and international investors to lay up investments in Nigeria until the financial system was hit by the global financial crisis in 2008 and economic recession in the second quarter of 2016 and the naira swap that occurred in 2023. This has led to the dominance of informal financing in Nigeria as depicted by Figure 3.
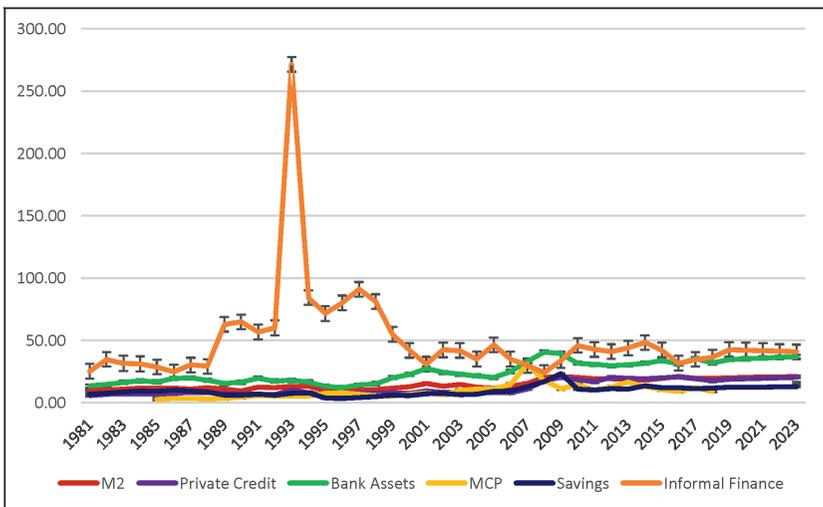
Figure 3: Trend of Financial Development Components

Source: CBN Statistical Bulletin

In 2000, Nigeria adopted a universal banking system that led to the merger of merchant and commercial banks, which metamorphosed into Deposit Money Banks (DMBs). Also, the setting up of the Debt Management Office (DMO) in the year 2000 spurred investment in government securities. In 2005, the enactment of the bank consolidation policy led to an increase in the minimum paid-up capital of commercial banks to N25b, and the number of banks dropped significantly from 85 to 25. The consolidation policy aimed to encourage the creation of stronger banks while the regulation of banking activities led to intense competition in the financial system. For example, the ratio of commercial banks in terms of savings mobilization decelerated from 99% in 1960 to 84% in 1985 and 70% in 1994. This negative trend showed a more diversified financial system where other financial bodies, such as microfinance banks (previously known as community banks) and merchant banks, played prominent roles in deposit accumulation and investment financing (CBN, 2017).

The bank recapitalization to ₦25 billion, in which 25 banks (but presently 21) emerged from the previous 89 banks, revealed the significance of the capital market. Most of the banks in Nigeria were able to raise the required capital after going to the capital market through initial public offerings. Soludo (2007) reported that about ₦650 billion was invested in the banking system in 2005. The figure that was raised from the capital market by banks to meet the minimum capital requirement of ₦25 billion is over ₦406.4 billion. However, after the consolidation, the economy failed, and the banking system witnessed a crisis in 2009, triggered by the global financial crisis. The Nigerian market capitalization diminished by 70% in 2008-2009, and the performance of many Nigerian banks dropped. In a bid to stabilize the entire financial system, the CBN intervened in the banking sector by injecting N620bn of liquidity and replaced the leadership of eight (8) Nigerian banks (CBN, 2017).

Efforts geared towards reforming the financial system was hinged on four (4) pillars.

Pillar 1: Improving the quality of banks
Pillar 2: Ensuring financial stability
Pillar 3: Maintenance of healthy financial sector evolution
Pillar 4: Making sure the financial sector contributes to the real economy

From all indications, the CBN is required to take the lead in enforcing reforms; in other areas, CBN is required to play a critical advocacy role. To enable the financial sector to play its role towards the growth of the real economy, the CBN took the lead in measuring the link between the real economy and the financial sector as well as the transmission mechanisms. The main implication of these reforms is to stimulate confidence in the financial sector such that banks would be better positioned to give fresh loans to key sectors of the economy.

2.2. Theoretical Review

The association between financial systems and economic expansion remains a focal point of considerable scholarly attention within the realm of macroeconomics. Financial advancement is widely regarded as the primary catalyst for economic growth and a crucial element that influences growth via modifications in productivity enhancement and capital efficiency. It impacts capital accumulation by affecting the savings rate through alterations in the savings ratio (Levine, 1997). This theoretical framework can be traced back to the seminal contributions of Schumpeter (1911), who was the inaugural theorist to assert that the evolution of the financial sector stimulates technological innovation and, consequently, economic growth (Bah, Yibing, Kone & Mohamed, 2016). Schumpeter contended that entrepreneurial innovation is the principal driver behind increased capital investments and fluctuations in business activity. These innovations may manifest as novel concepts, commercial implementations of emerging technologies, new materials, innovative methodologies, and alternative energy sources. This notion was subsequently reinforced in the foundational studies conducted by McKinnon (1973) and Shaw (1973), which emphasized that financial liberalization would enhance savings, subsequently facilitating capital accumulation that could be invested to foster economic growth.

The theoretical framework of this inquiry is predicated upon three contending theories concerning the nexus between finance and economic growth—namely, the supply-leading, demand-following, and feedback hypotheses (Greenwood & Jovanovic, 1990). Firstly, the supply-leading or finance-led growth hypothesis asserts a causal linkage from financial expansion to real economic growth. The intentional establishment of financial

institutions and markets enhances the supply of financial services, thereby catalyzing growth within the real sector. This perspective, initially posited by Patrick (1966), suggests that the presence of a well-functioning financial sector effectively channels limited resources from surplus units to deficit units, facilitating the efficient allocation of resources and propelling economic sectors in their growth trajectories. Secondly, the demand-following or growth-led hypothesis postulates a causal relationship from real economic growth to financial development. As the real sector progresses, the heightened demand for financial services stimulates growth within the financial sector. This viewpoint, advanced by Robinson (1952), succinctly posits that financial development is a derivative of economic growth, whereby finance follows the lead of entrepreneurial activity. Thirdly, the feedback hypothesis, often referred to as the "bi-directional causality perspective," proposes that financial and economic developments are mutually influential and characterized by bi-directional causality. According to this hypothesis, a nation with a robust financial system can facilitate substantial economic growth through technological advancements and innovations in products and services. This, in turn, generates increased demand for financial arrangements and services. As banking institutions adeptly respond to these demands, elevated levels of economic growth can be realized. Consequently, both financial growth and economic development are interdependent phenomena, and their interrelations may yield bidirectional causality (Levine, 1997).

