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Assessing the links between banking sector and human development in Nigeria: Evidence from 1981 - 2023

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ABSTRACT

The financial sector is central to any economy, as it is responsible for the mobilization and allocation of credit. In Nigeria, as in many developing nations, the banking sector is the most dominant part of the financial system. It is in light of the above that the study investigated the link between banking sector development and human development in Nigeria. The study utilized secondary data from 1981 to 2023, which was analyzed using an error correction model. The findings indicated a positive correlation at a 5% significance level between economic development, proxied by the Human Development Index (HDI), and banking sector development (PSC/GDP), aligning with theoretical expectations. Specifically, a 1% increase in the growth rate of PSC/GDP three years prior is associated with a 0.019% increase in the current growth rate of HDI, ceteris paribus, implying that improvements in the banking sector contribute positively to economic development. Conversely, gross domestic investment as a proportion of gross domestic product (GDI/GDP) demonstrated a significant lagged negative impact on economic development (HDI). Consequently, the study recommended that monetary authorities in Nigeria should implement policy measures to enhance investment in areas that foster human capital development, ultimately leading to increased economic development.

Contribution/ Originality: The study contributes to the literature by assessing the link between banking sector development and human development. It is the first study known to the authors that focused on economic development rather than economic growth, which has been the focus of most previous studies.

1. INTRODUCTION

Credit plays a crucial role in economic activities. It can be likened to the central nervous system of the economy. The process of mobilizing and allocating credit fosters investment, which subsequently leads to economic growth and development. The financial system is central to the economy, as it is responsible for the mobilization and allocation of credit. In Nigeria, as in many developing nations, the banking sector is the most prominent part of the financial system. This dominance, instead of promoting competition that could enhance welfare, may result in collusion, leading

to oligopoly and hindering economic development. Therefore, having an efficient and competitive banking sector is essential for promoting and sustaining economic development.

Several empirical studies have identified a strong relationship between the development of the banking sector, efficient credit allocation, and economic development King and Levine (1993); Demirguc-Kunt and Levine (2009); Nzotta and Okereke (2009); Ogwumike and Salisu (2012); Akpansung and Babalola (2011) and Kiprop, Kalio, Kibet, and Kiprop (2015). These research findings indicate that as the banking sector progresses, the economy also advances. This is supported by both the supply-leading and demand-following hypotheses, which suggest that initial advancements in finance promote economic growth; however, as real economic growth occurs, this relationship becomes less significant, and growth will spur increased demand for financial services (Carby, Craigwell, Wright, & Wood, 2012).

In the 1980s, the International Monetary Fund (IMF) led a campaign to displace the traditional development finance model of direct monetary and credit control for economic reforms. This adjustment package aimed to reflect the imperatives of financial development and introduced a new financial structure encouraged for developing economies. The new model was based on financial market liberalization and was already underway in advanced economies. The reforms were expected to increase savings and investment levels, which would, in turn, boost the growth rate. In Nigeria, the government adopted direct credit control of the banking industry in the 1970s. This regulated interest rate structure aimed to favor priority sectors to develop the economy. However, the model of direct monetary and credit control did not produce the expected growth and development envisaged by the government. Following the IMF's pattern of the new financial structure, Nigeria adopted the Structural Adjustment Program (SAP) in 1986. This led to the deregulation of the financial sector.

Interest rate deregulation had a positive effect on deposits. Central Bank of Nigeria (2015) statistics on deposit rates show that from 1986 to 1987, there was a sharp increase in deposit rates from 9.5 percent to 14 percent. The rate maintained a double-digit increase until 1997, when it decreased to 4.8 percent and thereafter remained fairly stable, hovering between 3 and 5 percent. CBN data on the volume of deposits from 1980 to 1988 shows an increasing trend from N10 billion in 1980 to N29.1 billion in 1988. In 1989, it dropped to N27.2 billion. From 1990, the figure shows a higher rising trend from N38.8 billion to N52.4 billion in 1991. Thereafter, the figure maintained an upward trend of N75.1 billion, N702.1 billion, N8.7 trillion, N17.2 trillion, N19.2 trillion, and N34.8 trillion in 1992, 2000, 2010, 2015, 2020, and 2023, respectively Central Bank of Nigeria, 2015).

One would expect that with improvement in credit mobilization, investment would also increase sufficiently to promote economic growth and development. Curiously, statistics from the Central Bank of Nigeria (2015) show an unimpressive trend in gross domestic investment (GDI). From 1980, when GDI was N18.2 billion, there was a downward trend from N17.6 billion, N16 billion, N12.7 billion, to N8 billion in 1981, 1982, 1983, and 1984, respectively. From 1985, it started rising from N8.4 billion to N242.8 billion in 1998. Thereafter, it decreased from N242.8 billion to N232.2 billion in 1998 and 1999, respectively, before rising to N866.7 billion in 2003. In 2005, it decreased to N805.4 billion and increased steadily to N4,015 billion in 2010. It was N9,897.19 billion, N13,593.78 billion, N16,908.13 billion, N41,253.54 billion, and N82,889.72 billion in 2011, 2014, 2017, 2020, and 2023, respectively. The oscillating movements of GDI within the period under consideration, compared to the upward trend of credit mobilization, contradict the liberalization theory of McKinnon (1973) and Shaw (1973), which argues that deregulation increases real interest rates through competition, encouraging savings and investment, thereby boosting economic development.

