Modelling the nexus between financial intermediation and economic growth in Nigeria

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Abstract

This study examined the influence of financial intermediation on Nigeria's economic growth. Secondary data employed in the study was sourced from the 2021 Statistical Bulletin of the Central Bank of Nigeria. The obtained data were subjected to autoregressive distributed lags (ARDL) models. The study revealed that credit to the private sector has contributed positively to the economic growth. Finally, the study indicated a significant positive relationship between the total volume of shares traded and eco-

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nomic growth in Nigeria. Consequently, the study concluded that financial intermediation plays a pivotal role in influencing economic growth within the country.

Keywords: Financial intermediation, economic growth, per capital income
JEL Codes: G20, F43.

Modelando el nexo entre la intermediación financiera y el crecimiento económico en Nigeria

Resumen

Este estudio examinó la influencia de la intermediación financiera en el crecimiento económico de Nigeria. Los datos secundarios empleados en el estudio proceden del Boletín Estadístico de 2021 del Banco Central de Nigeria. Los datos obtenidos se sometieron a modelos de rezagos distribuidos autorregresivos (ARDL). El estudio reveló que el crédito al sector privado ha contribuido positivamente al crecimiento económico. Finalmente, el estudio indicó una correlación positiva significativa entre el volumen total de acciones negociadas y el crecimiento económico en Nigeria. En consecuencia, el estudio concluyó que la intermediación financiera juega un papel fundamental a la hora de influir en el crecimiento económico dentro del país.

Palabras clave: Intermediación financiera, crecimiento económico, ingreso per capital
Clasificación JEL: G20, F43.

1. Introduction

Financial intermediation's contribution to economic growth has been a trending issues around the world. This focus is warranted, as a deeper knowledge of the financial sector's role in boosting economic growth has significant policy consequences. Hence, a robust financial system enhances economic effectiveness, generates and amplifies liquidity, stimulates savings mobilization, promotes capital accumulation, reallocates resources from conventional (non-growth) sectors to contemporary (growth-oriented) ones, and fosters adept entrepreneurial activities within the economy (Kolawole, 2020).

A financial institution acts as intermediaries between lenders and borrowers in order to smooth the flow of funds. According to Adewole, Dare, and Ogunyemi (2019), financial intermediation signifies the converting deposits into assets such as loans and overdrafts within financial institutions (both banks and non-banks). Simply put, financial intermediation involves collecting deposits from savers and providing loans to support productive ventures.

Increases in employment and income, for instance, are direct results of effective financial intermediation and hence contribute to overall economic growth. Through financial intermediation, financial institutions and banks help individuals, businesses, and governments access the savings they have accumulated and put those savings to

work by investing in projects and other areas where they stand to earn returns. The significance of financial intermediation within both banking and non-banking sectors holds immense importance in the investment process and savings. Money, regardless of their narrow or broad definition, constitutes a substantial portion of various financial assets within the wealth-holders' portfolio (Manasseh, et al, 2021).

Banks are the primary conduit through which monetary policy is implemented by governments, the primary provider of credit for consumers, and the primary purchaser of debt instruments issued by various governmental agencies because of their ability to create money using surplus reserves of public deposits. Kolawole, Ijaiya, Sanni, and Aina, (2019) stated that financial intermediation is vital to Nigeria's economic growth because it allows financial institutions to channel deposits from the country's affluent to its deficit sector in the form of loans and overdrafts. When lending rates and credit to the private sector are managed within the financial system, financial intermediation reduces the costs accrued to acquiring this information and conducting financial transactions, speeding up the growth of any economy. According to Kimberly (2019), countries gauge their economic progress annually by utilising the yearly growth rate of the real gross domestic product as a tool to assess their economic objectives. Reducing poverty and raising people's living standards are two of the primary goals of a flourishing economy. The economy expands when people take existing resources and transform them into new and better products. When the economy improves, companies earn higher profits, which drives up stock prices.

Alhassan, Ogoja, Ekadi, and Nkemakonam (2022) noted that as a result, economic growth has become the primary economic metric of interest across the world. However, sub-optimal levels of finance and investment and inefficient capital allocation can have severe effects for economic growth due to asymmetric information and externalities in financial markets (Muazu & Alagidede, 2017). Thus, financial intermediation refers to policies whose execution has the potential to speed up economic growth. This has led various reforms in Nigeria over time, all of which aimed to make the system more efficient so that the country can realize its full growth potential. The Central Bank of Nigeria developed a 13-point agenda in July 2004 (Ogiriki & Andabai, 2014) with the goals of developing larger financial institutions with stronger statements of financial condition, guaranteeing safe and sound banking practice, and increasing regulatory power to supervise the industry.

However, the Nigerian financial industry has not yet addressed the financial holes in the system despite the sector's multiple reforms. Around half of Nigeria's population still lacks access to banking services, and over sixty percent of those living in poverty do not have formal financial access. Consequently, they depend on a limited selection of risky and costly informal services, limiting their capacity to engage fully in markets, boost their earnings, and help economic growth (Evans, 2015). In addition, there are still periodic examples of banks failing to live up to their responsibilities. A considerable number of credit transactions in Nigeria continue to take place in the informal markets, despite governments efforts aimed at diverting credit to the productive sector through the financial institutions.

Capital markets have also been plagued by high levels of speculation by firms, making it tough for smaller ones to "check them out" and get out before the market collapsed. The inability to fund the real sector of the economy has been hampered by the excessively high interest rates set by financial institutions. As a result, financial crises have resulted from financial intermediation in Nigeria due to excessive risk-taking in the face of rising competition (Kolawole, 2020). Additionally, Nigeria's economic growth has been unstable over the past decade, with rates as low as 10.5% in 2003, 7.67% in 2013, and 3.6% in 2021 from a contraction of 1.8% in 2020 (African Development in Nigeria, 2022). Similarly, Nigeria has instead remained a conundrum, with its citizens living in poverty despite an abundance of resources.