The financial sector establishes a conducive framework for fostering economic growth and development, facilitating productive activities, enabling financial intermediation, promoting capital formation, and overseeing the management of the payments system (CBN, 2017). Nevertheless, the degree to which the financial sector influences the real sector of the economy is contingent upon the characteristics and scale of innovations occurring within the financial sector. Within the purview of the financial sector, such innovations may manifest as stability in essential performance indicators of the market, which are integral to the financial intermediation process. For instance, the stability observed in the money, capital, and foreign exchange markets serves as an indicator of innovations within the financial sector, which can be quantitatively assessed through the key performance indicators pertinent to these markets. Indicators pertaining to capital, money, and foreign exchange markets, such as the all-share

index (ASI), liquidity within the banking system, and fluctuations in exchange rates, imply the extent of innovations or advancements within the financial sector, which subsequently facilitates enhanced financial intermediation and, in turn, drives economic growth.

Levine et al. (2000) asserted that an efficiently functioning financial sector cultivates growth and profit incentives while simultaneously enhancing risk management efficacy. A robustly developed financial sector augments the financial intermediation process, thereby contributing to economic growth by reallocating financial resources from surplus spending units to the most productive deficit spending units. This phenomenon is closely linked to the expansion of financial savings, which, as posited by Schumpeter's hypothesis of interest, can be exclusively perceived as a "monetary phenomenon" (Schumpeter, 1939, 1934). Furthermore, as the interest rate emerges from the positive profit rate associated with the execution of innovative productive activities, it is also characterized as a short-term phenomenon (Arena & Festre, 1996). Consequently, while interest represents the cost of savings accrued from surplus units, it is concurrently levied on deficit units that receive these surplus resources.

In the nascent phases of economic development, the supply-leading or finance-growth hypothesis has the potential to invigorate real capital formation. The advent of novel financial services generates fresh opportunities for savers and investors, thus catalyzing an increase in economic growth. As financial and economic development progresses, the significance of the finance-growth hypothesis diminishes, with the demand-following or growth-led hypothesis gradually taking precedence. Patrick (1966) posits that a particular industry can be financially incentivized from the supply-leading perspective, and upon achieving development, its financing transitions to the demand-following paradigm. Industries that remain at lower levels of development will persist in the supply-leading phase.

2.3. Empirical Review

In an empirical analysis, Ayeni *et al.* (2024) studied the impact of financial development on economic growth in Nigeria, covering 1986 to 2022. The ARDL model was employed and the long run result revealed that interest rate (INT), lagged value of broad money supply (M2(-1)) and domestic

credit to private sector (DCP) have positive impacts on GDPG while broad money supply (M2) has a negative impact on GDPG. The short run estimate indicated that INT and DCP had positive impact on economic growth, while the coefficient of M2 had negative impact on economic growth in Nigeria. In conclusion, financial development can be said to contribute to economic growth.

Similarly, Bank-Ola et al. (2023) analysed financial development's effect on economic growth in Nigeria from 1981 to 2020. Domestic credit to private sector (DCD), broad money supply (BMS), inflation (INF) and trade openness (TOP) were the independent variable while the dependent variable was growth rate in GDP. ARDL model result of the error correction term points to 96% upturn after a year's disequilibrium. The long run result showed a positive and insignificant interconnection involving domestic credit to private sector and growth rate in gross domestic product, but a negative and significant connection, between broad money supply and inflation rate.

Also, Okeke (2022) examined financial development and economic growth in Nigerian from 1986 to 2020. Financial development was measured by money supply to GDP, insurance premiums to GDP, Stock market capitalization to GDP and private sector credit to GDP while economic growth was represented by real GDP. The data was subjected to statistical analysis using the OLS regression. The findings of the study revealed that money supply to GDP and Market capitalization to GDP has positive and significant relationship with economic growth in Nigeria while private sector credit to GDP and insurance premiums to GDP ratio had negative relationship with economic growth in Nigeria.

In a study of selected countries, Haan et al. (2021) ascertained how financial development affected the poverty rate through its influence on the inequality of income, economic growth, and financial instability. To measure financial development, the study used the ratio of private credit to GDP, while poverty was measured by the poverty gap. The fixed effects results for a panel of eighty-four (84) countries over the 1975–2014 period suggested that the poverty gap was not directly affected by financial development. However, as financial development triggered greater inequality, which, in turn, resulted in more poverty, financial development has an indirect effect on poverty through this transmission channel. This implied that the overall effect of financial

development on the poverty gap depends on which of income inequality or growth is stronger.

Likewise, Sambo et al. (2021) investigated the asymmetric linkages between financial development and economic growth by incorporating financial globalization uncertainty and inflation into a production function covering the Nigerian economy from 1980 to 2019. The threshold ARDL technique was used to estimate the asymmetric cointegration between the model variables and the degree of the relationship existing among the variables. The results indicated long-run influences between the parameters in the light of asymmetries. The asymmetric estimation results showed that positive shocks of financial development dampened economic growth. By comparison, symmetrically, the negative shock of financial development improved the economic growth of Nigeria. Conversely, while the inflation rate showed a positive relationship, financial globalization uncertainty indicated an insignificant result.

Similarly, Bassey et al. (2021) analyzed the impact of financial openness and development on economic growth in Nigeria between the periods 1981 and 2019. This was done through the use of the Auto-Regressive Distributed Lag (ARDL) model. In doing this, the ratio of credit ratio and informal finance were used as measures of financial development and financial openness, respectively. The study observed that financial development amidst financial openness had a positive and insignificant impact on economic growth. The study also found that financial openness had an inverse impact on economic growth.

