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Relationship between Banking Intermediation and Economic Growth: Evidence from Nigeria

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Abstract
This paper uses the Johansen method of co-integration and vector error correction model (VECM) to examine the effect of banking intermediation on real economicgrowth in Nigeria, based on banking sector development and economic growth data from 1981 to 2019. The result showed that private sector deposit which represents the liquid liability of banks, and interest rate spread which measures banking efficiency both had significant positive effect on real economic growth in the long-run. Bank credit to private sector had significant negative impact on economic growth in the long-run. The reason for this is inadequate bank lending to private sector, especially small and medium enterprises, mostly regarded as key drivers of growth in Nigeria. High lending rates also impeded credit to private sector's expected contribution to growth. Other observed strong positive influences on long-run economic growth include government expenditure and gross fixed capital formation. The result also revealed that none of the banking intermediation indicators caused growth in the short-run. However, it was observed that real gross domestic product (GDP) influenced private sector deposit in the short-run. The paper recommends that government increase investment in production infrastructure so that more jobs and incomes may be generated, leading to increased financial savings, expanded bank funds, quality investments,and deeper economy. Also, reduce the gap between prime and maximum lending rates, and stimulate more lending to private sector.

Keywords: *banking intermediation, credit to private sector, economic growth, Nigeria*

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I. Introduction

The relationship between banking intermediation and economic growth has been widely researched in Nigeria and internationally. From the early works of Bagehot (1873), Schumpeter (1911), and Hicks (1969) financial intermediaries, especially banks have been recognized as positive stimulators of capital accumulation, technological innovation and industrialization, all of which drive economic growth. Gurley and Shaw (1960) emphasized the importance of banking and other financial intermediaries in mobilizing financial savings, channeling them to productive investments, and finally promoting economic growth. Goldsmith (1969) believed that financial intermediaries facilitate efficient allocation of financial resources through raising the real rates of deposits to levels that improve investment quality. McKinnon (1973) and Shaw (1973) both agree in their separate works that higher interest rates - facilitated by banking intermediaries - will not only improve the demand for money but will also increase the quantity and quality of investments, thereby preventing financial repression, and promoting financial deepening and economic growth. Thus, through their credit operations, banks transform depositors' money into huge capital which is used to fund profitable industrial projects that create jobs and raise incomes, thereby fostering greater economic performance, prosperity and improved welfare. Some empirical study for Nigeria found positive linkage between, and causation from banking intermediation to economic growth.

Beck et al. (2008) assert that banks are an essential source of capital for small businesses across countries. In Nigeria, the banking sector dominates the financial system, and both private and public sector agents rely heavily on banks to fund projects. Therefore, the policymaker expects the banking sector to play a major role in providing stable support for sustainable growth in the real sector. Particularly, to support entrepreneurship, stimulate innovation, employment generation, productivity, and sustained growth. These expectations can only be met if banks can effectively mobilize financial savings, and efficiently allocate them to productive uses, while maintaining a strong capital base with liquid assets, under a stable national financial environment. Consequently, throughout its history, the Nigerian banking system experienced different reforms to enable it to perform its crucial intermediation role in the economic growth process, weather the storms of distress arising from domestic macroeconomic shocks, and absorb the negative impacts of economic and financial globalization. From the era of financial repression to era of financial liberalization and deregulation,

and to the current financial regulation and supervision regime, the expectation for the Nigerian banking sector has been the same: to support economic activities through enhanced lending. In spite of being well diversified, and one of the largest in sub-Saharan Africa, the Nigerian banking sector has failed in providing adequate support to the real sector to stimulate economic activities. One reason is that Nigerian banks are usually reluctant to lend to the real sector, especially the small and medium enterprises, generally regarded as the engine of economic growth. Without adequate funding from the banking sector, the real sector struggles to find alternative funding sources. This leads to increased market frictions,that is higher information and transaction costs, lower incomes, and therefore poor economic performance. The funds of banks will also be reduced due to low disposable income in the economy and non-existent financial savings. This has been the case in Nigeria. With low disposable income and low financial savings, the economy lacks sufficient depth. Therefore, banks mostly trade financial products in bulk to justify their existence, since they cannot mobilize funds from the traditional sources. Some banks even resort to sharp practices, including arbitrage and rent seeking behavior in order to stay afloat. Soludo (2004) asserts that Nigerian banks harm the economy by engaging in trading of government treasury bills, foreign exchange, and goods importation, instead of the primary banking business of savings intermediation. Furthermore, there is weak corporate governance in banks. Scholars theorize that banks promote good corporate governance through their monitoring function, however, banks themselves are guilty of governance malpractice. There are numerous cases of insider lending by bank executives who mislead their boards and oversight committees to obtain un-secured cheap loans for themselves, while depositors and investors bear the cost. There are also instances of banks using depositors' funds to purchase their own shares in order to manipulate their share prices upwards, and then pay dividends to themselves at the expense of savers and investors. Besides, there is low transparency and inadequate disclosure to enable regulators to actively and effectively supervise banks, protect depositors and investors, and maintain stability in the system. The business and the legal and enforcement environment also impede banking intermediation. Lack of well-developed infrastructure and high operating costs affect both banks and productive sectors negatively. High operating costs and risky environment cause banks to offer maximum lending rates to non-prime customers, who simply could not afford the credit facility. Besides, most SMEs snub bank-borrowing due to low profit margins and low capacity to absorb high finance costs. Thus, there is inefficiency and lost opportunities in the economy. The nature of these challenges facing the Nigerian banking sector calls for re-examination of the effect of banking intermediation on economic growth in Nigeria.