Small and medium-sized enterprises (SMEs) thrive on bank loans and are major growth drivers, especially in developing economies (Beck, Demirguc-Kunt, & Levine, 2005). Policies aimed at growing the private sector will positively impact economic development. The goal of deregulation was to strengthen and improve the banking sector by encouraging competition and discouraging oligopoly and monopoly power, which can lead to market dominance in banking. McKinnon (1973) and Shaw (1973) liberalization theory argues for competition, favoring channeling more

funds to the private sector than the public sector due to higher yields. However, the ratio of private sector credit (PSC) to gross domestic product (GDP), which measures the credit available to the private sector, and the ratio of gross domestic investment (GDI) to GDP, indicating overall investment performance, have not been impressive. A computation of the PSC/GDP ratio from the Central Bank of Nigeria (2015) statistical bulletins shows that from 1981 to 1985, before the SAP deregulation of the economy, PSC/GDP fluctuated between 9.1 percent and 10.7 percent. From 1986 to 2003, it fluctuated between 11.9 percent and 5.9 percent. The ratio peaked in 2009 at 22.75 percent, with other years until 2023 remaining below 22.56 percent. Further analysis indicates that from 1985 to 2015, the GDI/GDP ratio fluctuated between 3.3 percent and 12.4 percent. The lowest figure of 3.3 percent was recorded in 2015. The poor performance of the GDI/GDP ratio suggests that development in the Nigerian economy has been adversely affected.

World Bank (2012) shows that Nigeria's Human Development Index (HDI) has maintained a sluggish increasing trend. In 1980, Nigeria's HDI was 0.38, rising to 0.49 in 2010. Over thirty years, the HDI increased by 11 percent. In 2014 and 2015, the index was 0.51, and in 2023 and 2024, it stood at 0.548. A country with an HDI below 0.50 is classified as underdeveloped. The HDI trend for Nigeria has been unimpressive, considering the significant credit mobilized by the banking sector.

In light of reforms and improvements within the banking industry, Ndekwu (2013) noted that while the financial services sector has experienced significant growth, especially after the implementation of financial liberalization, the real sector, particularly the manufacturing segment, has not seen comparable growth. Typically, the real sector lags behind the financial services sector. Efforts to address this discrepancy warrant further empirical investigation. Considering this situation, the study aims to address the following question:

What is the connection between banking sector advancement and human development in Nigeria?

Responding to this research question will help determine whether, how, and to what degree the banking sector influences economic development in Nigeria. Focusing on economic development, as measured by the Human Development Index (HDI), is a key contribution of this study, since the primary purpose of economic development is to tackle issues related to poverty, inequality, and income distribution. Although many studies have attempted to explore the relationship between banking sector development and economic growth, none, to our knowledge, has examined its effects on economic development. Many finance and growth studies tend to presume that growth is the sole priority and that achieving growth will naturally lead to economic development. However, the emphasis placed on economic growth overlooks the fact that growth can occur without development. Therefore, while a substantial body of literature indicates that financial development accelerates economic growth with implications for development, it remains unclear whether the economic growth resulting from financial development equitably benefits the entire population or disproportionately favors the wealthy or the impoverished. For example, if financial development exacerbates income inequality, then a country may experience positive economic growth that does not aid its most disadvantaged households. In this scenario, the rich may become wealthier, while the less privileged become poorer. Hence, if financial sector reform policies that promote financial development are not paired with an appropriate regulatory framework and stable fiscal and macroeconomic conditions, then banking sector development could have significant repercussions on wealth distribution and negative effects on per capita income. It is within this context that the present research study becomes essential.

The remainder of this paper will be organized as follows: Section II reviews the existing literature, Section III outlines the methodology to be adopted, Section IV discusses the key findings and results, and Section V offers the conclusions of the study.

2. LITERATURE REVIEW

2.1. Theoretical Review

2.1.1. The Endogenous Theory

The endogenous growth theory, postulated by Romer (1986); Lucas (1988), and Rebelo (1991) among others, asserts that investments in human capital, innovation, and knowledge play crucial roles in fostering economic growth. This theory emerged in response to the shortcomings and gaps found in the Solow (1956) and Swan (1956) neoclassical growth models. It accounts for the long-term growth rate of an economy by focusing on internal factors instead of relying on external influences, as indicated by the neoclassical model. According to the neoclassical theory of the Solow-Swan model, long-term economic growth is driven by two external variables: technological advancement and population increase. This theory posits that these factors produce growth independently of the saving rate. The endogenous theory counters the neoclassical perspective, as Cortright (2001) suggests that embedding technology through knowledge and innovation causes increases in returns to scale to exceed the interest rate, thus fueling economic growth. Consequently, technological advancement occurs as a deliberate economic activity (research and development) when profit-seeking agents aim to create newer and superior products. Innovations gain ex-post monopoly power through patents to offset the substantial initial investments needed to launch new products in the market (Kibritcioglu & Dibooglu, 2001). Ultimately, the economy's growth is driven by research and development (R&D) and technology, with the optimal actions of economic agents serving as the engine of this growth.

2.1.2. Supply Leading and Demand Following Hypothesis

In 1966, Patrick Hugh proposed the supply-leading and demand-following hypothesis in the paper titled "Financial Development and Economic Growth in Underdeveloped Countries." The supply-leading hypothesis suggests that the development of the financial sector, such as the establishment of financial institutions, markets, and instruments, increases the supply of financial services. The demand-following thesis posits that as real economic growth occurs, the demand for financial services, which promotes development in the financial sector, also increases. This means that the rising demand for financial services, driven by economic growth, leads to expansion in the financial sector. The theory states that high economic growth creates demand for financial instruments and arrangements, and financial markets respond accordingly. The banking industry's response is reflected in the credit market, which mobilizes savings and allocates them for investment in the economy. According to Awdeh (2012) there is a third hypothesis called the "feedback hypothesis," which Patrick (1966) proposed. This theory suggests a two-way causal relationship between financial sector development and economic growth, which technological change brings about. It emphasizes the positive, mutual relationship between financial development and economic growth, leading to feedback causality.

