

Banking Intermediation and Private Real Investment: A Time Series Evidence from Nigeria

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Abstract

This study examined the effect of banking intermediation on private real investment in Nigeria from 1990-2022. The objective was to investigate the effect of banking intermediation indicators on private real investment in Nigeria. Time series data were sourced from Central Bank of Nigeria Statistical bulletin and publications of Nigeria Bureau of Statistics. Private real investment was proxy for dependent variables while banking sector credit, banking sector deposit, financial sector deepening and cost of financial intermediation were proxy for independent variables. Ordinary least square methods of cointegration, unit root test and Vector error correction model was used. The variable was stationary at first difference and there was presence of long run effect from the cointegration test. The study found that 75.9% and 68.1% variations in the dependent variable could be trace to variation in the model; this was justified by the f statistics and the probability value. The result indicated that the variables adjust by 38 percent annually. Base on the validity of lag I, the study found that banking sector credit have positive but no significant effect on private real investment such that a unit increase increased private real investment by 0.004 percent, banking sector deposits have positive and significant effect on private real investment such that a unit increase increased private real investment by 0.46 percent, financial deepening have positive but no significant effect on private real investment such that a unit increase increased private real investment by 0.01 percent cost of financial intermediation have negative and no significant effect on private real investment such that a unit increase reduced private real investment by 0.06 percent. The study recommended among others that Nigeria interest rate such as lending interest rate should be properly factored into the macroeconomic policy objective to encourage cross boarder flow of financial asset and investment into the Nigeria financial market. Policies should be formulated to manage the volatility in bank deposits and diversify Nigeria economy for better macroeconomic performance that will enhance real domestic investment. The macroeconomic environment and policies should be revisited, existing policies that threaten investment and the financial market should be abolished and new policies that will enhance economy growth should be formulated for increase in real domestic investment.

Keywords: *Banking Intermediation, Private Real Investment, Bank Sector Credit, Bank Sector Deposits, Financial Deepening*

INTRODUCTION

The opinion that financial intermediaries have a major role to play in the realization and achievement of desired economic development can be traced to the classical monetary policy theories such as Milton Friedman. It was later deepened by the 20th century economists such as Schumpeters in 1911 who argued that the creation of credit through the banking system was an essential source of entrepreneurial capacity to drive real growth. Levine et al (2000) opined that financial intermediaries emerge to lower costs of researching potential investments exerting corporation, controls, managing risks, mobilizing savings and conducting exchange. It is a rise in the level of production in an economy along with the advancement of technology, improvement in living standards. It involves a rise in the level of production in an economy along with the advancement of technology, improvement in living standards and so on.

A well-structured financial intermediation functions is believed by finance and economists to affect the overall performance of the economy in terms of aggregate output. For instance efficient lending and investment operations by commercial banks would cause economic growth, mobilization of excess funds and savings from surplus economic agents would pool resources and make them ready for gainful allocation in the economy (Ezirim 2012) which are major determinants of economic development. It will also enhance investment by identifying and funding good business opportunities mobilizing savings, enabling trading and diversification of risk and facilitate the exchange of goods and services. These functions results in a more efficient allocation resources, rapid accumulation of which is prerequisite for economic development (Nwanyanwu, 2011).

The notion that investment financing comes from the financial system has become a fundamental assumption of finance-growth nexus literature, (e.g., King and Levine (1993), Levine and Zervos (1998), Levine (1999), Levine et al. (2000), Rausseau and Watchtel (2000), Watchtel (2003) and Beck and Levine (2004) and Levine (2005). The implicit premise is that a deregulated (developed) financial system would enable financial intermediaries to provide more long-term credits to business. The view that investment financing comes from external sources does not prevail among only mainstream economists. Some heterodox economists also share this view. The first group among these is those who stand against financial liberalization theory. They criticize the fundamental assumption of the thesis that saving is prerequisite of investment. Arestis (2004) posited that savings can only facilitate the finance of investment' but 'it cannot finance capital accumulation ; this is done by the banking sector, which provides loans for investment without necessitating increases in the volume of deposits. Additionally, he asserts that it is loans that generate deposits, not that 'deposits create loans. This follows Keynes's argument that 'Increased investment will always be accompanied by increased saving, but it can never be preceded by it. Many works have been done to explain how investment behaves (Keynes, 1936, Tobin, 1969 Jorgenson, 1971 and McKinnon, 1973. In traditional economic theory, investment is largely determined by the cost of borrowing, interest rate. When this cost is low, investors or businesses undertake more investment projects. However, neoclassical economists believe that a rise in the collection of real money balances in a portfolio resulting from a fall in the real benefit on physical capital relative to the benefit on money (cash) may also have the effect of decreasing investment. Thus, investment and money balances are perfect substitutes. Hence, investment is negatively