According to National Bureau of Statistics (2022), in Nigeria, 133 million people, constituting 63% of the populace, live on less than $1 per day. There have been a number of analyses of the effect of financial intermediation variables on GDP expansion (see, for example, Aye (2015) and Alhassan, Ogoja, Ekadi, and Nkemakonam (2022)). Okereke-Onyiuke (2000) employed metrics like broad circulation of money and lending to private enterprises in assessing the effect of financial intermediation on the growth of the economy. Bank-based financial intermediation policies have received practically all of the attention, whereas the potential impact of non-banking influence on the Nigerian economy has been largely disregarded. In addition, past researches have estimated multiple regression models using the ordinary least square (OLS) approach, fully modified OLS (FMOLS), and error correction model, but has avoided using the autoregressive distributed lags (ARDL) model. Finally, earlier researches on the connection between financial intermediation and economic growth (Ekong and Okon, 2016; John and Nwekemezie, 2019) focused on increase in gross domestic product but did not investigate the effect of financial intermediation on per capital income in Nigeria.

Therefore, there is considerable uncertainty about the effect of financial intermediation on Nigerian economy. The objectives of the study are to (i) examine the impact of financial intermediation on growth of gross domestic product in Nigeria; and (ii) examine the impact of financial intermediation on per capital income in Nigeria. The subsequent part of the research involves a thorough exploration of related literature, both conceptually and empirically, concerning the topic under scrutiny in section 2. Meanwhile, section 3 is dedicated to outlining the methodology employed in the study. The findings and analysis are then presented in Section 4. Finally, a summary of the study's policy recommendations is stated in Section 5.

2. Literature Review

2.1. Concept of Financial Intermediation: Meaning, Measurement, Vehicle of Financial Intermediation and Importance and Challenges

Nwaogwugwu (2016) opined that financial intermediation is the act of expanding access to a variety of financial services with the goal of fostering growth at all socio-economic levels. Financial intermediaries transform gathered deposit liabilities into

credits or assets, such as loans and overdrafts, a process commonly referred to as financial intermediation. In a nutshell, it is when middlemen in the financial sector accept deposits from savers and then lend those funds to those who need them for investment or other forms of economic development. According to Shittu (2012), financial intermediaries help to lower the costs of acquiring information and conducting financial transactions.

It is productive for an institutional unit to incur liabilities on its own account in order to acquire financial assets through market financial transactions; this process is known as financial intermediation. Consequently, certain assets or liabilities become other assets or liabilities as a result of financial intermediation. When middlemen mediate between economic surpluses and deficits, this process is known as financial intermediation. The success of financial intermediation depends on three factors: low cost, ease of use, and trust (Afolabi, 1998). Many groups, people, and economic actors rely on financial resources for various reasons. Financial institutions come in many forms and offer a wide range of services to help people manage their money. Every step of the financing process is considered in this comprehensive definition of financial intermediation; after all, the money supply is created by many financial institutions, both non-banks and banks, utilising numerous financial strategies in various markets. Additionally, commercial banks play a pivotal role in carrying out the government's monetary policies, they are the go-to place for consumers to get credit, and they are the go-to place for purchasing debt securities issued by various government agencies (Mar, 2012).

There are a lot of things that commercial banks can do. They serve a crucial role in meeting economic and social needs since they provide for other industries' financial requirements, including agriculture, industry, trade, and communication. Clients and the general public can deposit funds into commercial banks in a variety of ways, including savings accounts, current accounts, and fixed deposits. Commercial banks provide an extensive range of loan and advance services, such as overdraft protection, cash credit, bill discounting, money at call, and more. Also, with the right collateral, they provide term loans to customers of all kinds. The primary role of commercial banks is to create new credit. Instead of handing the borrower cold, hard cash when they approve a loan, they set up a deposit account that the borrower can later access. That is to say, commercial banks engage in what is called "credit creation" when they automatically create deposits by sanctioning a loan.

Commercial banks offer a variety of useful services, including safe deposit boxes, money transfers, traveler's checks, acting as referees, accepting payments for utility bills (e.g., phone, gas, water), merchant banking, and various types of cards (e.g., smart cards, credit, debit, etc.). When it comes to the health of the nation's economy, the role of the banking institution is crucial. Mohammed (2012) cites its importance in monetary policy execution, payment and settlement systems, credit distribution, and resource mobilization.

Along with other components of the financial system, the capital market facilitates the effective management, distribution, and allocation of long-term money for

investment projects (Alile & Anao, 1990). The capital market acts as a channel for the effective movement of funds from savers to users (Sule & Momoh, 2009). Capital markets do more than only channel people's spare cash into productive endeavors; they also facilitate investment from outside and the flood of funds needed to build projects that benefit the general populace. Businesses and governments can get long-term funding through capital markets, which trade securities (debtor equity) (Sullivan & Sheffrin, 2003).

Capital markets provide five interconnected purposes, as stated by Nieuwerbugh, Buelens and Cuyvers (2005). To begin, intermediaries in the financial sector make it easier to trade and pool risks. Investors coping with liquidity shocks would have no choice but to pull money out of long-term investments if there weren't financial markets. Early withdrawal reduces economic growth. Lenders can get their money quickly through the stock market, while borrowers can have access to capital over the long term (Olowe, 1997).