In like manner, Sennuga et al. (2021) analyzed the influence of financial development on the Nigerian economy using annual data on the annual GDP, real interest rate, financial depth, and financial activities over the period 1980 and 2019. While the variables of real interest rate, savings ratio, and financial activities served as the explanatory variables, GDP was used as the dependent variable. The results indicated that two of the variables (real interest rate, gross domestic savings) were inversely related to the dependent variable (GDP annual growth rate) when combined, while financial activities were positively related to GDP, with the coefficient of multiple determination showing that the model was of a high good fit with approximately 93% of GDP being explained by financial development components.

Also, Manasseh et al. (2021) appraised the impact of financial intermediation on economic growth in Nigeria. Quarterly time series data

from 1994Q1 to 2018Q4 were employed for the analysis. The Ordinary Least Squares (OLS) approach was used for the estimation. Per-capita GDP was a proxy for economic growth, while bank deposits, credit and reserves were proxies for financial intermediation. Bank deposit, reserve and credit enhanced GDP per capita, indicating that higher bank credit and deposit induced economic growth. Though, the impact of bank credit was found to be insignificant.

Using the ARDL model, Akintola, Oji-Okoro and Itodo (2020) investigated the impact of the financial sector development on economic growth in Nigeria by looking at the independent contributions of the money supply, capital, and foreign exchange markets to the growth of the economy, using quarterly data between 2000Q1 and 2019Q4. The results indicated that while financial deepening, banking system liquidity, and the all-share index had positive and significant impacts on the growth of real output in the long run, the behavior of exchange rate spread was consistent with falling levels of real output growth.

In a study, Fuinhas, Filipe, Belucio and Marques (2019) examined the relationship between banking sector development, stock market development, and economic growth, using annual data from 1990 to 2015 for twelve (12) European countries (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain). The principal component analysis was used to develop two new measures (banking sector development and stock market development). The panel vector autoregressive model and Granger causality test were used. Results showed that the model was endogenous and stable and that the shocks caused by the introduction of the euro and the subprime crisis were significant. By using dummy tools to control the crisis effects, banking sector development and stock market development showed a bidirectional relationship.

Likewise, Karimo and Ogbonna (2017) examined the direction of causal flow from financial deepening and economic growth and vice versa in Nigeria between 1970 and 2013. The augmented Granger causality test within the Toda–Yamamoto was used. The results showed that the growth-finance nexus in Nigeria followed the supply-leading hypothesis. This implied that financial deepening influenced economic growth. The study recommended that efforts should be directed towards eliminating barriers that undermine bank credit and investors' confidence in the stock market.

Similarly, Mittal (2017) explored the causal relationship between stock market development and growth in nine countries: Brazil, China, India, Malaysia, Mexico, the Philippines, South Africa, Thailand, and Turkey. Nominal GDP values were used to measure economic growth, and the market capitalization ratio was used as a proxy for stock market development. To address this relationship, a Granger causality test was employed. Results of the Granger causality test revealed a bi-directional causality for China, Thailand, and Turkey between GDP and market capitalization ratio, while a unidirectional causality for market capitalization to GDP was found for India and Mexico. Unidirectional causality for GDP to market capitalization was found for Malaysia, the Philippines, and South Africa. No causality was determined for Brazil. The results showed that the financial markets were important for economic growth in India, Mexico, China, Thailand, and Turkey. It was noted that these causal relationships were country-specific.

In Nigeria, Osisanwo (2017) examined the impact of financial development on economic growth using annual time series data from 1980 and 2014. The study tested for the unit root and cointegration to determine the time series properties of the variables before using the ordinary least squares estimation technique to evaluate the long-run estimates and possible policy inferences. The financial development indicators were financial deepening, bank deposit liability, private sector credit ratio, stock market capitalization, and interest rate, while economic growth is measured by real gross domestic product. The results showed that all the indicators of financial development, except the private sector credit ratio, had a positive impact on the economic growth in Nigeria. It implied that the banking sector and stock market development played a critical role in the output growth of the real sector. However, the negative impact of private sector credit indicated that the provision of credit to investors does not enhance output due to the high interest on loans, as reported in the study.

Again, Bidemi and Abidemi (2014) examined the nexus between financial sector development and economic growth in Nigeria, accounting for the period 1981-2011 using Autoregressive Distributed Lag (ARDL) techniques. Four alternative measures of financial sector development—total liquid liabilities to GDP, total stock market capitalization to GDP, interest rate spread, and credit to the private sector to GDP—were employed to capture various financial issues such as financial depth, size, efficiency, and activity of the financial sector.

Indeed, the long-run relationship revealed that a one per cent increase in credit to the private sector to gross domestic product, foreign direct investment, gross fixed capital formation, stock market capitalization to gross domestic product, and liquid liabilities to gross domestic product resulted in a 0.0247, 0.084, 0.328, 0.0092, and 0.2491 per cent increase in the gross domestic product, respectively. The results supported the view that the extent of financial sector sophistication matters for the benefits of private sector development to translate into more economic growth in Nigeria.

Similarly, Dauda and Makinde (2014) looked into the relationship between financial development and poverty in Nigeria. The study used a vector autoregressive (VAR) model to analyze annual time series data for the period 1980 to 2010. The evidence from VAR and impulse response showed that the linkages between poverty and broad money supply (M2) were negative and significant. Thus, contrary to many studies, the study concluded that credits to the private sector have failed to reduce the incidence of poverty in Nigeria.

Also, Nkoro and Uko (2013) empirically examined the financial sector development-economic growth nexus in Nigeria. In doing this, the study employed the cointegration/error correction mechanism (ECM) with annual time series data covering the period 1980-2009. Five variables, namely, ratios of broad money stock to GDP, private sector credit to GDP, market capitalization to GDP, banks deposit liability to GDP, and prime interest rate, were used to proxy financial sector development, while real gross domestic product proxied economic growth. The empirical results showed that there was a positive effect of financial sector development on economic growth in Nigeria. However, credits to the private sector and financial sector depth were ineffective and failed to accelerate growth.

In a similar study, Ohwofasa and Aiyedogbon (2013), assessed financial deepening through the banking sector and the extent it had influenced economic growth in Nigeria from 1991 to 2011. The study employed vector autoregressive (VAR), impulse response and variance decomposition to scrutinize the relationship between financial deepening and economic growth. The findings revealed that the series had a long-run relationship. The VAR estimates showed that a period lag of GDP, gross national saving as a ratio of GDP and exchange rate had a significant positive impact on current economic

growth, while the impact of gross capital formation (lag 1) on the current level of economic growth was negative and statistically significant.