affected by inflation since a persistent rise in prices reduces the value and benefit of real money balances.

Uncertainty has become more apparent in the theory of investment due to its irreversible nature (Pindyck, 1991). An increasingly developing literature has moved the crux of the analysis to the adjustment costs caused by acquiring and installing capital stressing the permanent nature of most investment projects (Dixit & Pindyck, 1994). The rationale is that since most capital goods are usually firm-specific and has less value when resold, negative investment is rather costly compared to investing positively. Thus, the worth of the capital project must be greater than its cost of purchasing and installing by an amount, which is the same as the worth of keeping the investment option awake. These uncertainties resulting from financial markets in the form of interest rate volatility, inflation, irreversible nature of investments, and political structures of the country inter alia also have specific implications for private sector investment decisions.

Financial development relates to the factors, policies, and institutions that lead to effective financial intermediation and markets, as well as deep and broad access to capital and financial services (WEF, 2012). That is, financial development relates to the perfections in financial functions such as producing information about viable investments opportunities and allocating capital to such viable opportunities, management of risk, savings mobilization, and easing exchange activities within the economy. According to Greenwood and Jovanovich (1990), financial institutions are very influential in investment because of their ability to obtain and assess data concerning the level of technology and to divert investment funds available into ventures that give the highest rewards. Thus, with the existence of information, financial systems play an efficient role in investment decisions since both borrowers and investors are provided with information on expected payments based on the existing nation-wide interest rate. Financial development includes policies targeting the liberalization of financially subjugated nations from the consequences of financial policies that limit growth (Fowowe, 2011).

One of the most important creations of modern society is the financial system and the primary task of the financial system is to move funds from surplus spending economic units to deficit spending economic units in order to produce goods and services and as well to make investment in new equipment and facilities so as to stimulate the growth of the economy and improve the standard of living of citizens. As the economy grows the financial system according to Ochejele (1999) becomes increasingly more complex and its structure more sophisticated. The financial system of any nation has a functional relationship with the size of her economy. A growing economy has to place more responsibilities on the financial sector in order to mobilize the needed capital to facilitate production and generate income and employment. On the contrary, an economy that does not experience growth on sustained basis is likely to have a very passive financial sector as there seemed to be no incentives in place for investment. From the above, this study wants to examine the relationship between financial intermediation and private investment in Nigeria.

LITERATURE REVIEW

Overview of Financial Intermediation

Financial intermediation relates to intermediate functions of financial institutions in mobilizing savings and allocating resources. The importance of financial institutions especially banks in generating growth within the economy has been widely discussed in literature (Nwaeze et al, 2014). Several economists have argued that the role of intermediation which banks play help in providing linkages for different sectors of the economy as well as encouraging high level of specialization, expertise, economies of scale and creating a conducive environment for the implementation of various economic policies of government. For instance, Schumpeter (1912) as cited in Zakaria (2008), argued that financial intermediation through the banking system plays an essential role in economic development by affecting the allocation of savings, thereby improving productivity, technical change and the rate of economic growth. He acknowledged that efficient savings through identification and funding of entrepreneurs is vital to achieving desired objectives. Thus, one of the activities of financial institutions involves intermediating between the surplus and deficit sectors of the economy. The availability of credit function positively allows the fruition of this role and is also important for growth of the economy (Nwaeze et al, 2014).