2.1.3. McKinnon-Shaw Financial Liberalization Theory

The financial liberalization theory proposed by McKinnon (1973) and Shaw (1973) suggests that regulations on interest rates often result in low or negative real interest rates, which hinder the economic growth of developing nations. This theory contends that financial repression, which leads to low interest rates, discourages saving, consequently resulting in a decline in investment. Additionally, the quality of investments made under a repressive system is likely to be poor due to diminished yield rates. McKinnon (1973) and Shaw (1973) assert that financial progress is obstructed by a repressive credit environment, particularly through government-imposed interest rate caps, elevated reserve requirements, and loan subsidies. They therefore recommended that deregulating interest rates would raise deposit rates, encouraging savings, while simultaneously lowering lending rates to promote investment, effectively stimulating economic growth. An increase in deposit rates, along with a slight rise in lending rates that maintains a narrow margin, would achieve this outcome. The McKinnon-Shaw theory also argued that deregulation

of interest rates was essential to address issues stemming from the financial repression policies prevalent in developing countries.

2.2. Empirical Literature

On the empirical side, research such as that conducted by McKinnon (1973). McKinnon (1973); Shaw (1973) and Levine (1993) indicate that a well-developed financial market is essential for the economic growth of less developed and emerging nations. This connection has engaged economists over the years. The prevailing belief is that financial development can be a driving force for economic growth, while economic growth can also spur financial sector advancement. The pathways and direction of causality remain uncertain in both theoretical and empirical discussions. The positive perspective of the finance-led growth hypothesis mainly highlights the contribution of financial sector development in mobilizing domestic savings and directing them into investments through a more open and liberalized financial system, as well as in enhancing productivity by establishing an effective financial market (Akpansung & Babalola, 2011).

Supporting the notion of the significance of financial sector development, King and Levine (1993) utilized Two-Stage Least Squares (2SLS) and Three-Stage Least Squares (3SLS) methodologies to demonstrate that economic growth positively correlates with the level of financial development. By examining data from 80 countries spanning from 1960 to 1989, they revealed that the relative size of the financial sector in 1960 correlates positively with economic growth during that period. However, this positive correlation may merely indicate that countries experiencing faster growth tend to have larger financial sectors due to increased financial transactions. King and Levine (1993) aimed to address concerns regarding potential reverse causation between financial development and economic growth by assessing financial sector development based on measurements taken at the start of the period in 1960.

Aurangzeb (2012) explored the banking sector's contributions to Pakistan's economic growth from 1981 to 2010, focusing on ten banks and employing the Granger Causality Test. The regression analysis indicates that deposits, investments, advances, profitability, and interest earnings significantly benefit Pakistan's economic growth, while the Granger Causality test verifies a bidirectional causal relationship among deposits, advances, and profitability with economic growth. However, the study revealed a unidirectional causal relationship where investments and interest earnings impact economic growth, flowing from these factors to growth itself.

Petkovski and Kjosevski (2014) conducted an empirical analysis to examine whether the banking sector influences economic growth in 16 transition economies in Central and South Eastern Europe from 1991 to 2011. The study employed a Generalized Method of Moments (GMM) dynamic panel approach. It evaluated banking sector development through bank credit to the private sector, interest rates, and the ratio of quasi-money (RQM). Results showed that credit to the private sector and interest margins (IM) negatively affect economic growth, while RQM has a positive correlation. The authors suggested these outcomes might result from high levels of non-performing loans and banking crises faced during the early transition period, as well as in 2008 and 2010. This situation appears similar to Nigeria, where the positive effects of banking reforms and development are overshadowed by issues such as non-performing loans. In this context, Akinleye, Ojenike, and Afolabi (2012) assert that a significant portion of credit in Nigeria is allocated based on political motives rather than commercial considerations, leading to an increase in non-performing loans.

In their research on the determinants of banking sector growth, Han and Pei-Tha (2010) used real income, real interest rates, trade openness, and financial liberalization as independent variables and employed the Ordinary Least Squares (OLS) method to assess banking sector development in Malaysia. The indicators used to gauge banking sector development included liquid liabilities, private sector credit, and domestic credit. The findings indicated that an increase in GDP contributes positively to banking sector development; however, financial liberalization seems to destabilize this development. Furthermore, real interest rates and trade openness were not found to be statistically

significant factors influencing the growth of the banking sector, suggesting that financial reforms in Malaysia should be implemented at a later stage when robust institutions and effective macroeconomic policies are already established.

Nzotta and Okereke (2009) conducted an empirical analysis of financial deepening and economic growth in Nigeria. The study utilized a Two-Stage Least Squares (2SLS) framework and found that Nigeria's financial deepening index is relatively low. It concluded that the financial system has been ineffective in sustaining proper financial intermediation, especially regarding credit distribution and economic monetization.

Madichie, Maduka, Oguanobi, and Ekesiobi (2014) investigated the relationship between financial development and economic growth in Nigeria, which was empirically analyzed for the period from 1986 to 2012. Using Ordinary Least Squares (OLS) techniques and the Granger Causality test, the study found a short-term positive impact of financial development on economic growth. The causality test indicated a direct causal relationship from economic growth to financial development, supporting the finance-led growth hypothesis in Nigeria. This suggests that fostering economic growth will ultimately promote financial sector development.

Obamuyi, Edun, and Kayode (2012) explored the influence of bank lending and economic growth on manufacturing output in Nigeria, which was analyzed through time series analysis using the Ordinary Least Squares (OLS) technique. The dataset spanned from 1973 to 2009. Findings indicated that the volume of manufacturing production and bank lending rates significantly influence manufacturing output, which subsequently affects economic growth. The notable effect of bank lending rates aligns with Aurangzeb (2012), who suggested that deposits and investments have a meaningful impact on economic growth; the connection between deposits and investments is facilitated by bank lending rates.