The purpose of this study therefore is to examine the impact of bank intermediation on real sector growth in Nigeria. The specific research questions are: (1) is there a relationship between banking intermediation and real economic growth in Nigeria? (2) Has banking intermediation stimulated real sector growth in Nigeria? This study will contribute to the knowledge on finance-growth relationship in Nigeria. It will serve as resource for policy makers in formulating appropriate policies to enable the banking sector to boost economic activities in the real sector through lending.

II. Literature review

Financial intermediaries, especially banks transfer financial resources from net savers to net borrowers. In economic sense, they influence the allocative efficiency of financial resources, and the productivity of the investment of financial resources, thereby playing a crucial role in the growth process. The key question is: does the development of financial intermediation actually impact positively on economic growth? There is rich theoretical and empirical literature on this topic. Some of the theories and empirics are reviewed below.

Theoretical Review

Schumpeter (1911) highlighted the services provided by financial intermediaries such as mobilizing savings, appraising projects, managing risk, controlling managers, and facilitating transactions, and argued that these services stimulate technological innovation and economic development. Thus, Schumpeter indirectly suggested a positive relationship between finance and growth. Schumpeter's hypothesis influenced further discussion on the finance-growth relationship.

Gurley and Shaw (1960) emphasized the importance of financial savings and financial intermediaries in fostering economic growth. They argued that financial savings are important because they can be transformed into investment. And that financial intermediaries are important because they aggregate these financial savings and channel them to productive investments. Through these productive investments, capital stock can be accumulated, which in turn contributes to the process of economic growth. The implication is that increasing the level of economic growth would require increasing savings mobilization, which in turn requires higher level of banking and financial intermediation.

In explaining the relationship between financial development and economic growth, Patrick (1966) put forward the demand-following and supply-leading hypothesis. Under the demand-following view of financial development, banks, non-bank financial intermediaries, financial instruments and financial markets are created

and developed in response to increasing demand for financial services arising due to increased economic activity and growth in real output. Therefore, lack of developed financial systems in underdeveloped countries could be due to poor growth in real output and incomes. The demand-following hypothesis represent the views of authors such as Robinson (1952) who argued that finance trail the lead of business activity. In contrast, the supply-leading hypothesis of financial development postulates that financial institutions, financial instruments and financial markets are created and expanded beforehand to support and stimulate economic growth. This means that financial sector acts proactively in the economic growth process by moving financial resources from saturated low-growth industries to new, innovative high-growth sectors, thereby fostering investment in new high-growth sectors. This represent the views of authors such as Schumpeter (1911), Gurley and Shaw (1955), Goldsmith (1969), McKinnon (1973) and others. Patrick (1966) went ahead to champion the complementarity view of finance-growth relationship which postulates that financial development and economic growth are mutually supportive. This means that there is a bidirectional relationship between finance and economic growth. He then theorized that developing countries at the early stages of development can stimulate growth by developing their financial system (supply-leading), and when the country reaches a certain level of development, financial development becomes more demand-following. Patrick's theory failed to hold without exceptions in subsequent empirical studies (e.g., Chow et al., 2018). Finally, Hugh T. Patrick argues that the most important aspect of finance-growth relationship is in the ratio of financial assets and financial liabilities to real capital stock. He emphasized that financial intermediation can help to raise the rate of capital accumulation by generating efficiencies (lower transaction and information costs), and encouraging more savings and investment.

Goldsmith (1969) in his financial structure theory emphasized the importance of financial intermediaries in increasing the rate of saving and investment in the economic growth process. Financial intermediation facilitates efficient resource allocation through raising the real rates of deposits to levels that improve investment quality. Banking intermediation is particularly important in supporting growth from early stages and up to a certain point in the growth and development process where other specialized intermediaries and markets develop to compliment the effort of the banking sector. Empirically, Goldsmith (1969) analyzed 100 years data on 35 countries to examine both the impact and causal influence of financial development on economic growth. Although he found a strong positive correlation between financial development and economic growth, he did not conclude on the causal link between financial development and economic growth. His work raised several questions and created the paths for early modern research on the finance-growth nexus.