Finance is required for different purposes by different organizations, individuals and other economic agents. In order to provide the needed finance, there are varieties of institutions rendering financial services. Such institutions are called financial institutions. Commercial banks are among such institutions that render financial services. They are mainly involved in financial intermediation, which involves channeling funds from the surplus unit to the deficit unit of the economy, thus transforming bank deposits into loans or credits. In the primitive stages before evolution for financial intermediation, anyone who wanted to spend more than he could himself provide would have to look for a wealthy person or persons from whom he could borrow. This is known as a system of direct or un-intermediated finance. Afolabi (1998) posits that as crude as this system was, it probably satisfied the need of that time because financial requirements then were limited to such personal uses like marriages, burial ceremonies and minor commercial activities like farming. He further argued that at that time, intermediation was neither necessary nor sufficient for capital formation to take place (Nwaeze et al, 2014). Financial intermediation will thus, not be necessary for instance, if the lender and the borrower can come into direct contact and would in fact not be necessary if there is no deficit or surplus sector.

However, modern economic transactions will be difficult, if not impossible, with un-intermediated finance as the business world of today is much more complex and financial requirements are too large. Even without considering the complexity of modern times, un-intermediated finance has its inherent problems such as high tendency for subjectivity, unattractive interest rates, method of security was too crude and at times inhuman, repayment periods were usually too short for any meaningful long-term use, such that it became difficult for long-term projects to be financed from money raised from such medium, amongst others. According to Bencivenga and Smith (1991), in the absence of banks such as financial intermediation, too much investment is self-financed and long delays exist between investment expenditure and receipts of profits from capital invested.

They further argued that the absence of intermediary sector results in a composition of savings that is unfavourable to capital formation.

Private Sector Investment

Private Sector investment in Nigeria is faced with some daunting challenges. For decades, Nigeria's economy was characterized by growing dominance of the public Sector, over-dependence on oil exports and the pursuit of highly import-dependent industrial strategy. The private sector was dogged by weaknesses inherent in its skewed structure: dominated by a few multinationals and a large segment of small and medium-size enterprises with little linkage to the multinationals. Other problems included the poor state of physical infrastructure, particular road networks, electricity and water supply; high cost and limited access to banks credit, high cost of imported raw materials and spare parts, high production cost, inadequate security, corruption, weak enforcement of contracts, and lack of skilled labour. Nigeria's infrastructure does not meet the needs of the average investor, thereby inhibiting and increasing the cost of doing business.

Some macroeconomic policies have also not been conducive for a vibrant private sector investment. These include interest and exchange rate policies as well as other sectoral policies. Most entrepreneurs in Nigeria inadvertently reduced their borrowings from banks due to high interest rates and the short-term nature of the available loans. At the same time, banks were not actively lending to the real sector and loanable funds were primarily used to finance customer imports and for speculation in the foreign exchange markets (Lucky & Uzah, 2017; Lucky & Uzah, 2016). These factors have combined to act as deterrents to foreign investment flows and induced many Nigerians to take their money and skills abroad. To this end, infrastructure is expected to be developed, particularly power generation, transport and telecommunications to stimulate the growth of the private sector.

Investment has been shown to have a positive significant impact on economic growth (e.g., Khan and Reinhart, 1990, Hoeffler, 2002, and Frimpong and Adam, 2010). Specifically, proponents argue that private investment has a greater impact on economic growth because of its relative efficiency and job creation potential (Coutinho and Gallo, 1991, Serven and Solimano, 1990; Lucky, 2018). In view of this, attention has recently been put on building the private sector in developing countries to help reap these benefits. It is therefore not surprising that developed countries and development-oriented institutions such as the International Financial Corporation (IFC) continue to formulate and/or support policies to promote private sector-led investment in the development agenda. For example, the African Enterprise Fund and the African Growth Fund were established by the IFC and the United States, respectively, to help boost private investment (Ouattara, 2004).