Akpansung and Babalola (2011) conducted an empirical examination of the relationship between banking sector credit and economic growth in Nigeria from 1970 to 2008, employed a Granger causality test and a Two-Stage Least Squares (TSLS) estimation technique for their regression models. The Granger causality test results indicated a unidirectional causal relationship from GDP to private sector credit (PSC) and from the industrial production index (IND) to GDP. The regression model estimates showed that private sector credit positively influences economic growth during this period. This outcome suggests that banking sector development should focus on increasing loan allocation to the private sector in Nigeria. However, this finding contradicts the results of Petkovski and Kjosevski (2014), which indicated a negative correlation between credit to the private sector and economic growth.

Ogbuagu, Chijioke, and Udah (2014) analyzed the connection between credit market development, measured as the bank sector credit ratio to GDP, and investment productivity, gauged as the ratio of gross domestic investment (GDI) to GDP in Nigeria, using data from 1970 to 2010, was analyzed. The study applied the Error Correction Mechanism (ECM) for data analysis and found that improvements in banking sector reforms did not lead to advancements in credit market development. This lack of development was attributed to the ineffective use of credit market funds, resulting in low per capita income, minimal investment, and a poorly developed banking credit market in Nigeria. The findings indicate that credit market development does not lead to increased investment, which does not promote economic development. Therefore, since banking sector reform does not facilitate credit market development, it implies that economic development is not influenced by banking reforms.

Adekunle, Salami, and Adedipe (2013) investigated the effect of financial sector development on economic growth in Nigeria, which was analyzed using the Ordinary Least Squares (OLS) regression method. Financial development was represented by the liquidity liabilities to GDP ratio (M2/GDP), the real interest rate (INTR), and the ratio of credit to the private sector to GDP (CPGDP), while economic growth was evaluated through real GDP (RGDP). The study concluded that only the real interest rate has a negative correlation with economic growth, and all the explanatory variables were statistically insignificant. The connection between the financial and real sectors remains weak and has not been able to drive the necessary growth towards Vision 2020.

Chijioke and Ogbuagu (2014) conducted research on the credit market and its relationship with economic development in Nigeria. They utilized the Error Correction Mechanism (ECM) to analyze the relationship between

the credit market and economic development from 1970 to 2012. Their results indicated a positive contribution of the credit market to economic development. However, the inadequate use of credit market funds led to a minimal contribution of investment returns to economic development. The study recommended strict enforcement of policies that would promote the efficient use of credit market funds to positively impact the economy, which aligns with the objective of the current study: to evaluate the effect of banking sector development on economic development in Nigeria.

Based on the literature review presented, it is clear that while many empirical studies suggest that financial development contributes to accelerated economic growth, the question of whether financial development actually results in economic development remains unclear, thus leaving the debate open for further research.

3. METHODOLOGY

3.1. Theoretical Framework

Following the supply-leading hypothesis, which was logically argued by McKinnon (1973) and Shaw (1973) in their financial repression theory, all a developing country needs is to formulate a policy that liberalizes the financial sector to enhance financial intermediation. The result will be high economic growth and development through increased investment. Robinson (1952) asserted that where finance follows growth leads, this prompted the demand-following hypothesis, which regards financial development as endogenously determined by the real needs of the economy. As the economy grows, the demand for financial services and assets increases, leading to financial development. The two-gap theory establishes a link between foreign direct investment and economic growth. Thus, following Banerjee and Ghosh (1998); Ajisafe and Ajide (2014); Petkovski and Kjosevski (2014) and Aurangzeb (2012), and others also assumed that banking sector development has an impact on economic development. Based on the above literature, we establish the link between financial development and growth using the augmented Cobb-Douglas production function.

$$Y = AK^{\propto}L^{1-\propto} \quad (1)$$

Where Y = Output.

L = Labour Stock.

K = Capital Stock, which can be generated from the financial sector activities.

A is a vector of other variables.

A and K = Total Factor Productivity

Where $0 < \alpha < 1$, and the parameter α being less than 1 implies diminishing marginal returns to capital accumulation. Given the restriction that $\alpha = 1$, Equation 1.

$$Y = AK \quad (2)$$

Where output (Y) is assumed to be a linear function of the capital stock (k), which can be generated from the financial sector activities, which increase investment. Incorporating banking sector development variable and a macroeconomic variable in the AK model gives;

$$Y = f(INV, BSD) \quad (3)$$

Where Y is real GDP.

BSD is banking sector development, and INV is investment.

3.2. Model Specification

The regression model is based on the Eclectic model, following growth and development theories discussed above, and relies on the works of Petkovski and Kjosevski (2014); Aurangzeb (2012) and Eriemo (2014), among others. The goal of economic development is a better life for people, which leads to human development. Theories focus on bank credit, technological innovations, and investment.

The endogenous growth model emphasizes knowledge and technological innovation through research and development (R&D). This focus leads to investment in human capital development. In Schumpeterian theory, the innovative entrepreneur is financed by bank credit expansion, which creates investment. This entrepreneur uses bank credit and benefits from banking sector reforms, fostering banking development as a channel for economic growth. Human capital development is measured by the Human Development Index (HDI). The mobilization of credit is further enhanced by foreign capital inflows, such as foreign direct investment (FDI). The supply-leading hypothesis, aligned with the financial widening model, supports the idea that establishing a bank or expanding its branch network increases the supply of banking services, thereby promoting economic development.