Secondly, financial intermediaries are required for ex-post management monitoring and corporate control effort. Thirdly, stock markets create a marketplace where investors are at ease giving up some control of their savings, and capital markets efficiently mobilize savings. Similarly, capital markets make people more specialized. It is necessary to reduce transaction cost in order to increase specialization. Finally, by receiving information on time, intermediaries through the capital market improve the allocation of funds over investment projects. Firms with promising investment projects but no capital have an advantage when it comes to knowing what they're getting into because of information asymmetries. Screening projects and their managers can be a challenging and expensive process for private investors. The emergence of intermediaries is prompted by the cost of acquiring information. The two quantitative indicators, the "monetization ratio" and the "intermediation ratio," are commonly used to measure the size of the financial sector. Ndebbio (2014) states that monetary indicators, like the circulation of money ratio to GDP, and intermediation ratios, which include indicators pertaining to banks and capital markets, include ratios like market capitalization to GDP and private sector credit to GDP.

The COM-CENBAN ratio measures the commercial bank's asset base relative to the total asset base of both central banks and commercial banks. It reflects the fact that, in comparison to the central bank, financial intermediaries are better at directing savings toward investment, keeping tabs on businesses, influencing corporate governance, and managing risk. Therefore, the ratio of the money circulation to GDP is mirrored in the literature's definition of financial intermediation. Ratio of M2 to GDP is the most traditional and useful metric for measuring financial deepening. This ratio represents the proportion of a specific year's GDP that comes from M2 along with all non-institutional money market funds and time-related deposits. Metrics of the money supply, or the total amount of currency in circulation at any particular moment, are denoted by M1, M2, and M3. Having more easily convertible currency into other forms of currency opens up more possibilities for an economy to keep growing, so the thinking goes. To begin, we employ the time-honored method of gauging financial depth. The level of monetization in an economy can be seen by comparing the broad measurements of money stock (abbreviated as M2) to the level of national income (abbreviated as MB from here on out). The total money supply (M2) includes both

fiat and quasi-money, the latter of which includes the time, currency, savings, and demand deposits of non-government resident sectors. This metric reveals the growth of payment and saving functions and the magnitude of the financial intermediation sector.

The second indicator is the CBDL ratio, which is the ratio of chartered bank deposit liabilities to income. Financial institutions hold a sizable portion of the money supply. Banks are able to do a better job of matching savers' and businesses' needs for capital thanks to deposits. Furthermore, in both industrialized and developing nations, banks typically serve as the primary intermediary. Third, the banking sector's assets can be evaluated using the domestic credit to income (DOMC) ratio. An increase in this ratio indicates that financial intermediaries are allocating society's savings more extensively and that firms are using credit in addition to internal reserves. As a fourth point, rising investment and productivity levels in the private sector are mirrored in the private sector credit ratio. The distribution of domestic assets is shown by the proportion of non-financial sector claims to GDP (PRIV). This metric is based on the assumption that commercial financial intermediaries can find good investments, keep an eye on managers, help with risk management, and get savings moving.

Interest rates is another measure and can be defined as the equilibrium price that balances the credit added or supply of savings to the net rise in the money amount during a period with the demand for credit or investment plus net accumulation during the period (Keynes,1936). The cost of credit in a country is represented by its interest rates. Finally, the GDP at current prices (STCK) ratio to the turnover value of the Nigerian Stock Exchange is utilized as a measure of financial intermediation. Shares traded on the domestic exchange are a good indicator of turnover. Low transaction costs are typically indicated by a high turnover rate. It is a measure of liquidity that encompasses the entire economy. Levine and Zervos (1998) found that when people have more opportunities to swap ownership, it helps in allocating resources, building capital, and overall economic growth.

2.2. Concept of Economic Growth: Meaning, Measurement, determinants and Synergy between Financial Intermediation and Economic Growth

An economic growth is one in which a country's actual production rises gradually over time. Jhingan (2003) states that a nation's economic growth is gauged by measuring at its increase in the production of products and services. When a country's ability to generate commodities and services is enhanced, the result is a rise in the economy's productive capacity. When a country's physical economy grows, or when its actual gross domestic product rises, we say that the economy is growing (Antwi, Mills & Zhao, 2013). A rise in a country's GDP over a given time frame is a measure of the health of its manufacturing sector (Kanu & Ozurumba, 2013).

Economic growth was described by Todaro and Smith (2006) as an ongoing process wherein the nation's capacity for productivity improves gradually, resulting in rising levels of both national output and revenue. A rise in production was defined by Jhingan (2006) as economic growth. He elaborated by saying it has to do with a rise in the country's output or per capita income that is quantitative and sustained, as well

as an increase in the size of the nation's workforce, consumption, capital, and trade volume. Rising rates of structural change, increasing productivity, increasing rates of per capita income or production, and increased international flows of labour, goods, and capital are the primary features of an expanding economy (Ochejele, 2007).

This idea has developed from classical economists like Adam Smith (1776) who viewed economic growth through the lens of a nation's riches. There are two primary metrics used to gauge economic growth, as stated by Marlyse and Bakang (2014). Gross national product (GNP) is the first, and it measures the overall worth of all final products and services created by all citizens, both at home and abroad, during a specific time frame. The gross national product per capita is a way to look at how well off a country is economically. It shows how much money the typical person has to spend or put into savings (Todaro & Smith, 2006).

The second is GDP, a comprehensive gauge of economic activity and progress. Its intended use is to ascertain the monetary worth of output from endeavors that are encompassed by the national account framework. Gross Domestic Product (GDP) serves as a financial metric for economic expansion, disregarding various other dimensions of development. Both nominal and real terms, which account for inflation, can be used to express GDP. Gross domestic product (GDP) is the total amount of money that local manufacturers put into an economy, plus taxes on products and services and minus subsidies that are not a part of product prices (World Bank, 2013). The pursuit of economic expansion has occupied the minds of contemporary, classical, and Keynesian economists alike.