Again, Chukwuka (2012) examined the causal influence between financial deepening and economic growth in Nigeria from 1986 to 2010 using the vector autoregressive (VAR) model. It was observed that financial deepening did not impact economic growth in the short run. In the long run, there was a strong effect of financial deepening on economic growth, which lends credence to the supply-leading hypothesis that financial deepening influences economic growth. It was also observed that deposit money bank assets, money supply, and private sector credit were significantly influenced by economic growth consonant with the demand-following hypothesis.

Again, Alejekwu and Achugbu (2012) investigated the impact of the stock market-based financial development on the economic growth of Nigeria from 1994 to 2008. The analytical method used was ordinary least squares (OLS). The market capitalization ratio was used to proxy market size, while the value traded ratio and turnover ratio were used to measure market liquidity. The findings revealed that the market capitalization ratio and value traded ratios had a weak inverse relationship with economic growth, while the turnover ratio had a strong positive relationship with economic growth.

In another study, Loesse (2010) examined the cointegrating and causal relationship between financial development and economic growth in the ECOWAS countries. Data were collected from the World Bank database and covered the period 1960-2005. The results showed that there was a positive long-run relationship between financial development and economic growth in five countries, namely, Cape Verde, Cote d'Ivoire, Ghana, Guinea, and Liberia. In addition, the study showed that financial development led to economic growth in Ghana, Liberia, and Mali, while growth caused finance in Cote d'Ivoire, and there was a bidirectional causality in Cape Verde and Sierra Leone.

2.3.1. Summary of review and gap

The nexus between financial development and economic growth has been substantiated both theoretically and empirically. Empirical investigations have utilized a diverse array of variables to evaluate the impact of financial sector advancement on economic growth within the context of Nigeria. For example, Sambo et al. (2021), Bassey et al. (2021), Manasseh et al. (2021),

Sennuga et al. (2021), Bidemi and Abidemi (2014), and Nkoro and Uko (2013) have employed variables such as broad money supply, private sector credit, market capitalization, banks' deposit liabilities, and lending rates to ascertain the influence of financial development on Nigeria's economic growth. Additionally, Akintola et al. (2020), Mittal (2017), Osisanwo (2017), and Dauda and Makinde (2014) have utilized financial sector indicators, including financial deepening, money supply, and credit to the private sector, to analyze the correlation between financial sector development and poverty alleviation. Karimo and Ogbonna (2017) also investigated the interrelationship between financial sector deepening and economic growth, with a particular focus on the dynamics that underlie this relationship. The research conducted by Bassey et al. (2021) on the financial sector and economic growth predominantly centered on the informal financial sector. Nonetheless, significant gaps persist within the existing literature, as none of the empirical studies have concurrently assessed the effects of the money supply ratio, private sector credit ratio, market capitalization ratio, bank asset ratio, savings ratio, and currency outside of banks (as indicators of informal finance) on economic growth in Nigeria, except Chukwuka (2012). The investigation by Chukwuka (2012) encompassed the timeframe from 1986 to 2010, whereas the present study extends the analysis to the period from 1981 to 2023. This paper aims to address this issue by evaluating the contributions of financial development to economic growth in Nigeria.

3. METHODOLOGY

3.1. Sources of Data

Time series data from 1981 to 2023 of the related variables were collected from the CBN database, National Bureau of Statistics, and World Bank Database. Data on real GDP, banking sector assets, private sector credit, market capitalization, and national savings were obtained from the CBN database while data on currency outside banks were sourced from the National Bureau of Statistics and the World Bank Database. Specifically, data for real GDP, broad money to GDP ratio, private sector to GDP ratio, and gross national savings to GDP ratio were computed in the CBN statistical bulletin, while data for banking sector assets to GDP ratio and market capitalization to GDP ratio were computed using data obtained from the earlier mentioned sources.

3.2. Model Specification and Operational Definition of Variables

Following a detailed review of previous studies, the model used for this study was adopted from Chukwuka (2012) in explaining the relationship between financial development and economic growth in Nigeria. The functional form of the model is contained in equation (1):

$$Log(RGDP) = f(MOS, PSC, MCP, BSA, SAV \text{ and } COB) \qquad (1)$$

Transforming equation (1) into econometric form, equation (2) ensued;

$$Log(RGDP) = \beta_0 + \beta_1(MOS) + \beta_2(PSC) + \beta_3(MCP) + \beta_4(BSA) +$$
$$\beta_5(SAV) + \beta_6(COB) + \varepsilon \qquad (2)$$

Where,

RGDP = Real gross domestic product

MOS = Broad money supply to GDP ratio

PSC = Private sector credit to GDP ratio

MCP = Market capitalization to GDP ratio

BSA = Bank assets to GDP ratio

SAV = Gross national savings to GDP ratio

COB = Currency outside bank/M2 ratio

β_o = Constant parameter

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 = Estimated coefficients of the independent variables

ε = Error term

Log = Natural log

The model variables were described as follows:

- **Real gross domestic product (RGDP):** Real GDP is the dependent variable for the model. The use of RGDP is premised on the fact that it gives the total value of services and goods produced by the economy over a particular period after adjusting for price changes.

The independent variables are:

- **Broad money supply to GDP ratio (MOS):** The most classic and practical indicator of financial development is the ratio of broad money (M2) to GDP, obtained as the share of narrow money (M1) + all time-related deposits and non-institutional money market funds to GDP in a certain year.

- **Private sector credit to GDP ratio (PSC):** This refers to the ratio of private sector credit to gross domestic product. It is a measure of financial development but emphasizes credit flow from financial intermediaries to the private sector. The idea is that the availability of private credit would create more opportunities for persistent growth.
- **Market capitalization to GDP ratio (MCP):** Market capitalization is seen as the most important measure for assessing capital market development. It is well known that a well-developed capital market is a key indicator of a sound financial system. MCP is computed as share price multiplied by the total number of shares outstanding divided by GDP.
- **Bank assets to GDP ratio (BSA):** As an indicator of financial development, this connotes the ratio of deposit money banks' assets to gross domestic product. This is based on the premise that a stable and well-functioning financial system boosts the assets of banks, which could be transmitted to economic growth through increased loans and advances.
- **Gross national savings to GDP (SAV):** Gross national savings to gross domestic product ratio. The use of SAV is based on the premise that a matured and stable financial system propels savings mobilization by banks and other financial institutions, which circulates through loans and advances extended to economic units for production purposes.
- **Currency outside bank/M2 ratio (COB):** This variable was used to capture informal finance, such as currency in the hands of individuals who use such to grant small loan amounts to small business owners. These funds are not legally controlled by monetary authorities; hence they attract higher interest rates than those of formal finance.