Following Goldsmith's work, McKinnon (1973) and Shaw (1973) further advanced the debate on finance-growth relationship from the perspective of financial repression and financial deepening. They posit that financial repression impeded efficient allocation of financial resources and mobilization of financial savings, thereby leading to poor economic performance. McKinnon (1973) observed that developing countries experience financial repression and slow economic growth due to interventionist policies such as interest rate controls. When governments place ceilings on interest rates, it leads to a situation where banks underprice scarce savings and suppress returns for savers, thus impeding savings mobilization. When bank credits are rationed to favored corporations and preferred sectors, the rest of the economy suffer, as there will be inadequate financial resources to fund investment in these areas. Overall, the financial system will be repressed, resulting in poor economic performance. Shaw (1973) postulate that administrative fixing of interest rates below the market equilibrium represses financial intermediation and leads to sub-optimal mobilization and allocation of financial savings. Consequently, banks' savings funds decrease, financial intermediation narrows, financial assets and financial structure shrink, and economic growth slows. For example, in Nigeria prior to the liberalization reforms (i.e. the structural adjustment program (SAP)) which started in 1986, the Central Bank of Nigeria used interventionist policies to influence the flow of bank credit to preferred sectors in order to induce investment and productivity. However, the intervention inhibited savings mobilization, investment and productivity, and resulted in negative growth in the early 1980s. Therefore, to efficiently allocate financial resources and effectively mobilize savings, both McKinnon and Shaw argued that countries must deepen their financial systems through financial liberalization. Financial liberalization entails creation of higher interest rates that balances the market demand and supply of financial savings (McKinnon, 1973; Shaw, 1973). The two scholars believed in the linkage between financial development and economic growth. On the one hand, a sound financial system can mobilize and channel savings to productive investments, thereby fostering economic growth; on the other hand, a well-developed economy can also promote the development of the financial industry as growth in national income and increased economic activity stimulate demand for financial services. To create a good environment for financial deepening and economic development, McKinnon and Shaw recommended that developing countries avoid policies that repress their financial systems. This involves giving up the artificial control of interest rates and exchange rates, and promoting deeper reforms in foreign trade and finance. Shaw (1973) further hypothesized that financial liberalization can increase the rate of private domestic savings, and expand the funds of financial intermediaries. As banking intermediaries grow in real terms, more investors have access to credit, and more savers are stimulated and create more borrowing access for investors. Although the consequence of the implementation of financial liberalization is a rise in interest rates, McKinnon

and Shaw both argue in their separate works that higher interest rates will not only improve the demand for money but will also increase the quantity and quality of investments, and thereby preventing both inflation and economic recession. Following McKinnon and Shaw's predictions, many developing countries liberalized their financial systems, but failed to achieve financial deepening and desired level of economic growth. For instance, in Nigeria, as mentioned earlier, the SAP (liberalization reforms) started in 1986, and one of the main goals was to move towards a more market-oriented financial system in order to promote the mobilization of savings, and to foster more efficient allocation of financial resources. The program focused on exchange rate reform - devaluation of the domestic currency; trade reform - removal of import restrictions; monetary policy - more flexibility given to banks in their lending operations and raising of interest rate ceilings to make it more profitable for banks to channel savings to potential investors, so that scarce savings resources are dedicated to profitable industrial projects; and fiscal policy - lowering the ratio of federal budget deficit to GDP, and enhancing the effectiveness of public spending. Although the reforms led to upward pressures on both savings and lending rates of banks, it neither raised private savings ratio to GDP nor increased efficiency in the financial system. Financial liberalization and financial deepening hypothesis were criticized for ignoring the individual characteristics and financial structure of developing countries.

The endogenous growth theories also provide more understanding of the finance-growth relationship by accommodating more endogenous variables and parameters in the growth model (Romer, 1990; Lucas, 1988). Particularly, the productivity of capital, the efficiency of intermediation, and the enhancement of savings rate will not only influence the rate of growth, but will also prolong the period of growth. Endogenous growth theories emphasized human capital and knowledge creation as the key drivers of long run growth. Financial intermediaries such as banks can stimulate ideas creation and innovation by funding potentially successful research and development projects. Investment in knowledge, research and development can lead to creation of new ideas, business models, products and processes that are highly profitable, and that can increase output sustainably. Moreover, banks have the skill base and capacity to analyze and identify potentially successful R&D projects, and then channel resources to these projects, thereby enhancing the productivity of capital and encouraging more savings.

Levine and Zervos (1998) found that banking development positively impact capital accumulation, productivity improvement and economic growth, even as Rajan and Zingales (1998) noted that financial development reduces finance costs for firms, thereby leading to higher profitability and growth. Levine (2005) explains the linkage between finance and economic growth from the perspective of the crucial functions provided by the financial sector. He highlights the functions of banks and how they affect economic growth as follows: (1) banks acquire information, thereby helping to improve capital allocation and promote economic growth (2) banks monitor borrowers to ensure efficient use of borrowed capital, thus promoting good corporate governance and firm performance, increasing the rate of savings, improving resource allocation and fostering economic growth (3) banks pool savings from different savers and facilitate mobilization of capital for investment, thereby fostering capital accumulation and economic growth (4) banks manage risks for both savers and borrowers, thereby enhancing investment efficiency and economic growth, and (5) banks facilitate transfer of payment between economic agents, thus easing exchange, reducing transaction costs, promoting specialization and innovation, and finally fostering economic growth. Levine (1997) explains that these financial functions are constant in time and space, but the quality of the financial service differs across countries, and hence this will determine the extent to which the financial sector stimulates economic growth.