Thus, economic development measured by HDI is affected by developments in the banking sector through the investment channel. The reviewed literature also identifies determinants of economic development, including Banking Sector Development (BSD), Real Gross Domestic Product (RGDP), and Investment (INV) variables such as foreign direct investment (FDI), Gross Domestic Investment as a ratio of Gross Domestic Product (GDI/GDP), among others. Based on these theories and the study's objective, we model economic development as:

$$\mathrm{HDI} = \mathrm{f}\left(\frac{\mathrm{GDI}}{\mathrm{GDP}}, \mathrm{FDI}, \frac{\mathrm{PSC}}{\mathrm{GDP}}, \mathrm{CBACR}, \mathrm{RGDP}\right) \quad (4)$$

Where: HDI = Human Development Index used as a proxy for economic development.

GDI/GDP = Gross Domestic Investment as a ratio of Gross Domestic Product.

FDI = Foreign Direct Investment (in $' billion).

PSC/GDP = Private Sector Credit as a Ratio of Gross Domestic Product, used as a proxy for banking sector development.

CBACR = Commercial Bank Aggregate Concentration Ratio.

RGDP = Real Gross Domestic Product in N'billion.

In linear form, Equation 4 becomes;

$$\mathrm{HDI} = \beta_0 + \beta_1 \frac{GDI}{GDP} + \beta_2 FDI + \beta_3 \frac{PSC}{GDP} + \beta_4 CBACR + \beta_5 RGDP + \mu \quad (5)$$

Where μ is the error term and other variables are as defined below. A priori expected parameter β_0, β_1, $\beta_2, \beta_3, \beta_5 > 0$ *and* $\beta_4 < 0$.

3.3. Definition of Variables and A Priori Theoretical Expectation

Dependent variable: The Human Development Index (HDI) is a composite measure that includes life expectancy, educational attainment, and income per capita, which is utilized to evaluate and rank nations. A country achieves a higher HDI when it has longer life expectancy at birth, extended educational periods, and increased income per capita. This index reflects the general quality of life within a nation and serves as a more accurate indication of economic development compared to gross domestic product (GDP) and gross domestic product per capita (GDPPC), which focus primarily on economic growth. It also surpasses the physical quality of life index (PQLI) as the latter only addresses basic needs and omits crucial psychological aspects like security, justice, and human rights, failing to account for the intricate nature of economic and social advancement. HDI is a composite measurement encompassing a long and healthy life, educational attainment, and a reasonable standard of living. According to the World Bank's Human Development Report from 2014, a nation is considered to have a high HDI if it falls within the range of 0.8 to 1.0, a medium HDI if between 0.5 and 0.8, and a low HDI if it is below 0.5.

Independent Variables: Private Sector Credit as a ratio of gross domestic product (PSC/GDP): This refers to the proportion of bank credit extended to the private sector relative to GDP and is regarded as an indicator of bank sector growth. This ratio gauges the financial resources allocated to the private sector by deposit-taking institutions, excluding the central bank, represented as a percentage of GDP. A higher value of this ratio indicates a greater provision of financial resources to the private sector, thereby enhancing opportunities for growth and development

within this segment of the economy. This serves as an indicator of the development of the banking sector. According to economic theories, advancements in the banking sector catalyze efficient mobilization and distribution of credit, which propels economic growth. Hence, a positive correlation is anticipated between this variable and economic development.

Gross Domestic Investment as a ratio of gross domestic product (GDI/GDP): This ratio represents the relationship between gross domestic investment and gross domestic product. It assesses the overall effectiveness of investment activities in the economy. It signifies the proportion of investment in total production, calculated by taking gross capital formation as a percentage of gross domestic product. Gross capital formation includes both gross fixed capital formation and changes in inventory. A higher investment ratio indicates a greater investment rate, which correlates positively with economic advancement. It is expected that a positive association exists between GDI/GDP and economic growth.

Foreign direct investment (FDI): This involves investments made directly into production or business operations in Nigeria by individuals or companies from abroad, which can occur through acquiring a business or expanding the capacity of an existing one in Nigeria. Foreign direct investment is distinct from portfolio investment, which refers to passive investments in another country's securities, such as stocks and bonds. In broader terms, foreign direct investment encompasses activities like mergers and acquisitions, constructing new facilities, reinvesting profits generated from foreign activities, and intra-company loans. In a more specific context, foreign direct investment pertains to constructing new facilities. Economic theories suggest that foreign direct investment contributes to economic growth. Therefore, a positive correlation is expected to exist between FDI and economic development.

Commercial Bank Aggregate Concentration Ratio (CBACR): This ratio reflects the proportion of loans provided by five commercial banks compared to the total loans offered by all lending institutions in the economy. CBACR, which assesses market power within the credit market, plays a crucial role in determining credit distribution in the economy. Considering the dominant role of the banking sector and the prevalence of loans from commercial banks, a high CBACR may indicate an oligopoly by the five largest commercial banks. It is anticipated that CBACR will exhibit a negative correlation with HDI.

Real Gross Domestic Product (RGDP): Real Gross Domestic Product is a key indicator for gauging economic progress. This metric adjusts GDP for inflation or reflects GDP in constant prices. It evaluates the total market value of goods and services produced in an economy during a specific year, expressed in terms of base year prices. RGDP can also be viewed as a measure that quantifies the inflation-adjusted market value of goods and services generated by an economic system over a particular period. Businesses might utilize the real GDP of a country to assess the standard of living in that nation, which can inform their expectations regarding the success of their products. A positive relationship with economic development, as measured by the Human Development Index, is expected.