3.3. Data Estimation Technique

The Ordinary Least Squares (OLS)–based Autoregressive Distributed Lag (ARDL) / bounds testing approach was used for testing the long-run co-integrating relationship among the time series variables. The bounds testing methodology developed by Pesaran, Shin and Smith (2001) has some advantages over conventional co-integration testing approaches because it can

be used with a mixture of I(0) and I(1) data, and again, it involves just a single-equation set-up, making it simple to implement and interpret.

Following Pesaran *et al.* (2001), the ARDL model specification of equation (2) is expressed as an error correction model (ECM) to test for cointegration between variables under study as captured by equation (3):

$$\Delta \log(RGDP)_t = \delta_o + \Sigma_{i=1}^{p}\delta_1\Delta\log(RGDP)_{t-i} + \Sigma_{i=0}^{p}\delta_2\Delta MOS_{t-i} + \Sigma_{i=0}^{p}\delta_3\Delta PSC_{t-i} +$$
$$\Sigma_{i=0}^{p}\delta_4\Delta MCP_{t-i} + \Sigma_{i=0}^{p}\delta_5\Delta BSA_{t-i} + \Sigma_{i=0}^{p}\delta_6\Delta SAV_{t-i} + \Sigma_{i=0}^{p}\delta_7\Delta COB_{t-i} +$$
$$\beta_1\log(RGDP)_{t-1} + \beta_2 MOS_{t-1} + \beta_3 PSC_{t-1} + \beta_4 MCP_{t-1} + \beta_5 BSA_{t-1} + \beta_6 SAV_{t-1}$$
$$+\beta_7 COB_{t-1} + \mu_t.$$

(3)

Once cointegration is established, the long-run relationship is estimated using the conditional ARDL model as specified in equation (4):

$$\Delta \log(RGDP)_t = \delta_0 + \beta_1\log(RGDP)_{t-1} + \beta_2 MOS_{t-1} + \beta_3 PSC_{t-1} + \beta_4 MCP_{t-1} + \beta_5 BSA_{t-1}$$
$$+\beta_6 SAV_{t-1} + \beta_7 COB_{t-1} + \mu_t$$

(4)

The short-run dynamic relationship is estimated using the error correction model as specified in equation (5):

$$\Delta \log(RGDP)_t = \delta_o + \Sigma_{i=1}^{p}\delta_1\Delta\log(RGDP)_{t-i} + \Sigma_{i=0}^{p}\delta_2\Delta MOS_{t-i} + \Sigma_{i=0}^{p}\delta_3\Delta PSC_{t-i} +$$
$$\Sigma_{i=0}^{p}\delta_4\Delta MCP_{t-i} + \Sigma_{i=0}^{p}\delta_5\Delta BSA_{t-i} + \Sigma_{i=0}^{p}\delta_6\Delta SAV_{t-i} + \Sigma_{i=1}^{p}\delta_7\Delta COB_{t-i} +$$
$$\theta ecm_{t-i} + \mu_t$$

(5)

Where,

δ_0 = Constant

δ_1 - δ_6 = short-run elasticities (coefficients of the first-differenced explanatory variables)

β_1 - β_6 = long-run elasticites (coefficients of the explanatory variables)

θ = Speed of adjustment

ecm_{t-i} = Error correction term lagged for one period

Δ = First difference operator

p = Lag length

Before ARDL estimation, the time series data was tested for stationarity. The test for stationarity of data was carried out with the Augmented Dickey-Fuller (ADF) unit root. This particular stage is very necessary because most macroeconomic time series contain unit roots, and any regression involving non-stationary series almost always produces a significant relation where no relationship exists between the variables. The general model for the Augmented Dickey-Fuller unit root test could be represented by equation (6):

$$\Delta y_t = \beta_0 + \beta_1 t + \beta \lambda y_{t-1} + \Sigma_{j-1}^{p} \delta_j \Delta_{y-j} + \mu_t$$

(6)

Where,

y_{t-1} = Lagged value of y_t at first difference

Δy_{t-j} = A change in lagged value

δ = Measure of lag length

Δy_t = First difference of y_t

μ_t = Error term

4. EMPIRICAL FINDINGS

4.1. Descriptive Statistic

Before engaging in a regression analysis, it is essential to describe the basic features of the data. Consequently, the descriptive analysis of data is presented in Table 1:

Table 1: Descriptive Statistic

	RGDP	MOS	PSC	MCP	BSA	SAV	COB
Mean	34690.67	15.89410	11.21231	10.78615	23.45103	9.129231	53.91872
Median	23688.28	14.19000	8.210000	6.860000	20.27000	8.830000	55.83000
Maximum	71387.83	24.34000	20.77000	39.95000	40.65000	23.25000	63.46000
Minimum	13779.26	9.800000	5.920000	3.050000	12.14000	3.340000	36.42000
Std. Dev.	20237.78	4.132704	5.399793	8.382686	8.048498	3.734237	7.184365
Skewness	0.673787	0.547396	0.792826	1.245309	0.476615	1.442388	-0.538366
Kurtosis	1.880848	2.018356	1.826647	4.723791	1.987477	6.645924	2.290952
Jarque-Bera	4.986242	3.513565	6.322956	14.90878	3.142509	35.12389	2.700917
Probability	0.082652	0.172599	0.042363	0.000579	0.207784	0.000000	0.259121

Source: Author's computations using EViews 10

The mean values of the summary statistic showed that the average of the data. Generally, the series displayed a high level of consistency as their mean and median values fall within the maximum and minimum values of the series. The mean value indicates that the average value of production in Nigeria was ₦34,690.67 billion, which is quite low for a largely populated nation like Nigeria. The average MOS of 15.89% implies low absorption of money supply into economically productive activities. Also, PSC with an average rate of 11.21% indicates a low level of credit extension to the private sector. The MCP averaged 10.79% to indicate that the Nigerian stock market growth and development is quite slow. With an average value of approximately 9.13%, it is seen that the banking sector development was increasing slowly. The average value for SAV was approximately 9.13%, implying a poor savings culture in Nigeria. With approximately 53.91% of COB, it was indicated that a large proportion of financial activities in Nigeria took place in the informal sector. The difference between the maximum and minimum values indicated the range of the series. The standard deviation revealed how far the observations are from the sample average.