Empirical Review

In investigating financial intermediation and economic growth in developing countries, Odedokun (1998) took cross-sectional data for 90 developing countries over 20 years period from 1970s to 1980s. He found that financial intermediation exerted a positive influence on economic growth in developing countries through two channels which are: the externality of financial sector on real sector and the differential in the productivity of inputs of production among the financial sector and real sector. He added that financial depth which was defined as the ratio of financial aggregates to GDP stimulated economic growth in low-income developing countries, but did not influence growth in high-income developing countries. Mhadhbi et al. (2020) examined the causal relationship between banking sector development and economic growth, using 42 years data on 40 developing countries, and applying the panel bootstrapped approach to Granger causality testing approach. The results show as follows: (i) none of the three banking development indicators (size, liquidity, and efficiency) caused economic growth in 23 countries. (ii) Economic growth did not stimulate banking sector development in 23 countries, and (iii) there was no causality in either direction of economic growth and banking sector development in 16 countries. Korkmaz (2015) used panel data analysis to examine whether banking sector credits had any effects on inflation and economic growth of ten European countries. He found that banking sector credit did not affect inflation, but bank credits significantly influenced economic growth. Nazir et al. (2018) studied the relationship between banking sector development, inflation and economic growth in Asian countries for the period 1970 to 2016 using panel time series. They employed a mix of econometric techniques

including cointegration, panel Granger-causality, error correction, and both dynamic and fully modified ordinary least squares to analyze data on indices of banking sector development and economic growth. Their results showed that all five indicators of banking sector development analyzed were positively related with economic growth in the long run. They also observed a bidirectional causation between banking sector development and economic growth.

In specific country studies, Ahmed et al. (2019) examined the impact of banking sector development on economic growth of Bangladesh using annual time series data from 1980 to 2016. Applying the granger causality and vector error correction models on data related to private sector credit, domestic credit, broad money and GDP per capita, they found both unidirectional and bidirectional relationship between banking sector development and economic growth. They concluded that banking sector development has a positive impact on economic growth in both long and short run. They recommended that banks lower their lending rates in order to enhance domestic fundraising capacity and investments. Tahir et al. (2015) investigated the impact of bank lending on economic growth of Pakistan using GDP data and a number of banking sector development measures from 1973 to 2013. They used multiple statistical techniques including correlation, vector error correction model and regression analysis to analyze the data. Their main finding showed that bank credit had strong but negative relationship with economic growth in both the long run and short run.

In Nigeria, Odedokun (1989) examined the causal relationship between money supply (M1, M2), total credit, and gross domestic product (GDP), price level industrial activities and imports in Nigeria. He applied Granger causality test on quarterly data from 1970 to 1983. He found causality running from GDP to total credit, and from price level to M1. He also found causality from both M1 and M2 to industrial production. Furthermore, a feedback causation was observed between GDP and M2; total credit and price level; and import and M1; import and M2; and import and total credit. The findings of Odedokun (1989) was crucial for modelling and monetary and credit policy designs.

Acha and Ekpenyong (2011) examined the impact of Nigerian banks on economic growth, using banks savings mobilization and credit to real sector as measures of banking intermediation. Applying regression and cointegration techniques, he found that banking intermediation exerted an insignificant effect on economic growth in Nigeria. He concluded that other variables such as human resources, social infrastructure, political stability and technology played better role in promoting economic growth in Nigeria. Similarly, Abubakar and Gani (2013) study the impact of banking sector development on economic growth in Nigeria using data covering 40 years period until 2010. They used the Johansen and Juselius method of cointegration and vector error correction. They found that liquid liability of commercial banks exerted significant positive influence on economic growth in the long-run, while bank credit to private sector and interest rate spread exerted significant negative impact on long-run growth. They attributed the cause of low bank credit-to-private sector to government borrowing activities and high interest rates which crowd out investment and growth. They recommended creation of more financial instruments to provide more alternatives to bank credit. In another study, Emmanuel and Adegboyega (2014) investigated bank and economic growth relationship in Nigeria from the perspectives of financial repression and deregulation. Their study covered a period of 42 years divided into three periods of financial repression, financial deregulation and guided financial regulation. They found that Nigerian banking sector contributed more to growth during periods of full deregulation and guided deregulation of the financial sector. They recommended that government maintain the guided deregulation as it is the most beneficial to banking sector development and economic growth.

Amoo et al. (2017) studied the impact of private sector credit on economic growth in Nigeria, using quarterly data from 1993 to 2013. Their results showed that bank credits enhanced growth, especially when domestic conditions were favorable. Akpabio (2018) examined whether credits from deposit money banks had any significant effect on the real sectors GDP growth rate in Nigeria. He employed the Ordinary Least Square (OLS) regression techniques to analyze annual data from 1991 to 2015. He found a positive and statistically significant impact of deposit money banks credits on the GDP growth of agriculture, manufacturing and mining sectors. He recommended that government encourage investment in the real sectors of the economy. Finally, John and Nwekemezie (2019) studied the effect of financial intermediation on Nigeria's economic development from 1986 to 2017, using the auto-regressive distributive lag (ARDL) approach to cointegration and error correction. They found that credit to private sector did not contribute positively to economic development. The attributed this weakness to high lending rates and recommended authorities effect monetary policies to induce banks to lower their lending rates, so as to spur better performance in the productive sectors.