2.3. Theory of Financial Intermediation

Financial intermediaries, according to Schumpeter's (1911) financial intermediation theory, influence investment and, by extension, economic growth by changing funds from net savers to net borrowers. By changing the risk attributes of assets, financial intermediaries can fix an information asymmetry issue and fix a market failure, according to the theory. Because borrowers typically have better knowledge about investment projects compared to lenders, credit markets might have asymmetries. It would appear that financial intermediaries are able to mitigate some of the transaction costs caused by information breakdowns. Not only do search, monitoring, and auditing costs fall under the umbrella of "transaction costs" (Benston and Smith, 1976), but so do monetary or exchange transaction costs (Tobin, 1963). According to Schumpeter's work from 1911, efficient financial intermediaries can boost economic efficiency as a whole. In order to foster innovation and entrepreneurship, two essential pillars of economic progress, financial intermediation pools and distributes capital.

In their 1960 study, Gurley and Shaw backed the idea that financial intermediaries can help borrowers save and invest more money. Consequently, a larger degree of financial sector intermediation leads to higher levels of savings mobilization and investments, which in turn lead to higher levels of economic growth. Additionally, according to Goldsmith (1969), an economy's financial structure boosts performance

when it helps money get to where it will do the best, or to the part of the economy that will benefit society the most. Consistent with this approach is the argument put forth by Greenwood and Jovanovic (1990), who state that financial intermediation boosts growth by enabling a better rate of return on capital. In turn, this enables the implementation of expensive financial structures. This theory forms the basis of this study.

2.4. Financial Intermediation and Economic Growth

Azmeh (2021) employed Ordinary Least Squares (OLS) regression using indicators like liquid liabilities, central bank assets, bank credit, and deposit money to gauge financial development. Ibrahim (2013) and Azmeh (2021) found a substantial influence of financial development on economic growth. Ibrahim's study highlighted the significant positive long-term effect of domestic bank credit on growth, contrasting with its short-term insignificant negative impact. Similarly, the stock market index had an anticipated positive long-term effect but an unexpected and insignificant short-term influence. Olusegun (2013), using different variables, discovered that solely the real interest rate exhibited an adverse correlation with the growth of the economy, with other factors being statistically insignificant.

Sennuga et al. (2021) and Puatwoe and Piabuo (2017) used time series data to analyze economic growth and financial development. Sennuga et al.'s findings showed a mix of relationships between variables, with some indicators inversely related (like gross domestic savings and real interest rate) and others positively linked to GDP growth. Puatwoe and Piabuo (2017) discovered short-term negative correlation between certain financial indicators and growth, but in the long run, all indicators exhibited a positive and significant impact.

Adamopoulos (2010) utilized a vector error correction model and revealed that the development of the credit market is linked to that economic growth. Additionally, there existed a mutual causal relationship between stock market development and economic growth. In a similar vein, Guru and Yadav (2019) as well as Hassan et al. (2011) in OIC developing nations confirmed the positive connections between the advancement of economic growth and indices of banking development.

However, Musta's (2016) findings contradicted several studies (Ibrahim, 2013; Azmeh, 2021), suggesting a negative influence of financial sector growth on overall growth due to inefficiencies in capital allocation and high non-performing loans. Conversely, Akintola's (2020) research provided evidence supporting positive impacts of banking system liquidity and financial deepening on long-term real output growth, although exchange rate behavior aligned with declining output growth levels.

Several studies were done on financial intermediation variables centering on metrics such as broad money velocity and credit to private sector. The emphasis has predominantly centered on financial intermediation through banking, overlooking the potential influence of non-banking factors, such as the development of capital markets, on the Nigerian economy. The prior studies also failed to focus on the lending rates of economic growth in Nigeria. Furthermore, fully modified OLS (FMOLS) and

error correction model and ordinary least square (OLS) method were used to estimate the multiple regression models of previous studies while neglecting the usage of autoregressive distributed lags model (ARDL). Finally, the previous studies (Ekong and Okon, 2016; and John and Nwekemezie, 2019) on financial intermediation and economic growth concentrated on growth of gross domestic product while neglecting the impact of financial intermediation on per capital income in Nigeria. Hence, constitute the research gaps which this current study duly considered

2.5. Bank Development and Economic Growth

Nguyen (2022) highlighted a positive long-term effect of banking development on economic growth, emphasizing the pivotal role of the banking system within financial systems centered around banks. This effect signifies the system's ability to mobilize and provide capital to the economy during periods of economic transition. Notably, the research highlighted a non-linear influence and a decreasing marginal effect of banking development.

Nyasha and Odhiambo (2015) discovered a favorable connection between bank-centered economic growth and financial development in South Africa. Interestingly, no such association was detected between economic growth and market-oriented financial development, regardless of whether the analysis was short or long-term. This suggests that South Africa's actual economic sector expansion is more impacted by bank-focused financial development than by market-driven financial mechanisms.

Aligned with Nguyen's (2022) findings, Puryan (2017) recognized a unilateral causal connection from banking sector development to economic growth, a reciprocal causal linkage between economic growth and stock market development, and a one-sided causal influence from banking sector progression to the stock market. Notably, Stock Market Development (SMD) showcased a lasting beneficial effect on economic growth. Furthermore, Mhadhbi, Terzi & Bouchrika (2019) presented substantiating proof endorsing the causal correlation between economic growth and banking sector development across twenty-five nations.

Contrarily, Omoruyi and Osawmonyi's (2013) research unveiled substantial factors contributing to economic growth in Nigeria. These encompassed indicators like the total assets of deposit money banks relative to GDP (BA) and the ratio of Private Sector Credit to GDP (PSC), both of which exhibited significant positive correlations. However, the liquid liability ratio of banks (BLL), while statistically significant, revealed a negative coefficient in the regression outcomes.

2.6. Capital Development and Economic Growth

Research on capital market development's impact on economic growth has yielded diverse perspectives. Sulaiman, Adejayan & Ilori (2023) and Alam & Hussein (2019) suggest a relationship between the two. Ubesie et al. (2020) found that most variables,

except for Labour force, significantly explained capital market behavior in Nigeria's economic growth.