The measure of skewness showed that the distribution of RGDP, MOS, PSC, MCP, BSA, and SAV was positively skewed, which indicated that the observations for the aforementioned variables had a long right tail, while COB, which was negatively skewed, had a long left tail. The kurtosis measures the flatness or peakedness of the distribution, and a kurtosis of 3 mirrors a normal distribution. The kurtosis values of RGDP, MOS, PSC, BSA, and COB were less than 3, implying that their distribution was platykurtic (that is, having higher values than their sample mean), while the kurtosis of MCP and SAV was greater than 3, which indicates that their distributions were leptokurtic (that is, higher values than the sample mean).

4.2. Unit Root Test

The execution of the unit root test was directed towards determining the order of integration of the time series variables encompassed within the study. The Augmented Dickey-Fuller (ADF) test was utilized for this purpose, incorporating both the constant and trend assumptions. Table 3 delineates the outcomes of the test, wherein I(0) signifies that the variable exhibits stationarity

at the level, and I(1) indicates that the variable demonstrates stationarity at the first difference. The outcome of the ADF unit root test was presented in Table 2:

Table 2: ADF Unit Root Test Results

Variable	ADF at level: I(0)		ADF at first difference: I(1)		Order of integration
	t-Statistic	Prob.	t-Statistic	Prob.	
Log(RGDP)	-1.503995	0.8091	-3.619501	0.0493	I(1)
MOS	-2.372929	0.3868	-5.561112	0.0003	I(1)
PSC	-1.873077	0.6481	-4.808224	0.0023	I(1)
MCP	-3.056625	0.1331	-6.020521	0.0001	I(1)
BSA	-3.209634	0.0986	-4.296561	0.0086	I(1)
SAV	-2.677518	0.2511	-6.468145	0.0000	I(1)
COB	-4.316542	0.0080	--	--	I(0)
Critical values:	I(0)	I(1)			
1%	-4.226815	-4.234972			
5%	-3.536601	-3.540328			
10	-3.200320	-3.202445			

Source: Author's computations using EViews 10

The outcome of the unit root test is presented in Table 2, which showed that all the model variables were stationary at first difference except COB, which was integrated at order zero. This state of stationarity satisfied the assumptions for ARDL; hence, the estimation procedures for bounds testing to cointegration were used (Pesaran *et al.,* 2001).

4.3. Granger Causality Test

Theory suggests three dimensions of causal flow between financial development and economic growth. The directions of causality suggested by the theoretical literature are the unidirectional causalities of financial development-led growth and growth-led financial development and the two-way causal flow between the two variables. Hence, the direction of causality was ascertained with the aid of the pairwise Granger causality test in Table 3:

Table 3: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
MOS does not Granger Cause LOG(RGDP)	36	1.74761	0.1909
LOG(RGDP) does not Granger Cause MOS		5.11901	0.0120
PSC does not Granger Cause LOG(RGDP)	36	0.33740	0.7162
LOG(RGDP) does not Granger Cause PSC		4.35372	0.0216
MCP does not Granger Cause LOG(RGDP)	32	0.60952	0.5509
LOG(RGDP) does not Granger Cause MCP		1.75962	0.1913
BSA does not Granger Cause LOG(RGDP)	36	1.88688	0.1685
LOG(RGDP) does not Granger Cause BSA		5.78619	0.0073
SAV does not Granger Cause LOG(RGDP)	36	0.29746	0.7448
LOG(RGDP) does not Granger Cause SAV		1.51228	0.2362
COB does not Granger Cause LOG(RGDP)	36	0.71092	0.4990
LOG(RGDP) does not Granger Cause COB		0.35062	0.7070

Source: Author's computations using EViews 10

The Granger causality test results revealed a one-way causal relationship running from RGDP to MOS, PSC, MCP, and BSA, with their respective probability values being less than 0.05, while no causal relationship was found between SAV and RGDP and COB and RGDP with their respective probability values greater than 0.05. This implied that economic growth (measured by RGDP) Granger caused these financial development variables such as MOS, PSC, MCP, and BSA, thus lending credence to the demand-following hypothesis of one-way causal flow from economic growth to financial development. This finding implied that rising economic growth triggers financial development by boosting the absorption of money supply and private sector credit into economically productive activities and enhancing the stock market and banking sector development in Nigeria.

4.4. Bounds Test for Cointegration

The cointegration test was used to determine whether there was a long-term link in the model since the time series variables are stationary in a mixed order of levels and first differences. The ARDL Bounds test for levels relationship was used to do this, and the findings are shown in Table 4. The 5% threshold of significance was used for the test, which compared the upper and lower bounds. The absence of a level link in the model was the null hypothesis. The ARDL bounds test for coitegration gave the results presented in Table 4:

Table 4: Bounds testing results

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	16.19628	10%	1.99	2.94
k	6	5%	2.27	3.28
		1%	2.88	3.99

Source: Author's computations using EViews 10

The F-statistic, which is frequently compared with the lower limit, I(0), and upper bound, I(1) values, was used to perform the bounds test for the levels cointegration relationship. k=6 means that six (6) parameters are estimated by the model. The F-statistic is 16.19628, the lower bound is 2.27, and the top bound is 3.28 based on the data in Table 4. The null hypothesis that there is no level association is rejected since the F-statistic is outside the lower and upper boundaries. As a result, the short- and long-term models were calculated, and cointegration was included in the model.