III. Methodology

Data and variable

Based on the availability of data, this study selects 1981 to 2019 as the sample period, using annual time series data on Nigerian bank intermediation and economic growth. The data is sourced from the Central Bank of Nigeria (CBN) Annual statistical bulletins.

In order to measure banking intermediation which, make up the independent variables, this paper selects three variables namely, bank credit ratio, private deposits to GDP, and lending spread. Bank credit ratio consist of bank credit to private sector excluding credits to governments and government owned enterprises. It is a measure of banking intermediation, and is calculated as bank credit to private sector divided by GDP. The ratio of deposits to GDP consists of deposits made to deposit money banks (DMBs) by private sector, including demand, savings, and time deposits. It measures banking sector size and shows the monetary liability within the banking sector. It is calculated as private sector deposits divided by GDP. Previous studies in Nigeria used the ratio of M2 to GDP as a measure of banking sector size. The ratio of M2 to GDP is a conventional measure that captures the extent of monetization within the system, but it may include some monetary resources that are beyond the reach of DMBs. As mentioned in Aziakpono (2003) broad money stock in developing countries includes currency circulating beyond the walls of the banking system, so, theoretically, an increasing broad money stock may indicate wide-ranging use of currency than increase in banks' lending capacity. Hence, the ratio of deposits to GDP is used to correct for the lack of robustness. The third banking development variable is the lending spread which is used to indicate efficiency of banks, and is simply the difference between prime lending rates charged by banks and the savings rate paid by banks to depositors. In Nigeria, due to huge fixed costs and operating expenses, the average cost for banking industry is high, and impacts both the cost of intermediation and the spread between deposit and lending rates. Hence, the lending spread is used as proxy for the efficiency of banking intermediation. Three more variables are adopted to control for other influences on economic growth. They include, trade openness, calculated as exports plus imports divided by GDP; gross fixed capital formation (GFC), calculated as gross fixed capital formation divided by GDP; and total government expenditure (TGE), calculated as government expenditure divided by GDP. To measure growth which is the dependent variable, we adopt the real gross domestic product (GDP) of Nigeria as proxy, because real GDP is the typical measure of economic growth in Nigeria.

Model specification

The relationship between banking intermediation and economic growth in Nigeria is expressed in functional form as:

$$GDP = f(CPS, PSD, IRS, OTR, TGE, GCF) \quad (1)$$

To reduce the gap between the values of the variables and to reduce possibility of heteroscedasticity, all the variables are transformed to their natural log forms. Thus, the functional relationship is rewritten as:

$$lnGDP = f(lnCPS, lnPSD, IRS, lnOTR, lnTGE, lnGCF) \quad (2)$$

The cointegration andvector error correction model (VECM) is used to investigate the dynamic relationship between the variables. When the data series of all the modelled variables are cointegrated, it means they can be combined in a linear fashion and an equilibrium relationship exist. So, the cointegration VECM is used to examine the long-run relationship. Therefore, the following steps are used to conduct the empirical analysis. First, a unit root test is carried out in order to check the stationarity order of the variables, that is whether they are integrated at levels - I(0)) - or integrated at order one after differencing - I(1). The Augmented Dickey Fuller (ADF) unit root test was used to check the data series for stationarity, this is important because a non-stationary regressor may invalidate empirical results. Second, a lag-order selection test was conducted to obtain the optimum lag lengths to include in both cointegration test and VECM. The number of lags selection was based on the Akaike information criterion (AIC), Hannan–Quinn information criterion (HQIC), and the sequential likelihood-ratio (LR) test. Third, a cointegration test is performed to identify the long run relationship between the variables. The Johansen Cointegration test was used. Finally, the VECM is estimated. The error correction model adjusts the short-run and long-run patterns of the variables (Gujarati and Porter, 2009). Thus, the VECM is specified as follows:

$$\begin{aligned}\Delta lnGDPt = {} & \beta_0 + \beta_1 \Delta lnGDP_{t-1} + \beta_2 \Delta lnCPS_{t-1} + \beta 3 \Delta lnPSD_{t-1} + \beta_4 \Delta IRS_{t-1} + \beta_5 \Delta lnOTR_{t-1} \\ & + \beta_6 \Delta lnTGE_{t-1} + \beta_7 \Delta lnGCF_{t-1} + \lambda 1 ECT_{t-1} + \eta_{1t}\end{aligned} \quad (3)$$

Where: Δ is the difference operator; $\beta 0$ is the constant term; $\beta 1$ to $\beta 6$ are the coefficients of the variables; ECT is the error correction term; t is time; and $\eta 1t$ is the residual. A total of seven models were specified for this study, however, only the model for the target variable is presented above. The Stata statistics software version 15.1 was used to perform all calculations and tests in this study.

IV. Results and discussion

The integration order of the individual time series is investigated using the augmented Dickey Fuller (ADF) unit root test. Table 1 shows the result of the unit root tests on the levels of each series. The results show that the log of the variables were non-stationary at levels (i.e. I(0)). The logged data was then differenced and they all became stationary and integrated of order one (i.e. I(1)). Pre-estimation diagnostics were also carried out on the time series and there is no autocorrelation and heteroscedasticity in the disturbance terms.