Cynthia et al. (2021) highlighted the significance of listed Securities and the All-Share Index in relation to Nigeria's economic growth, both in short and long runs. Abere et al. (2021) supported these findings, identifying a long-term correlation between capital market development and economic growth. Their study emphasized the positive and significant effects of deal numbers and turnover ratio on Nigeria's economic growth, implying that capital market development can indeed stimulate the country's economic growth.

Anderu (2020) also established a long-term effect of capital market on economic growth in Nigeria. Conversely, Angaye & Frank (2020) contradicted these findings, showcasing a positive yet insignificant relationship between economic growth and the stock market in Nigeria.

Adamu and Mustafa (2023) revealed intriguing insights, indicating that in the long run, certain factors like the total value of transactions and all-share index had a negative influence, while market capitalization and deal numbers had a positive impact on economic growth. Nevertheless, Ughulu and Osas (2020) found that market capitalization and the all-share index had a positive but insignificant effect on economic growth, while the total value of transactions significantly impacted growth positively.

Moreover, Adamu and Mustafa's (2023) short-term analysis showed positive and significant effects of certain factors—such as the all-share index, deal numbers, and total transaction value—on economic growth, while market capitalization displayed a negative relationship. In conclusion, this study suggests that enhancing Nigeria's capital market requires active involvement from the real sector and regulatory authorities. Initiatives such as broadening the production foundation, enhancing public awareness, and streamlining entry and listing prerequisites have the potential to cultivate a more resilient and inclusive capital market in Nigeria.

3. Methodology Sequence and Data

The Central Bank of Nigeria statistical bulletin provided secondary data on various indicators including market capitalization, total value of shares traded, credit to private sector, lending rates, broad money supply, per capital income, and gross domestic product and were utilized for the study. This data was collected over a span of thirty-four (34) years, from 1987 to 2020. The study utilized the Autoregressive Distributed Lags model (ARDL) to accomplish its objectives. This study relies on the classical theory of interest rate, which posits that the interest rate is a balance between the supply of and demand for money available for investment. The theory further states that interest is the remuneration given in exchange for the act of capital preservation. The price of saving, similar to the value of other commodities, is controlled by supply of and the demand for saves. Businesses are the primary source of demand for capital. Some individuals borrow money for the sake of consumption, litigation, or religious and social rites. According to the supply side of the classical theory of interest rate,

individuals who save from their current income provides the money that is utilized to purchase capital goods. By deferring the consumption of a portion of their income, individuals' free up resources for the sake of production. Savings entail the act of patiently deferring present consumption for the purpose of future financial gratification.

The equilibrium between savings and investment is achieved through the mechanism of interest rate. When the savings exceed the investment amount, the interest rate will decrease, which will discourage people from saving and encourage them to invest instead. This trend persists until a state of equilibrium is reached between savings and investment. Similarly, When the investment level exceeds the savings level, the interest rate increases in order to discourage investment and promote saves until a balance is achieved between savings and investment. In the classical system, the rate of interest is considered to be the equilibrium factor that balances savings and investment. According to George-Anokwuru (2017), an increase in interest rates positively impacts the overall level of economic activity. Therefore, the interest rate is the value incurred for borrowing money.

3.1. Model Specification

From the review of literature and particularly the classical theory of interest rate, where interest rate is assumed to serve as a vehicle for financial intermediation for economic growth in any economy. Therefore, the model is re-modified and stated as:

$$GDP = f(CPS, BMS, LR, MCGDP, NTS) \quad (1)$$

$$GDP = \beta_0 + \beta_1 CPS_{t1} + \beta_2 BMS_{t2} + \beta_3 LR_{t3} + \beta_4 MCGDP_{t4} + \beta_5 NTS_{t5} \quad (2)$$

Econometrically, it can be written thus:

$$GDP = \beta_0 + \beta_1 CPS_{t1} + \beta_2 BMS_{t2} + \beta_3 LR_{t3} + \beta_4 MCGDP_{t4} + \beta_5 NTS_{t5} + \mu_t \quad (3)$$

The model can be transformed into ARDL-ECM form as:

$$\Delta GDP_t = \beta_0 + \beta_1 \Delta lnGDP_{t-1} + \beta_2 \Delta lnGDP_{t-2} + \beta_3 \Delta CPS_{t-1} + \beta_4 \Delta CPS_{t-2} + \beta_5 \Delta lnBMS_{t-1} + \beta_6 \Delta lnBMS_{t-2} + \beta_7 \Delta lnLR_{t-1} + \beta_8 \Delta lnLR_{t-2} + \beta_9 \Delta lnMCGDP_{t-1} + \beta_{10} \Delta lnMCGDP_{t-2} + \beta_{11} NTS_{t-1} + \beta_{10} NTS_{t-2} + \beta_{19} ECM_{t-1} + \mu_t \quad (4)$$

Where:
GDP= Growth Rate of Gross Domestic Product
BMV= Broad Money (M2, Supply to nominal GDP)
MSD= Money Stock Diversification (Proxy with the ratio of demand deposits to the narrow money stock)
CPS= Credit to Private Sector (Proxy with the ratio of credit to private sector to GDP)
MCGDP= Market Capitalization (Proxy with the ratio of listed shares to GDP)
LR= Lending Rates
NTS= Total share volume to GDP)
β_1, $\beta_{2,}$ $\beta_{3,}$ $\beta_{4\ and}$ β_5 = Slope coefficient