3.4. Estimation and Validation

In order to obtain empirical evidence to test the explanatory powers of the variables in our model and to investigate and ascertain the true position of some conclusions made in the reviewed research works, we will employ an econometric technique to estimate and validate our models. Multiple regressions will be used to analyze the relationships between the independent variables and the dependent variable in the banking industry development equation and the economic development equation. Our estimated models will be evaluated and verified for reliability. We will use three criteria commonly adopted in the evaluation of estimates: the economic a priori criteria, which are based on economic theory and examine the signs and magnitudes of parameters; the statistical criteria, based on statistical theory, which assess the statistical reliability of the parameter estimates using Student's t-statistic, F-statistic, R^2, and adjusted R^2; and econometric criteria, based on econometric theory, utilizing the Durbin-Watson (DW) test to determine the presence of autocorrelation.

3.5. Sources of Data

The data for the study are secondary, covering 1981–2023. The sample period is justified by data availability. Relevant sources include the Central Bank of Nigeria (CBN) Statistical Bulletins, Research and Data Services (REDASEL), various World Bank publications, and annual reports from commercial banks.

4. RESULT AND DISCUSSION

4.1. Descriptive Statistics

Preliminary analysis was conducted to determine data normality, measures of central tendency, and measures of dispersion. The results are presented in Table 1.

Table 1. Descriptive statistics.

Variable	HDI	GDI_GDP	FDI	PSC_GDP	CBACR	RGDP
Mean	0.43	8.90	2.66	13.14	0.36	29871.05
Median	0.41	7.20	1.45	11.0	0.31	22060.99
Maximum	0.51	53.2	8.84	36.9	0.62	69023.93
Minimum	0.38	2.96	0.19	5.90	0.18	31.54
Std. Dev.	0.04	8.25	2.70	6.70	0.14	17809.99
Skewness	0.71	4.51	1.08	1.69	0.45	0.84
Kurtosis	2.11	24.55	2.72	5.99	1.83	2.59
Jarque-Bera	4.23	818.5	7.09	30.5	3.27	4.52
Probability	0.12	0.00	0.03	0.00	0.11	0.10
Sum	15.39	320.46	95.65	473	12.82	1075358
Sum Sq. Dev.	0.06	2381.28	254.59	1570.93	0.66	11100000000
Observations	43	43	43	43	43	43

The mean indicates the average or expected value of the sample. The maximum and minimum values show the highest and lowest for each variable, respectively. All variables were closely dispersed from their mean values, as shown by their small standard deviations. Based on skewness, kurtosis, and the Jarque-Bera probability, it can be seen that CBACR, HDI, and RGDP are normally distributed, while FDI, GDI/GDP, and PSC/GDP are not, based on their probability values. These results suggest that the data are suitable for the study, as they would help in explaining the data in a simpler and more meaningful way.

4.2. Unit Root Test

Most time series variables are non-stationary. Incorporating non-stationary variables into a model can result in spurious regression outcomes. The result of the unit root tests is presented in Table 2.

Table 2. Augmented Dickey-Fuller unit root tests.

Variable	Level		1st Difference		Remarks
HDI	-1.23		-6.67*		I(1)
GDI_GDP	-1.01		-14.80*		I(1)
FDI	-1.46		-2.91*		I(1)
PSC_GDP	-1.53		-5.68*		I(1)
CBACR_5	-0.52		-2.25**		I(1)
RGDP	-0.88		-9.45*		I(1)
Test critical values:	1% level	-2.65	1% 1st Diff	-2.64	
	5% level	-1.95	5% 1st Diff	-1.95	
	10% level	-1.60	10% 1st Diff	-1.61	

Note: *Significant at 1% **Significant at 5%.
Exogenous: Constant, Linear Trend.
Lag Length: 0 (Automatic - based on SIC, maxlag=9).

In the ADF test above, all tested variables contain unit root processes at levels, as their t-values were less than their 5% critical values, and all became stationary after the first difference. Therefore, the variables are integrated of order 1, i.e., I(1). This confirms the suitability of the variables for use in co-integration analysis.

4.3. Co-Integration Test

From an econometric perspective, two variables are said to be co-integrated when they share a long-term or equilibrium relationship. Therefore, a co-integration test was performed to ascertain if a long-run relationship exists between the dependent variable and the independent variables used in the model, employing Johansen's co-integration test. This test utilizes both trace and maximum Eigenvalue statistics. The first row in each table assesses the null hypothesis of no co-integration, while the second row examines the null hypothesis of one co-integrating relationship, continuing accordingly against the alternative of complete co-integration rank. The results are shown in Table 3.

Table 3. Johansen Co-integration test result for economic development.

Hypothesized no. of CE(s)	**Eigenvalue**	**Trace statistic**	**0.05 critical value**	**Prob****
None *	0.99	355	95.8	0.0000
At most 1 *	0.95	212	69.8	0.0000
At most 2 *	0.83	119	47.9	0.0000
At most 3 *	0.71	62.8	29.8	0.0000
At most 4 *	0.44	23.3	15.5	0.0027
At most 5 *	0.14	4.73	3.84	0.0297
Trace test indicates 6 cointegrating eqn(s) at the 0.05 level * denote rejection of the hypothesis at the 0.05 level **MacKinnon, Haug, and Michelis (1999) p-values				
Unrestricted cointegration rank test (Maximum Eigenvalue)				
Hypothesized no. of CE(s)	Eigenvalue	Max-eigen statistic	0.05 critical value	Prob**
None *	0.99	142	40.1	0.0001
At most 1 *	0.95	93.7	33.9	0.0000
At most 2 *	0.83	55.8	27.6	0.0000
At most 3 *	0.71	39.4	21.1	0.0001
At most 4 *	0.44	18.6	14.3	0.0097
At most 5 *	0.14	4.73	3.84	0.0297
Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level				

Note: * denotes rejection of the hypothesis at the 0.05 level.
**MacKinnon et al. (1999) Prob. Values.