Table 1: Unit root test using Augment Dickey-Fuller (ADF)

Variables	ADF test statistic		Critical values		Interpretation	Remark
	Level	1st Difference	1%	5%		
lnGDP	-1.211	-2.535	-2.445	-1.692	I(1)	Stationary
lnCPS	-1.032	-5.050	-3.675	-2.969	I(1)	Stationary
lnPSD	-1.736	-4.621	-3.675	-2.969	I(1)	Stationary
lnIRS	-2.013	-8.031	-3.675	-2.969	I(1)	Stationary
lnOTR	-1.516	-4.545	-3.675	-2.969	I(1)	Stationary
lnTGE	-1.583	-5.247	-3.675	-2.969	I(1)	Stationary
lnGCF	-1.757	-5.478	-3.675	-2.969	I(1)	Stationary

Having found that the data series are all integrated of order one, accordingly, the Johansen Co-Integration test and VECM were used to estimate both the long-run and short-run relationship between the variables. The Johansen Co-integration test results for trace and max statistics are summarized in Table 2. The Trace statistics suggests the existence of two co-integrating equations at most, as the statistic is greater than the 5% critical value for the first two ranks. It is therefore inferred that a long run relationship exists between the variables.

Table 2: Johansen Cointegration test results

Null hypothesis	Trace statistics	5% Critical value	Max Statistics	5% Critical Value	No. of Co-integrating Equations
r = 0	147.2092	124.24	47.7903	45.28	None
r ≤ 1	99.4190	94.15	31.7350*	39.37	At most 1
r ≤ 2	67.6840*	68.52	26.6412	33.46	At most 2*
r ≤ 3	41.0428	47.21	21.7908	27.07	At most 3
r ≤ 4	19.2519	29.68	9.8574	20.97	At most 4
r ≤ 5	9.3945	15.41	6.6311	14.07	At most 5

The normalized co-integrating - long-run - equation reveals the following: In the long run, credit to private sector, openness to trade and government expenditure have negative impact on real economic growth in Nigeria, while private sector deposit, interest rate spread, and gross fixed capital formation have positive impacts on real economic growth in Nigeria. With exception of openness to trade, all the other coefficients are statistically significant (at 1% level) to predict movement in real GDP. The negative impact of banking credit to private sector highlights banking sector's inadequate lending to the real sector, especially SMEs, mostly regarded as the engine of growth in Nigeria. Moreover, banks extend credit to the private sector at high lending rates, while most businesses have low profit margins, and after paying finance costs they are left with zero or negative income. The declining banking sector credit to private sector calls for concern. Besides, the weak legal environment and poor enforcement of financial contract discourages banks from lending and make them adopt a risk averse approach towards lending. Thus, potentially high-growth inducing opportunities are lost. The normalized co-integrating – long-run – equation can be estimated as:

$$\begin{aligned} \text{lnGDP} = {} & 42.47236\text{lnCPS} - 28.09463\text{lnPSD} - 40.29769\text{lnIRS} + 5.26519\text{lnOTR} + \\ & 65.38946\text{lnTGE} - 39.92953\text{lnGCF} + 17.4214 \end{aligned} \quad (4)$$

Thus, for every 1% increase in the ratio of private sector credit to GDP, ratio of trade to GDP, and ratio of government expenditure to GDP, GDP will expand by 0.42%, 0.053% and 0.65%, respectively; for every 1% increase in the ratio of private sector deposit to GDP, interest rate spread and ratio of gross fixed capital formation to GDP, GDP will contract by 0.28%, 0.40% and 0.40%, respectively.

Table 3 Error Correction Model

	ΔlnGDP	**ΔlnCPS**	**ΔlnPSD**	**ΔlnIRS**	**ΔlnOTR**	**ΔlnTGE**	**ΔlnGCF**
ΔlnGDP_{t-1}	.5086078	.5463812	.3357928	-1.005962	.0797819	.4933904	.1263584
	[0.002]	[0.030]	[0.318]	[0.188]	[0.867]	[0.212]	[0.610]
ΔlnCPS_{t-1}	-.1866822	.6772218	1.030309	-1.329123	-.4877426	.7764936	-.076168
	[0.229]	[0.005]	[0.001]	[0.070]	[0.287]	[0.040]	[0.748]
ΔlnPSD_{t-1}	.1385384	.0071689	-.3590051	.2865172	-.0701446	-.3114847	-.1058585
	[0.135]	0.960]	[0.063]	[0.513]	[0.798]	[0.169]	[0.455]
ΔlnIRS_{t-1}	.079461	-.0957937	-.2287191	-.2192192	.1862647	-.1811226	-.0020203
	[0.021]	[0.074]	[0.001]	[0.177]	[0.067]	[0.031]	[0.969]
ΔlnOTR_{t-1}	.0514938	-.0368507	-.0287651	-.2478309	-.2621245	-.1070957	-.0236792
	[0.385]	[0.690]	[0.816]	[0.376]	[0.134]	[0.459]	[0.794]