3.2. Specification of Model Two

The second model was used to analyze the impact of financial intermediation on economic growth using per capital income as a proxy for economic growth in Nigeria. The model is specified as:

$$PCI = f(CPS, BMS, LR, MCGDP, NTS) \quad (5)$$

The model can be transformed into ARDL-ECM form as:

$$\Delta PCI_t = \beta_0 + \beta_1 \Delta lnPCI_{t-1} + \beta_2 \Delta lnPCI_{t-2} + \beta_3 \Delta CPS_{t-1} + \beta_4 \Delta CPS_{t-2} + \beta_5 \Delta lnBMS_{t-1} + \beta_6 \Delta lnBMS_{t-2} + \beta_7 \Delta lnLR_{t-1} + \beta_8 \Delta lnLR_{t-2} + \beta_9 \Delta lnMCGDP_{t-1} + \beta_{10} \Delta lnMCGDP_{t-2} + \beta_{11} NTS_{t-1} + \beta_{12} NTS_{t-2} + \beta_{19} ECM_{t-1} + \mu_t \quad (8)$$

Where:
PCI= Per Capital Income
While others as explained earlier

4. Empirical Interpretation and Discussion

This section proceeds with preliminary analysis which comprises with basic tests and regression.

Table 1
Result of Unit Root (Stationarity) Test

Variables	Augmented dickey-fuller (ADF)	5% Critical level	Philip-Perron (PP)	5% critical level	Order of integration	
					ADF	PP
GDP	-12.03872	-3.464865	-6.256851	-3.463547	I(1)	I(1)
PCI	-5.669668	-3.463547	-5.732580	-2.895924	I(1)	I(1)
CPS	-4.083723	-3.568379	-4.914650	-3.465548	I(0)	I(0)
BMS	-4.296729	--3.568379	-6.474873	-3.464198	I(1)	I(1)
LR	-9.201746	-3.567527	-11.86949	-3.464198	I(1)	I(1)
MCGDP	-7.726372	-3.574244	-8.269390	-3.574244	I(1)	I(1)
NTS	-4.074398	-3.574244	-3.890418	-3.221728	I(0)	I(0)

Source: Author's computation (2023)

Applying ordinary least squares (OLS) to non-stationary series results in erroneous regression outcomes. Consequently, it is crucial to conduct a unit root test in order to assess the level of integration of the series and prevent misleading regression. Regression becomes spurious when both the dependent and independent variable(s) lack stationarity at the level. A false regression typically exhibits a notably high R2 value, t statistics that seemingly yield significant estimates, but the outcomes may lack intuitive sense. This is due to the lack of consistency in the OLS estimates, which consequently invalidates the tests of statistical inference. In order to address the previously discussed issues, this study employed the Augmented Dickey Fuller (ADF) and Philips-Perron unit root tests. The findings of these tests are provided in table 1 above. The Augmented Dickey Fuller test and Philips-Perron test indicates that both CPS and NTS exhibit stationarity at their respective levels while others are stationary at first difference. The resulting outcome is provided below.

Table 2
Cointegration Test (Bound Testing Approach)

Model Specification	**Dependent Variable (GDP) F-Statistics**	**Bound CV (10%)**		**Bound CV (5%)**		**Bound CV (1%)**	
		1(0)	**1(1)**	**1(0)**	**1(1)**	**1(0)**	**1(1)**
		2.03	3.13	2.32	3.5	2.96	4.26
Adjusted R^2	.319270						
AIC	5.319270						
SC	5.418140						
Model 2: Dependent Variable: PCI							
Adjusted R^2	5.596422						
AIC	6.391757						
SC	5.064171						

Source: Author's computation (2023)

In order to prevent biased restriction in lag selection, the study employed the modified R2, Akaike Information Criterion (AIC), and Schwarz Criterion (SC) while imposing a maximum lag duration of four during the test. The selection of these three lag criteria is warranted as only an adequate selection would accurately identify the genuine dynamics of the models. In this study, the decision rule is to reject the null hypothesis if the F-statistics of the test exceeds the Critical Value of the upper bound at a given level of significance, which is 5%. Conversely, the null hypothesis is not rejected if the F-statistic is smaller than the Critical Value of the lower bound. If the F-statistic is inside the range defined by the upper and lower bounds, the test results are inconclusive.

The test results show that the F-statistics for the GDP model are 5.319270 for adjusted R2 and AIC, and 5.418140 for SC. The Critical Values for the upper bound are 3.5. The test results show that the F-statistics of the PCI model for adjusted R2 is 5.596422, and the AIC is 6.391757. Additionally, the F-statistics of the PCI model for SC is 5.064171, with Critical Values of the upper bound set at 3.5. This indicates that the F-statistic of each model surpasses the Critical Value of the Upper Bound in all models. This indicates the refusal of the null hypothesis. Therefore, the test demonstrates that there is cointegration in all of the models. Essentially, the ARDL bound test of cointegration demonstrates that there is a stable and balanced relationship between the variables in all of the models over a long period of time. Consequently, the autoregressive distributed lags (ARDL) method is employed to simulate long-term relationships.

Table 3
Estimates of Error Correction Model Results

Model Specification Dependent Variable (GDP)	AIC Coefficient Variable (Standard Error)	Adjusted R^2 Coefficient Variable (Standard Error)	SC Coefficient Variable (Standard Error)
D(CPS)	-0.000150 (0.000214)	-0.000150 (0.000214)	-0.000199 (0.000219)
D(BMS)	0.083017 (0.062567)	0.083017 (0.062567)	-0.000605 (0.020528)
D(LR)	-0.142139 (0.031931)***	-0.142139 (0.031931)***	-0.151608 (0.032306)***
D(MCGDP)	0.030842 (0.041243)	0.030842 (0.041243)	0.047067 (0.018860)
D(NTS)	1.628960 (0.306687)***	1.628960 (0.306687)***	-1.691325 (0.313219)***
CointEq(-1)	-1.001395 (0.015887)***	-1.001395 (0.015887)***	-0.999538 (0.016301)***
Model 2: Dependent Variable (PCI)			
D(CPS)	-0.000254 (0.000357)	-0.000362 (0.000395)	-0.000311 (0.000361)
D(BMS)	0.197070 (0.103538)*	0.173519 (0.111640)	0.207378 (0.104979)*
D(LR)	-0.251603 (0.063532)***	-0.247686 (0.078515)**	-0.310165 (0.055429)***
D(MCGDP)	0.060017 (0.067821)	-0.083349 (0.074878)	-0.069301 (0.068671)
D(NTS)	1.535726 (0.463021)**	1.489269 (0.513907)*	1.806061 (0.444804)***
CointEq(-1)	-0.801686 (0.101276)***	-0.795637 (0.124722)***	-0.981099 (0.018654)***

Source: Author's Computation, 2023.
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 denotes 1%, 5% , 10% level of significance respectively.