4.5. Long-run ARDL Estimation

The long-run coefficient estimates of the ARDL model were presented in Table 5:

Table 5: Long-run Coefficient Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MOS	-0.322304	0.151342	-2.129644	0.0491
PSC	0.102545	0.045937	2.232288	0.0402
MCP	0.031119	0.011670	2.666585	0.0169
BSA	0.197723	0.066075	2.992396	0.0086
SAV	-0.109463	0.033949	-3.224312	0.0053
COB	0.000224	0.001754	0.127864	0.8999
C	10.25078	0.703103	14.57934	0.0000

Source: Author's computations using EViews 10

From the long-run estimated coefficients elucidated in Table 5, it was observed that an increment in the money supply (MOS), represented as M2/GDP, resulted in a decrement of the real gross domestic product (RGDP) by 0.322304. This phenomenon might be ascribed to a deficiency in money supply, potentially culminating in diminished domestic production within Nigeria. Furthermore, this outcome could be ascribed to the reality that the

extant money supply has not been adequately allocated to the productive sectors of the economy. Conversely, private sector credit (PSC), expressed as private sector credit/GDP, exhibited a positive coefficient of 0.102545, indicating that RGDP experienced an acceleration of approximately 10.25% in the long run attributable to a 1% elevation in PSC. This aligns with the *a priori* expectation that augmented credit flow to the private sector enhances the productivity of goods and services, thereby fostering an enhancement in RGDP.

Furthermore, the estimated coefficient of market capitalization (MCP), depicted as MCP/GDP ratio, was quantified at 0.031119. This finding illustrated that the elevation in MCP accounted for a 3.11% enhancement in RGDP. This suggests that the advancement of capital markets catalyzes domestic economic growth over the long term, as increased capital market development (operationalized by MCP) facilitates producers' access to funds for productive endeavours. Moreover, the estimated coefficient of bank assets/GDP ratio (BSA), utilized to gauge the development of the banking sector, was positive, signifying that an increase in bank assets resulted in a 19.77% elevation in RGDP in the long run. This indicates that the progression of the Nigerian banking sector has been instrumental in promoting economic growth throughout the study. Furthermore, a significant portion of bank assets comprises loans and advances extended to diverse economic sectors and individual producers. The coefficient associated with National Savings/GDP (SAV) exhibited a negative value of -0.109463. The estimated coefficient indicates that a 1% increase in SAV precipitated a decline in RGDP by approximately 10.94% in the long run. A plausible explanation for this observation may be hinged on the notion that the accumulation of savings does not inherently stimulate economic growth over an extended period; rather, its allocation in the form of credit and loans to productive economic sectors is what propels overall economic prosperity. The estimated coefficient of currency outside bank/M2 (COB) demonstrated that the gross domestic product was adversely affected by fluctuations in COB. The estimated coefficient of 0.000224 linked to COB suggested that informal finance engendered an approximate 0.02% increase in RGDP.

It was found that MOS, PSC, MCP, BSA, and SAV were the most significant financial development indicators that influenced long-run RGDP in Nigeria since their p-values were less than 0.05. This meant that changes in these explanatory variables (that is, the aforementioned financial development

indicators) had a strong long-run influence on real GDP in Nigeria. Studies by Ohwofasa and Aiyedogbon (2013) and Chukwuka (2012) were against the findings of Alejekwu and Achugbu (2012), probably due to the period covered by the different studies. Also, in consonance with the findings of this study, Bidemi and Abidemi (2014) found that market capitalization to GDP ratio (MCP) and private sector credit to GDP ratio (PSC) had a positive effect on economic growth. However, Nkoro and Uko (2013) contradicted the findings of this study by stating, based on their empirical analysis, that financial depth (broad money supply/GDP ratio) and private sector credit ratio were ineffective in stimulating economic growth in Nigeria. Also, international studies such as Mittal (2017) and Loesse (2010) supported the findings of this study that market capitalization to GDP ratio, private sector credit to GDP ratio, and broad money supply to GDP ratio were significant financial development variables that explained the mechanism of economic growth.

4.6. Error Correction Mechanism (ECM)

The error correction model (ECM) and short-run estimates associated with the ARDL model are captured in Table 6.

Table 6: Error Correction Mechanism

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(RGDP(-1))*	-0.129651	0.053499	-2.423420	0.0276
D(MOS)	-0.021515	0.004199	-5.123381	0.0001
D(MOS(-1))	0.009885	0.004272	2.313634	0.0343
D(MOS(-2))	-0.000219	0.002775	-0.078771	0.9382
D(PSC)	0.003235	0.003677	0.879632	0.3921
D(PSC(-1))	-0.006221	0.003872	-1.606429	0.1277
D(MCP)	0.004035	0.001870	2.157142	0.0465
D(BSA)	0.002972	0.001809	1.643295	0.1198
D(BSA(-1))	-0.013484	0.002711	-4.974077	0.0001
D(SAV)	0.001031	0.002365	0.435984	0.6687
D(SAV(-1))	0.007410	0.002456	3.017020	0.0082
D(COB)	-4.80E-05	9.86E-05	-0.486579	0.6332
ECM(-1)*	-0.129651	0.009500	-13.64761	0.0000
R-squared	0.750167			
Adjusted R-squared	0.641544			
Durbin-Watson stat	2.043073			

Source: Author's computations using EViews 10

The results in Table 6 showed the error correction model (ECM) of the ARDL. The differenced coefficients represent the short-run effects of financial development variables on RGDP. The results showed that the model had a coefficient of determination (adjusted R-squared) of about 0.641544. The adjusted R-squared measured the percentage of variations in LOG(RGDP) that were accounted for by variations in MOS, PSC, BS, MCP, SAV, and COB. Thus, it implied that the explanatory variables (financial development indicators) collectively accounted for approximately 64.15% of the total variations in the dependent variable (real GDP). The value of the Durbin-Watson statistic was 2.043073 and was approximately 2. It is known that when the value of Durbin-Watson is 2, there is no autocorrelation in the residuals; when DW approaches 0, there is evidence of positive autocorrelation (first-order autocorrelation) in the residuals. However, when DW approaches 4, there is a problem of negative autocorrelation (2nd order autocorrelation) in the residuals. With this in mind, it was concluded that the regression model was not plagued by autocorrelation of any order. This implied that the model is reliable for making inferences.