ΔlnTGE$_{t-1}$	-.0029184	.0897151	.4203716	-.3562685	.0512281	.1143928	.1467759
	[0.972]	[0.495]	[0.017]	[0.372]	[0.837]	[0.579]	[0.255]
ΔlnGCF$_{t-1}$	-.0205955	-.208491	-.3549823	.3317146	.2979128	-.1446745	-.1405424
	[0.875]	[0.305]	[0.191]	[0.590]	[0.439]	[0.650]	[0.481]
ECM$_{t-1}$	.0032368	-.0084828	-.0135216	.0223787	.0028793	-.0129936	.0005454
	[0.008]	[0.000]	[0.000]	[0.000]	[0.421]	[0.000]	[0.768]
C	.0562434	-.0098052	.0727793	.045255	-.0146237	.0162985	-.0733351
	[0.077]	[0.843]	[0.271]	[0.763]	[0.876]	[0.834]	[0.131]
R-Squared	.8842	.4946	.5388	.6311	.3138	.4679	.2231
NB: Coefficients (P-values in parenthesis)							

The VECM which shows the short run relationships and adjustment to the long run is presented in table 3. In the short run, the ratio of private sector deposit to GDP, and interest rate spread have positive effects on GDP, but only interest rate spread exerts significant influence. Interestingly, it is observed that GDP causes banking credit to private sector in the short run, with a positive relationship at 3% level of significance. The ECT coefficients should give negative and statistically significant coefficients. In the above model, however, only credit to private sector as a ratio of GDP, ratio of private sector deposits to GDP, and ratio of government expenditure to GDP give negative and statistically significant coefficients. This implies that the adjustment to the long-run equilibrium is occurring in these models. Real GDP and interest rate spread are statistically significant but have positive ECT coefficients, this means that a short run shock or structural shift to these models does not adjust towards the long-run equilibrium. This finding is consistent with Abubakar and Gani (2013).

VECM estimation requires diagnostic testing to ensure there is no autocorrelation in the model; that the equations are normally distributed; and the VECM specification is stable. Table 4 shows results of diagnostics tests. The normality test shows that out of the seven equations, lnCPS, lnIRS, lnOTR, lnTGE and lnGCF are normally distributed. The autocorrelation test shows no autocorrelation with p-values of 70% and 98.8% for lags 1 and 2, respectively. For the stability test, the VECM specification imposes 6-unit moduli, meaning a stable model.

Table 4: Diagnostic tests

VECM stability test			
Eigenvalue stability condition			
Eigenvalue			Modulus
1			1
1			1
1			1
1			1
1			1
1			1
.6308732			.630873
-.4155466	+	.3465918i	.541115
-.4155466	-	.3465918i	.541115
.2622902	+	.3842419i	.465229
.2622902	-	.3842419i	.465229
-.2907106	+	.2292878i	.370251
-.2907106	-	.2292878i	.370251
-.1588429			.158843

Normality test (Jarque-Bera)			
H0: The residuals are normally distributed.			
Equation	Chi2	df	P value
D_lnGDP	8.503	2	0.01424
D_lnCPS	4.334	2	0.11451
D_lnPSD	16.479	2	0.00026
D_lnIRS	0.289	2	0.86563
D_lnOTR	1.378	2	0.50207
D_lnTGE	2.065	2	0.35618
D_lnGCF	0.104	2	0.94931
All	33.152	14	0.00274
Lagrange-multiplier test for residual autocorrelation			
H0: no autocorrelation at lag order			
lag	Chi2	df	P-value
1	43.2	49	0.7044
2	29.4	49	0.988

V. Conclusion And Recommendation

This study has examined the long-run and short-run impact of banking intermediation on economic growth in Nigeria based on 39 years annual time series data, using advanced econometric analysis – including Johansen co-integration and vector error correction model. The result revealed that out of the three indicators of banking intermediation that were examined, only private sector deposit (liquid liability of banks) and interest rate spread (efficiency of banks) had positive and significant impact on economic growth in the long-run. Credit to private sector had a significant negative impact on real GDP. This highlights the banks inadequate lending to the real sector, especially SMEs, mostly regarded as the engine of growth in Nigeria. It was also observed that the three measures of banking intermediation had insignificant impact on growth in the short-run. However, it was observed that real GDP growth caused private sector deposit in the short run. Based on these findings it is recommended that policymakers initiate policies to stimulate more bank lending to private sector businesses, especially SMEs. Of course, with positive impact of bank liquidity and government expenditure on growth, the government should increase investment in logistics and manufacturing infrastructure to generate more jobs, incomes, and increase financial savings in the economy. This may foster a deeper economy and deeper financial system, and increase the funds of banks and their lending capacity. The legal environment and processes should

also be strengthened to facilitate enforcement of financial contracts. The current regime of supervised deregulation of the banking sector should continue, but should be continually monitored and improved when necessary, such as increasing the minimum capital base of banks - given the recent depreciation of the domestic currency (The Nigerian Naira) and rising inflation.

References

[1] Abubakar, A., &Gani, I. M. (2013). Impact of Banking Sector Development on Economic Growth: Another Look at the Evidence from Nigeria. Journal of Business Management & Social Sciences Research, 2(4), 47–57.

[2] Acha, I.A., &Ekpenyong D.B (2011) Banks and Economic Growth in Nigeria. European Journal of Business and Management, 3(4), 155-166.

[3] Ahmed, R., Yousuf, Md., &Lubna,N.A. (2019). Banking Sector Development and Economic Growth in Bangladesh: An Empirical Analysis. Canadian Journal of Researcher's Society, 9(1).