As indicated in Table 3, the error correction term (CointEq(-1)) for both models (GDP and GNI) are negative and significant at 1% given the P-value shown in paren-

thesis which indicate that the residuals are not serially correlated and that there is no problem of heteroskedasticity in the model selected.

Table 4
Estimated Results of Long Run Relationship

INDEPENDENT VARIABLES	**Model 1: Dependent Variable = GDP (AIC)**	**Model 2: Dependent Variable = PCI (AIC)**
CPS	0.0121150	0.002216
	(0.000213) ***	(0.000442) ***
BMS	3.1251171	-0.008476
	(1.220364)***	(0.043187)
LR	-0.141942	-0.313843
	(0.032206)***	(0.069723)***
MCGDP	0.054230	0.095095
	(0.018800)**	(0.039539)**
NTS	1.626692	1.915620
	(0.308929)***	(0.553665)***
C	56.360681	95.725950
	(6.376332)***	(11.903499)***

Source: Author's Computation, 2023.
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 denotes 1%, 5% , 10% level of significance respectively.

Credit to the private sector, broad money supply, lending rates, market capitalization and total share volume were used as independent variables while growth rate of gross domestic product was used as dependent variable in this study. It was shown that there are several factors that significantly impact GDP, including private sector credit, money supply, lending rates, market capitalization, and total share volume. Half of the coefficient must be greater than the standard errors for a variable to be considered significant. There coefficient values are 0.0121150 for private sector credit, 3.1251171 for money supply, lending rates is 0.141942, for market capitalization is 0.054230 and 1.626692 for total share volume; the corresponding standard errors are 0.000213, 1.220364, 0.032206, 0.018800 and 0.308929. We can infer that private sector credit, money supply, lending rates, market capitalization, and total share volume significantly affect GDP's growth rate as half of the variables' coefficients are greater than their standard errors. But it was out that every single indicator had a positive relationship with GDP growth rate, with the exception of lending rates. GDP growth rate will rise by 0.0121150 if lending to the private sector is increased by one unit. Additionally, there will be 3.1251171, 0.054230 and 1.626692 rise in GDP growth rate for every one unit

growth in money supply, market capitalization and total share volume, respectively. The GDP growth rate will fall by 0.141942 if the lending rate is raised by one unit.

The effect of financial development on per capita income was further investigated in this study. It was shown that there are several factors that significantly impact per capita income, including private sector credit, lending rates, market capitalization, and total share volume. Half of the coefficient must be greater than the standard errors for a variable to be considered significant. There coefficient values are 0.002216 for private sector credit, 0.313843 for lending rates, 0.095095 for market capitalization, and 1.915620 for total share volume; the corresponding standard errors are 0.000442, 0.069723, 0.039539, and 0.553665. We can infer that private sector credit, lending rates, market capitalization, and total share volume significantly affect per capita income as half of the variables' coefficients are greater than their standard errors. But it was out that every single indicator had a positive relationship with per capita income, with the exception of broad money supply and lending rates. Per capita income will rise by 0.002216 if lending to the private sector is increased by one unit. Additionally, there will be a 0.03953 and 0.553665) rise in per capita income for every one unit growth in market capitalization and total share volume, respectively. The per-capita income will fall by 0.069723 if the lending rate is raised by one unit.

This work is in agreement with previous studies done by Kolawole (2020), Aye (2015), Torruam, Chiawa, and Abur (2013), and Nzotta (2009). It is also consistent with what is known as the Classical Theory of Interest Rate, which states that interest rates, along with the efficiency of financial sector and people's investing habits, determine the rate of economic growth.

Table 5

Result of Diagnostic Test for all the Models

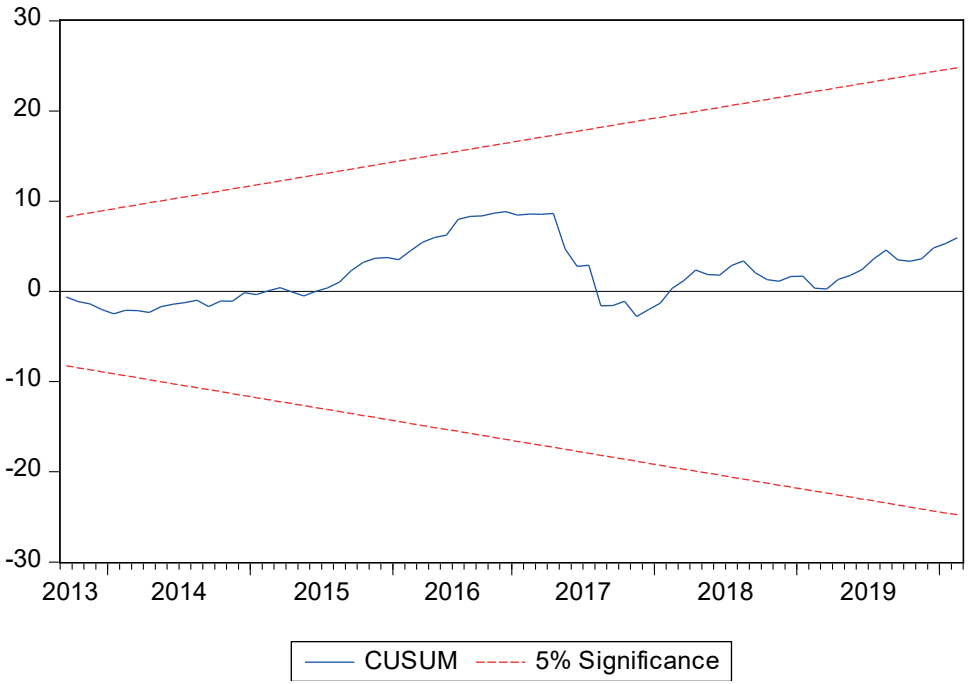
Models	Breusch-Pagan-Godfrey Heteroscedasticity Test:		Breusch-Godfrey Serial Correlation LM Test	
	F-statistic	P- value	F-statistic	P-value
GDP model	5.127753	0.0000	0.238353	0.7886
PCI model	3.326377	0.0010	0.270703	0.7636