The reforms, which have been well documented by, for instance, Aryeetey et al. (2000) and Bawumia (2010) were expected to: enhance the flow of funds via a well-structured financial system; attain some stability with regards to interest rates on borrowing to help reduce uncertainties; ameliorate the mechanism of self-finance in enterprises and households; strengthen the capital markets, money markets and intermediation by insurance companies and trusts. The aim was to enhance and speed up economic growth by using investment as one of the major conveyance processes. The expectation was that the freed interest rates would enhance savings and increase deposits in banks, and make funds available to be channelled into capital formation.

Furthermore, there seems to be less progress in private sector involvement in the Ghanaian economy despite development in the financial system (Asare, 2013). Indeed, economic growth within the last few decades has been impressive, but the rate of savings and investment necessary to achieve sustained growth remains significantly lower, thereby presenting a threat to job creation and poverty reduction (Asare, 2013; Naa-Idar et al. 2012; Asante, 2000). It is not surprising that the impact of financial development on private investment in Ghana remains inconclusive. Additionally, some previous studies on the determinants of investment and/or private investment in Ghana failed to capture the effects of financial development (Ibrahim, 2000). For studies that capture the impact of financial development, only a few measures of FD have been used (Asante, 2000; Akpalu, 2002; Frimpong and Marbuah, 2010; Frimpong and Adam, 2010; Asare, 2013; and Eshun et al., 2014).

Theoretical Review

Financial Intermediation Theory

The general aim of financial sector is inter-temporal and interpersonal transfer of resources (Winkler 1998). Financial sector specifically as contend by Rajan & Zingales (1998) help firms to overcome the problems of moral hazard and adverse selection and this reduces the costs of external financing; as well as the transaction costs in general (Levine 1997). The theory of financial intermediation was first formalized in the works of Goldsmith (1969), Shaw (1973) and Mckinnon (1973), who see financial markets (both money and capital markets) playing a pivotal role in economic development, attributing the differences in economic growth across countries to the quantity and quality of services provided by financial institutions. Supporting this view is the result of a research by Nwaogwugwu, (2008) and Dabwor, (2009) on the Nigerian stock market development and economic growth, the causal linkage.

However, this contrasts with Robinson (1952), who argued that “financial markets are essentially hand maidens to domestic industry, and respond passively to other factors that produce cross-country differences in growth. Moreover there is general tendency for supply of finance to move along with the demand for it. The same impulse within an economy, which set enterprises on foot, makes owners of wealth, venturesome and when a strong impulse to invest is fettered by lack of finance, devices are invented to release it. The Robinson school of thought therefore believes that economic growth will bring about the expansion of the financial sector. Goldsmith (1969) attributed the direct correlation between the level of real per capita GNP and financial development to the positive effect that financial development has on encouraging more efficient use of the capital stock. In addition, the process of growth has feedback effects on financial markets by creating incentives for further financial development.

Mckinnon (1973) in his thesis argued that there is a complimentary relationship between physical capital and money that is reflected in money demand. This complementarity relationship according to Mckinnon (1973) links the demand for money directly with the process of physical capital accumulation mainly because the conditions of money supply have a first order impact on decision to save and invest. Debt intermediary hypothesis was proposed by Shaw (1973), whereby expanded financial intermediation between the savers and investors resulting from financial

liberalization (higher real interest rates) and development increase the incentive to save and invest, stimulates investments due to an increase supply of credit, and raises the average efficiency of investment. This view stresses the importance of free entry into and competition within the financial markets as prerequisites for successful financial intermediation. Structural problems such as market inefficiencies as the principal cause for economic backwardness of developing countries have been emphasized by the structuralist school of thought. They criticized the market clearing assumptions implicit in the financial liberalization school, especially the assumption that higher interest rates attract more savings into the formal financial sector (Van Wijnbergen, (1982 and 1983).