The result of the Johansen test for evidence of co-integration among selected variables shows that, in both the trace statistic and the maximum eigenvalue tests, there are at least six co-integrating equations.

Before estimating the economic development model, it is important to establish the lag length of the variables entering the model. To this end, the study employed the SIC and AIC criteria to determine the appropriate lag lengths. In choosing between two competing models, the one in which the Akaike information criterion, Schwarz criterion, and Hannan-Quinn criterion have the least values is assumed to be the better model. This basis determines the choice between over-parameterized and parsimonious models. In this case, the parsimonious model is chosen because it has the least value of these criteria. The parsimonious ECM estimate is obtained by eliminating the jointly insignificant variables from the over-parameterized model. Table 4 demonstrates the information above.

Table 4 presents the result of the lag order selection criteria, which indicates that both the SIC and AIC suggest a lag order of 5. The chosen lag order is based on the lowest AIC and SIC scores, which indicate the best fit because lower scores reflect less information loss. Selecting the model with the lowest AIC and SIC values helps prevent overfitting (too many lags) or underfitting (too few lags).

Table 4. VAR Lag order selection criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-4.37	NA	1.26e-06	0.60	0.84	0.68
1	88.3	149	1.64e-08	-3.76	-2.37	-3.31
2	116	35.4	1.60e-08	-3.92	-1.38	-3.09
3	135	18.8	3.38e-08	-3.56	0.18	-2.36
4	174	25.0	3.48e-08	-4.45	0.40	-2.87
5	310	43.9*	2.69e-10*	-11.6*	-5.62*	-9.67*

Note: * indicates lag order selected by the criterion.
LR: sequential modified LR test statistic (each test at 5%level).
FPE: Final prediction error.
AIC: Akaike information criterion.
SIC: Schwarz information criterion.
HQ: Hannan-Quinn information criterion.

In order to determine the impact of banking sector development on economic development in Nigeria, the study estimated a dynamic short-run error correction model following the general-to-specific approach of Hendry and Richard (1982). The result of the over-parameterized model is shown in Table 5.

Table 5. Result of over-parametrized economic development model.

Dependent variable: D (LOG (HDI))				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-5.05	0.80	-6.28***	0.0008
LOG(RGDP)	0.34	0.05	6.22***	0.0008
LOG(CBACR_5)	0.01	0.01	1.06	0.3307
LOG(HDI(-1))	-1.85	0.29	-6.32***	0.0007
D(LOG(FDI(-1)))	-0.02	0.01	-3.51**	0.0127
D(LOG(FDI(-2)))	-0.03	0.01	-4.61***	0.0037
D(LOG(FDI(-3)))	-0.02	0.01	-2.64**	0.0387
D(LOG(PSC_GDP(-1)))	0.02	0.01	1.74	0.1319
D(LOG(PSC_GDP(-2)))	0.01	0.01	1.29	0.2458
D(LOG(PSC_GDP(-3)))	0.03	0.01	2.75**	0.0334
D(LOG(CBACR_5(-1)))	-0.03	0.01	-2.45**	0.0495
D(LOG(CBACR_5(-2)))	0.01	0.01	1.36	0.2215
D(LOG(CBACR_5(-3)))	-0.01	0.01	-0.97	0.3675
D(LOG(RGDP(-1)))	0.16	0.07	2.40*	0.0536
D(LOG(RGDP(-2)))	0.03	0.07	0.41	0.6987
D(LOG(RGDP(-3)))	0.11	0.08	1.40	0.2119
D(LOG(GDI_GDP(-1)))	-0.03	0.01	-2.62**	0.0396
D(LOG(GDI_GDP(-2)))	-0.03	0.02	-1.95*	0.0989
D(LOG(GDI_GDP(-3)))	-0.02	0.01	-1.58	0.1653
D(LOG(GDI_GDP(-4)))	-0.01	0.01	-1.63	0.1532
D(LOG(RGDP(-4)))	-0.002	0.002	-0.80	0.4539
D(LOG(CBACR_5(-4)))	-0.03	0.02	-1.72	0.1361
D(LOG(PSC_GDP(-4)))	0.01	0.01	0.92	0.3915
D(LOG(FDI(-4)))	-0.01	0.01	-1.27	0.2511
ECMN1(-1)	-0.29	0.14	-2.02*	0.0895
R-squared	0.95	F-statistic	5.12	
Adjusted R-squared	0.77	Prob (F-statistic)	0.02	
Durbin-Watson stat	2.03			

Note: *(** ***) denotes rejection of the hypothesis at 10% (5%, 1%) significance.

The R2 value of 0.95 indicates that approximately 95 percent of the fluctuations in banking sector development in Nigeria can be explained by the variables within the model. The Durbin-Watson statistic is approximately 2.03, suggesting no autocorrelation in the error term. The probability of the F statistic, around 0.02, shows that the variables are collectively significant in analyzing Nigeria's economic development. Regarding the error correction parameter, it is correctly signed and statistically significant, implying a long-term relationship between banking sector development and the other variables in the model.

After determining the nature and scope of the co-integrating relationship among the model's variables, an over-parameterized error correction model, as outlined in Table 5, was estimated. At this stage, the over-parameterized model presents challenges for meaningful interpretation; its primary purpose is to help uncover key dynamic patterns within the model. However, the focus of the study is on the parsimonious model, which is more straightforward to interpret. This parsimonious model is achieved through stepwise elimination of insignificant dynamic variables until an optimal level of simplicity is reached, as demonstrated in Table 6.

Table 6. Result of the parsimonious ECM of economic development model.