[4] Amoo, G.B.A., Eboreime, M.I., Adamu, Y., &Belonwu, M.C. (2017) The impact of private sector credit on economic growth in Nigeria. CBN Journal of Applied Statistics, 8(2), 1-21.

[5] Aziakpono, M. (2003). Financial intermediation and economic growth in economic and monetary union: The case of SACU and CMA. Paper presented at the ESSA Conference, Lord Charles Hotel, Somerset West, 19 September 2003.

[6] Bagehot, W. (1873). Lombard Street: A description of the Money Market.

[7] Beck, T., Demirguc-Kunt, A., Laeven, L. & Levine, R. (2008) Finance, Firm Size, and Growth. Journal of Money, Credit and Banking, 40(7) https://doi.org/10.1111/j.1538-4616.2008.00164.x

[8] Chow, S.C., Vieito, J.P., & Wong, W. (2018) Do Both Demand-Following and Supply-Leading Theories Hold True in Developing Countries? Physica A: Statistical Mechanics and its Applications, 513 (2019) 536–554.

[9] Emmanuel, O.O., &Adegboyega, E. (2014) Banks and Economic Growth in Nigeria: A Re-Examination of the Financial Repression Hypothesis. American Journal of Business and Management, 3(1), 1-9. https://doi.org/10.11634/216796061403516

[10] Goldsmith, R.W. (1969) Financial Structure and Development. Yale University Press, New Haven.

[11] Gurley, J.G., Shaw, E.S., 1960. Money in a Theory of Finance. Brookings Institution, Washington, D.C.

[12] Hicks, J. (1969) A Theory of Economic History. Clarendon Press, Oxford.

[13] John, E.I., &Nwekemezie, O.A (2019) Effect of Financial Intermediation on Economic Development of Nigeria. IOSR Journal of Economics and Finance, 10(1), 23-32. http://doi.org/10.9790/5933-1001012332

[14] Korkmaz, S. (2015). Impact of Bank Credits on Economic Growth and Inflation. Journal of Applied Finance and Banking, 5(1), 1–4.

[15] Levine, R. (1997) Financial Development and Economic Growth: Views and Agenda. Journal of Economic Literature, 35, 688-726.

[16] Levine, R. (2005). Finance and Growth: Theory and Evidence. In P. Aghion & S.N. Durlauf (Eds.), Handbook of Economic Growth, Volume 1A (pp. 865-934). Elsevier B.V. https://doi.org/10.1016/S1574-0684(05)01012-9

[17] Levine, R., &Zervos, S. (1998). Stock Markets, Banks, and Economic Growth. The American Economic Review, 88, 537-558. https://doi.org/10.1596/1813-9450-1690

[18] Lucas, R. E. (1988). On the mechanics of economic development. Journal of Monetary Economics, 22(1), 3-42.

[19] McKinnon, R. I. (1973). Money and capital in economic development. Brookings Institution, Washington DC.

[20] Mhadhbi, K., Terzi, C. &Bouchrika, A. (2020) Banking sector development and economic growth in developing countries: a bootstrap panel Granger causality analysis. Empirical Economics, 58(4), 2817–2836 https://doi.org/10.1007/s00181-019-01670-z

[21] Nazir, M. I., Tabassam, R., Khan, I., & Nazir, M. R. (2018). Banking Sector Development, Inflation and Economic Growth in Asian Countries: A Panel Causality and Co-Integration Approach. International Journal of Accounting and Financial Reporting, 8(4), 399–423. https://doi.org/10.5296/ijafr.v8i4.14046

[22] Odedokun, M. O. (1998). Financial intermediation and economic growth in developing countries Faculty of Commerce, University of Swaziland, Swaziland

[23] Odedokun, M.O. (1989). Causalities Between Financial Aggregates and Economic Activities in Nigeria: The Results from Granger's Test. Savings and Development, 23(1), 101-111.

[24] Patrick, H.T. (1966). Financial Development and Economic Growth in Underdeveloped Countries. Economic Development and Cultural Change, 14, 174-189.

[25] Rajan, R.G. & Zingales, L. (1998) Financial Dependence and Growth. American Economic Review, 88, 559-586.

[26] Robinson, J. (1952). The Generalization of the General Theory. In: The Rate of Interest and Other Essays, MacMillan, London.

[27] Romer, P.M. (1990). Endogenous Technological Change. Journal of Political Economy, 98, 71-102.

[28] Schumpeter, J.A. (1911) The Theory of Economic Development. Harvard University Press, Cambridge.

[29] Shaw, E. S. (1973). Financial deepening and economic development. Oxford University Press, New York.

[30] Soludo, C.C (2004). Consolidating the Nigerian Banking Industry to Meet the Development Challenges of the 21st Century. BIS Review 43/2004.

[31] Tahir, S.H., Shehzadi, I., Ali, I. & Ullah, M.R. (2015). Impact of Bank Lending on Economics Growth in Pakistan: An Empirical Study of Lending to Private Sector. American Journal of Industrial and Business Management, 5,565-576. http://dx.doi.org/10.4236/ajibm.2015.58056