Moreover, Van Wijnbergen (1982 and 1983) argued that it could very well be the case that informal markets will provide more financial intermediation. Since institutions in this sector are not subject to reserve requirements and other regulations that affect financial institution in the formal sector. They also stressed that in the event that informal sector agents substitute their deposits for that in the formal sector due to high interest rates, the unexpected consequence will be an adverse effect on financial intermediation and economic growth. There are also several literature reviews on the relationship between finance and economic growth: Gertler (1988), Pagano (1993), Levine (1997; 2005), Trew (2006), and Demirgüç-Kunt and Levine (2008). This paper is distinct from previous literature reviews because it is organized by what seem to be the most important, usually unresolved, issues in the finance and growth literature. The positive effect of financial sector development on economic growth is modelled with information gathering, resource allocation and rising liquidity (Greenwood, Jovanovich 1990), rising productivity (King, Levine 1993a), reducing of monitoring costs (Diamond 1984, Boot, Thakor 1997, Holmström, Tirole 1997, Blackburn, Hung 1999). In Greenwood and Jovanovich model financial intermediaries help agents to choose projects with higher returns.

Without financial intermediaries agents could not invest in these projects because of the lack of the information and low liquidity of the project (Greenwood, Jovanovich 1990). Schumpeter's (1934) argument focuses on the ability of banks to allocate savings more effectively. Goldsmith (1969), McKinnon (1973) and Shaw (1973) emphasize the role of financial intermediation in supplying the capital accumulation required in economic growth; by lowering financial market frictions, domestic savings are increased and foreign capital is attracted. Williams and Mahar (1998) arguing along the lines of Mckinnon and Shaw maintain that if the financial sector is free, it can provide the necessary information for economic growth and development. They argued that there are six kinds of reforms that need to be put in place in order to fill a repressed financial system, so that it can take the initiative to pull up the real sector through investment.

These six reforms are: (i) the deregulation/liberalization of interest rates; (ii) removal of credit controls; (iii) relaxation of entry-rules into the financial sector especially the banking subsector; (iv) bank autonomy/which frees the banks from bureaucratic controls; (v) privatizing the ownership of banks; and (vi) deregulating international capital flows. The private sector credit as a ratio of GDP and financial savings as a ratio to GDP are commonly used as indicators of financial stability (Easterly and Rebelo, 1993; Fischer, 1993; Allen and Ndikumana, 1998 and Levine et al 2000). Baldwin (1991) identifies five main channels, which foster economic efficiency in an economic and monetary union and consequently may have beneficial effects on output growth.

These are: (i) Elimination of transaction costs; (ii) Improved allocation of common market capital; (iii) Intensified cross-border competitive pressures; (iv) Higher efficiency of corporate ownership; and (v) Increased output as a result of reduced and converged inflation rates.

Empirical Review

Ahmed, Jayaraman and Ahmed (2020) examined how these important economic indicators affected the total amount of credit provided by traditional commercial banks in the Sultanate of Oman. The study's findings indicate that macroeconomic indicators have a favorable effect on the amount of credit provided by traditional commercial banks in the Sultanate of Oman. Takon, John, Ononiwu, & Mgbado's (2020) study, which sought to assess the importance of the financial intermediaries cost and to suggest measures that could accelerate economic growth in Nigeria, focused on the factors that determine the cost of financial intermediaries in Nigeria's pre- and post-consolidated banking sector. From the analysis, it was found that there was a significant correlation between credit for the private sector and GDP in Nigeria. Further research revealed a strong correlation between Nigeria's GDP and total deposits. Additionally, it was discovered that interest rates significantly impacted Nigeria's GDP.

Zeqiraj, Shawkat, Omer and Aviral (2020) examined the dynamic relationship between banking sector performance and GDP growth in 13 Southeast European nations between 2000 and 2015, taking into account factors such as trade openness, investment, and human capital, among others. The major empirical finding suggests a favorable and significant impact of banking sector performance on growth in the economy using an intricate detail generalized moments method (GMM). Okoroafor, Magaji & Eze (2018) assessed the effect of deposit money banks on capital formation in Nigeria, taking into account the liquidity ratio, bank savings, and deposit rate. To determine the long-run and short-run relationships, they performed unit root tests, ARDL co-integration tests, and ECM. The findings demonstrate a favorable association between bank savings and GFCF.