The coefficient of the lagged error correction mechanism, that is, ECM(-1), was significant at the 1% level and was negative as per the *a priori* expectation, indicating the speed of adjustment towards long-run equilibrium when the system is exposed to a shock. The magnitude of the ECM implied that approximately 12.96% of the previous years' disequilibrium in financial development was adjusted for in the current year. However, the speed of adjustment (12.96%) implied that financial development indicators adjusted slowly to long-run equilibrium after short-run disequilibrium. Hence, the ECM results were supportive of the existence of long-run and short-run relationships between LOG(RGDP) and measures of financial development. The lagged coefficient of the dependent variable (RGDP) revealed that the previous year's RGDP contributed significantly to the current year's RGDP. The short-run coefficient of MOS showed that MOS/GDP had a positive influence on RGDP. Also, short-run PSC had a negative influence on RGDP. On the other hand, MCP had a positive short-run influence on RGDP. Again, the short-run BSA negatively influenced RGDP. Also, short-run SAV positively influenced RGDP, while short-run COB negatively influenced RGDP.

4.7. Diagnostic Tests

One major assumption of ARDL/Bounds testing as proposed by Pesaran *et al.* (2001) is that the errors of the ARDL equation must be serially independent, normally distributed, and free from heteroscedasticity. This was confirmed using the Breusch-Godfrey serial correlation test, the Jarque-Bera statistic, and the Breusch-Pagan-Godfrey heteroskedasticity test. The results are presented in Table 7.

Table 7: Summary of Diagnostic Tests

Test	P-values	Null hypothesis	Decision
Breusch-Godfrey Serial Correlation LM Test	0.4899	No serial correlation	The null hypothesis of no serial correlation could not be rejected
Breusch-Pagan-Godfrey Heteroskedasticity Test:	0.8150	No heteroscedasticity	The null hypothesis of no heteroscedasticity could not be rejected.
Normality test:	0.0530	Normal Distribution Jarque-Bera	The null hypothesis of normal distribution could not be rejected
Ramsey RESET test:	0.6230	Coefficients are zero	All coefficient are not zero

Source: Author's computations using EViews 10

The results reported in Table 7 above indicated that there were no challenges of misspecification, heteroscedasticity, higher-order autocorrelation, or normality in the model. The outcome of the serial correlation test led to the rejection of the null hypothesis that the residuals of the ARDL model were serially correlated. Also, the output of the heteroscedasticity test supported the absence of unequal variability of the observations. Again, the normality test revealed that the residuals of the model were normally distributed. Finally, the Ramsey RESET test showed that the ARDL model did not suffer from misspecification.

The stability of the model parameters was tested using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) test procedures. CUSUM and CUSUMSQ were plotted against the breakpoints. Parameter stability was indicated when the CUSUM and CUSUMSQ plots against time had remained within the 5% significance level over the sample period, while parameters and hence the variance were unstable if these plots had moved outside the 5% critical lines.
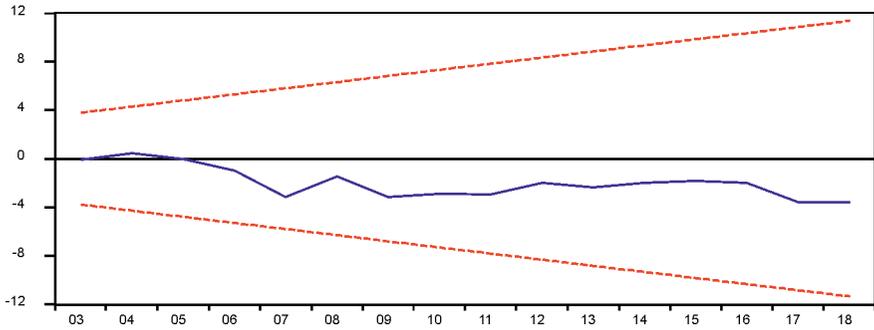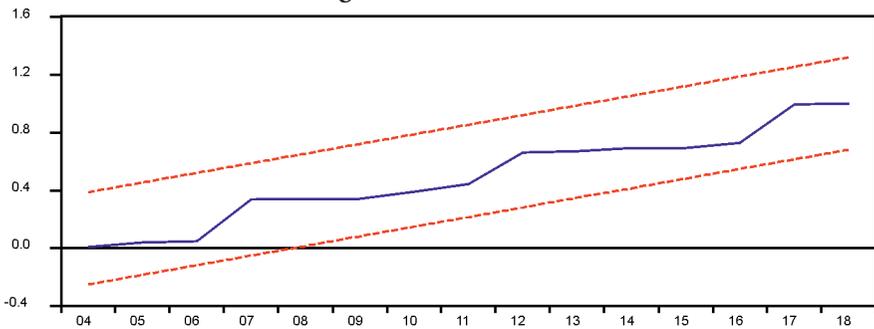
Figure 4: CUSUM Test

Figure 5: CUSUM of Squares Test

Figures 4 and 5 plot the results of CUSUM and CUSUMSQ tests. The results indicate the absence of any instability of the coefficients because the plot of the CUSUM and CUSUMSQ tests falls inside the critical bands of the 5% confidence interval of parameter stability. Hence, there is convincing proof that the model's parameter estimates are stable for inference since the 5% line falls between the upper and lower bounds.

5.   CONCLUSION

This study empirically investigated the causal relationship between financial development and economic growth in Nigeria, based on supply-leading and demand-following hypotheses. The study analyzed the causality between financial development and economic growth and the influence of financial development indicators such as the broad money supply to GDP ratio, private sector credit to GDP ratio, market capitalization to GDP ratio, banking sector assets to GDP ratio, total savings to GDP ratio, and currency outside the bank to GDP ratio on real GDP (economic growth). Results from the Granger causality test largely

supported the demand-following hypothesis, while the ARDL estimation showed that all the measures of financial development enhanced the economic growth of Nigeria at different times, which could imply some evidence of the supply-leading hypothesis, except for the savings rate and informal finance, which were found to have negative and significant effects in the long run and short run. However, the study concluded that financial development enhanced economic growth in the long run based on the ARDL estimation, while in the short run, economic growth caused financial development, which led to the acceptance of the supply-leading hypothesis for the long run and the demand-following hypothesis for the short run. It thus implied that the nexus between financial development and economic growth in Nigeria varied with time. The implication of this is that financial development can only be utilised on a long-run basis to improve economic growth while economic growth is required to enhance financial development in the short-run.

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