Source: Author's computation, (2023)

Each model underwent testing for heteroscedasticity and serial correlation. The absence of heteroscedasticity is the null hypothesis. When the F-statistics test's p-value is less than a certain level of significance, usually 5%, the null hypothesis is rejected. However, the analysis shows that there is no heteroscedasticity in the models because all of the P-values are more than 5%. Hence, the null hypothesis is not rejected.

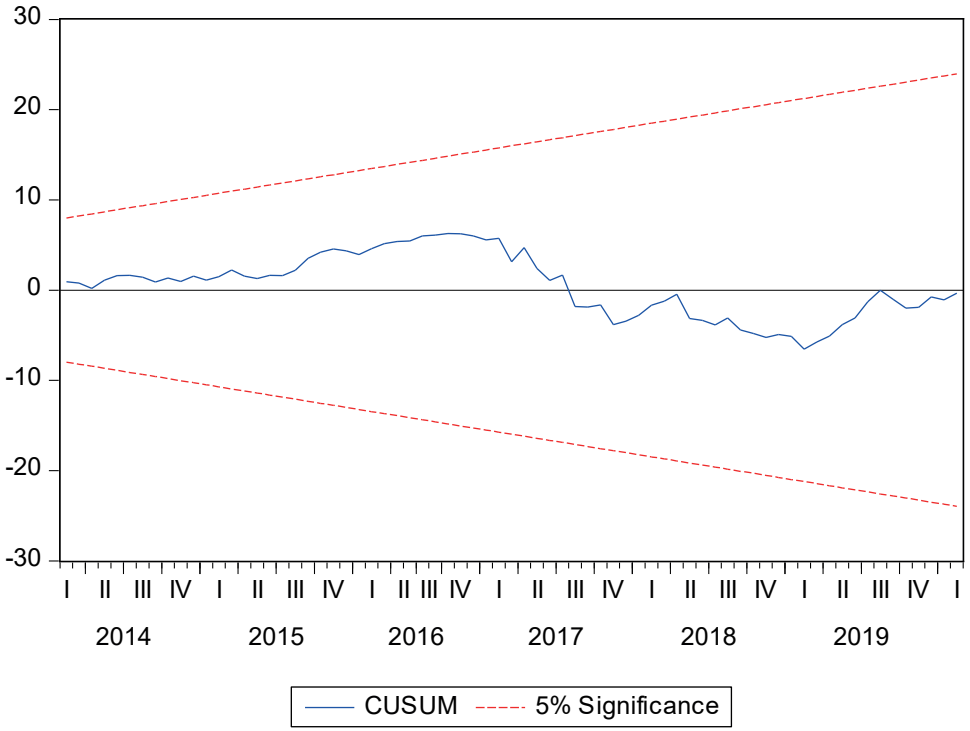
The Breusch-Godfrey Serial Correlation LM test was also used for the correlation analysis. Nonetheless, in a serial correlation test, the absence of serial correlation is taken as the null hypothesis. Test F-statistics were found to be as follows: GDP= 0.238353 and PCI= 0.270703. We may conclude that none of the models have a serial connection because the probability values of the F-statistics are greater than the 5% significance level. So, there is no serial correlation (autocorrelation) or heteroscedasticity in any of the model results.

Figure 1
Plot of cumulative sum of recursive residuals for GDP model



Source: E-views software

Figure 2
Plot of cumulative sum of recursive residuals for PCI model



Source: E-views software

In order to determine if the long run coefficients were stable, the study moved on to CUSUM testing. Figure 1 shows the findings for model 1's cumulative sum of recursive residuals test, whereas Figure 2 shows the results for model 2. At the 5% level of importance, it is expected that the cumulative will remain inside the two critical lines to guarantee stability. Another problem is that things are not stable enough. The CUSUM plots are shown to be contained inside the two critical intervals. Therefore, it follows that the GDP and PCI model parameters are stable.

5. Conclusion and Policy Recommendations

In conclusion, the study found a substantial relationship between financial intermediation and economic growth in Nigeria. The study suggests that bank management should be incentivized to use strategies that enhance the effective distribution of financial services to promote economic development in Nigeria. Similarly, the Nigerian

government should make efforts to stabilize its capital market by implementing competitive market policies. Enhancing domestic investment production will enhance the competitiveness of local enterprises. The Securities and Exchange Commission should also enact rules and initiatives designed to restore customers' confidence, trust, and loyalty, resulting in a positive impact on market capitalization. Deposit money banks should establish mechanisms to educate and support individuals living in rural areas, who are financially disadvantaged or excluded, in accessing financial services. This will encourage them to seek financial assistance for potential investment opportunities and other financial requirements. It is advisable to establish a robust policy to reduce the disparity between lending and deposit interest rates, as well as the total profitability of banks.

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