Dependent variable: D (LOG (HDI))				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-2.28	0.40	-5.78***	0.0000
LOG(FDI)	-0.01	0.004	-1.65	0.1122
LOG(RGDP)	0.16	0.03	5.84***	0.0000
LOG(HDI(-1))	-0.77	0.14	-5.54***	0.0000
D(LOG(PSC_GDP(-3)))	0.01	0.01	2.74**	0.0117
D(LOG(CBACR(-3)))	-0.01	0.01	-1.18	0.2517
D(LOG(GDI_GDP(-4)))	0.004	0.01	0.76	0.4548
ECML(-1)	-0.103	0.01	-11.39**	0.0266
R-squared	0.88	F-statistic	6.97	
Adjusted R-squared	0.58	Prob (F-statistic)	0.00	
Durbin-Watson stat	2.34			

Note: *(**, ***) denotes rejection of the hypothesis at 10% (5%, 1%) significance.

Evidence from the estimated model indicates that, during the period under consideration, Nigeria exhibits a statistically significant positive relationship between economic development (proxied by HDI) and banking sector development (proxied by PSC/GDP). This aligns with economic theoretical expectations. The impact becomes significant only after three years. In other words, an innovation, rule, or policy that enhances banking sector performance or development does not immediately translate into economic development; a three-year lag is observed. This delay may be due to technological or institutional factors. The short-run coefficient of the lagged PSC/GDP variable suggests that a 1% increase in PSC/GDP will, on average, increase economic development by 0.02% after three years. The impact is significant even at the 1% critical level. Empirical studies by King and Levine (1993), Aurangzeb (2012), and Adekunle et al. (2013) support this evidence of the positive impact of financial sector development on economic development.

Furthermore, the estimated model shows that during the review period, there is a negative short-term relationship between bank market power (CBACR_5) and economic development (HDI) after the first year, and in the second year, it becomes positive. It is expected that a 1 percent increase in market power will reduce economic development by 0.016 percent after one year and later increase it by 0.017 percent after two years. The cumulative dynamic short-term impact after two years is 0.001 percent. These findings imply that increasing the market power of the five largest loan-granting commercial banks in Nigeria will initially negatively impact economic development but will later have a positive effect on the overall economy. The variable is also statistically significant, indicating that market power (CBACR) influences economic development in Nigeria. This supports the position of Akinleye et al. (2012) that credit is often given based on political rather than commercial considerations in Nigeria, resulting in a large pile of non-performing loans in banks. The slow improvement in Nigeria's HDI statistics further supports this conclusion. The negative sign of the coefficient of the control variable FDI suggests an inverse relationship between FDI and economic development, even after three years. The impact is, however, statistically significant. This is inconsistent with a priori economic expectations. Surprisingly, the negative sign of the lagged value of HDI suggests an inverse relationship between economic development in the immediate past and present. Put differently, a negative feedback relationship exists between current and past HDI. Economic expectations, however, suggest that a positive relationship should exist between present development and that of the immediate past.

Finally, the model indicates a statistically significant positive relationship between real gross domestic product (RGDP) and economic development in Nigeria, even after three years. GDI/GDP exhibits a positive but insignificant effect on economic development during the review period. This aligns with theoretical expectations.

The R^2 value of 0.877721 for the ECM of economic development indicates that the overall goodness of fit is satisfactory. This means that 87 percent of the variation in economic development is explained by the explanatory variables. The remaining 13 percent is attributed to the error term. The F probability value of 0.000010 shows that the variables are statistically significant as a group. The Durbin-Watson value of 2.13 indicates the absence of autocorrelation.

5. CONCLUSION AND RECOMMENDATIONS

The research aimed to evaluate the influence of banking sector development on Nigeria's economic development from 1981 to 2023, utilizing parsimonious models evaluated for short-term equilibrium adjustments through the error correction method. The analysis of the estimated results indicated that banking sector development had a positive and significant effect on human development, aligning with economic predictions. The increase in loanable funds following the 2004 bank consolidation led to a rise in domestic investment, which ultimately contributed to economic growth. Additionally, there was an overall positive correlation between the market power of five commercial banks and economic growth. Although economic theory suggests a negative relationship between bank market power and economic growth, the model's results showed that the initial effect was negative; however, after the second year, the market power of these banks promoted economic growth. Conversely, foreign direct investment (FDI) exhibited a negative and significant relationship with economic growth, contrary to economic assumptions. This negative correlation is attributed to FDI's focus on the industrial sector rather than sectors like health and education, which results in a limited impact on the human development index. Real gross domestic product (GDP) positively and significantly influenced economic growth, consistent with economic expectations, confirming that Nigerian investment projects primarily aim to enhance GDP rather than other aspects of economic development, such as human capital. Gross domestic investment as a percentage of GDP exerted a substantial nonlinear effect on economic growth. The negative relationship between gross domestic investment and economic growth may be due to the misallocation of bank credit for political reasons rather than commercial considerations. This also explains why some researchers have concluded that banking reforms have not yielded the anticipated outcomes on economic development.

From the analysis of the findings and the derived conclusions, the following suggestions were proposed:

Monetary authorities should pursue a policy objective aimed at enhancing the efficiency and competitiveness of credit market mobilization and allocation. Monetary policy tools, such as interest rates, should be effectively employed to foster banking sector development and subsequently drive economic growth. Furthermore, banking sector reforms should not solely concentrate on bolstering the capital base of banks but also prioritize human capital development and the technological aspects of banking service delivery. Lastly, the Central Bank of Nigeria should strengthen its oversight role to closely monitor the distribution of bank loans in order to address non-performing loans within the banking system. Moreover, banks should refrain from allowing political interests to overshadow commercial interests when it comes to granting loans to clients.

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