Anyanwu, Ananwude and Okoye (2017) determined the effect of commercial bank lending on RGDP and the industrial production index to empirically evaluate the impact of bank lending on Nigeria's economic development from 1986 to 2015. Heterogeneity was identified in data from the preliminary statistics of the CBN. Commercial bank lending and GDP are predicted to have a long-term relationship by Johansen's cointegration, and this is true for the Industrial Production Index. According to the Granger Impact Assessment's findings, private sector lending has a substantial impact on real GDP while CB lending has a substantial impact on real GDP.

Tongurai and Vithessonthi (2017) examined how adjustments in the economic system and growth were affected by the development of the banking sector. They asserted that the growth of the banking industry had different effects on the growth of the agricultural and industrial sectors. Check to see if the banking sector's development is supported by the economic structure and growth. We will compile a committee sample of all nations from 1960 - 2016 to test the theory. The growth of the banking industry has a detrimental effect on the growth of the industrial and agricultural sectors. Only in nations with a high level of banking sector growth is the negative

effect of banking sector growth on agriculture industry development visible. Our findings also demonstrate the expansion of the agricultural sector.

Akani and Uzah (2018) examined micro financing and macroeconomic stability in Nigeria from 1992-2015. The objective was to investigate the relationship between micro finance lending operation and Nigerian macroeconomic stability. The required data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin and Stock Exchange Annual Report. The study modeled Nigeria real gross domestic product as a function of micro finance lending to agricultural sector, mining and quarrying, manufacturing sector, transport and communication, real estate and micro finance other lending. The Ordinary Least Square multiple regressions with econometric view were used as data analysis techniques. Cointegration test, Granger Causality Test, Augmented Dickey Fuller Test and Error Correction Model were used to examine the variables and its relationship to the dependent variables. The study found that microfinance lending to the various sectors of the economy have positive but insignificant effect on Nigerian macroeconomic stability except lending to agricultural sector and mining and quarrying. The stationarity test proved presence of stationarity at first difference, the cointegration test indicates the presence of long run relationship and the granger causality test prove no causal relationship among the variables. The study concludes that microfinance operation does not significantly affect Nigerian macroeconomic stability.

Akani, Lucky and Anyamoabi (2016) examined the effect of banking sector development on Nigerian capital formation. The objective is to investigate the extent to which various banking sector reforms affect Nigerian capital formation. Time series data was collected from the publications of Central Bank of Nigeria statistical bulletin from 1980-2014. The study has Nigerian Capital Formation (CF) as the function of Percentage of Bank credit to Gross Domestic Product (BC_GDP), Percentage of Bank investment to Gross Domestic Product (BI_GDP), Percentage of Bank deposit to Gross Domestic Product (BD_GDP), Percentage of Bank Total Assets to Gross Domestic Product (BTA_GDP) and Prime Lending Rate (PLR). The study used the Ordinary Least Square (OLS) Method of cointegration test, Augmented Dickey Fuller Unit Root Test, Granger causality test in a Vector Error Correction Model setting to examine the relationship between the dependant and the independent variables. The study revealed that in the static regression result that all the independent variables have positive relationship with the dependent variable except prime lending rate. The Unit Root Test shows that the variables are non-stationary at level but stationary at difference. The cointegration result indicates long run relationship between the dependent and the independent variables. The granger causality test shows multivariate relationship running from the independent variables to the dependent variable and from the dependent variable to the independent variables while the vector error correction result shows adequate speed of adjustment to equilibrium. The study conclude that banking sector development have significant effect on Nigerian capital formation.

Akani, Lucky and Kingsley (2016) examined the relationship between Nigeria financial sector development and macroeconomic stability from 1980 – 2014. The objective is to investigate the extent and the direction of relationship between various components of financial sector development and macroeconomic stability in Nigeria. Time series data were sourced from Central

Bank of Nigeria (CBN) statistical bulletin. The study modeled percentage of Nigerian Gross Domestic Product to Balance of Payment (GDP/EXT) as our dependent variable total commercial banks credit to Gross Domestic Product (TCBC/GDP), Broad Money Supply to Gross Domestic Product (M2/GDP), Credit to Core Private Sector to Gross Domestic Product (CPS/GDP), Stock Market Capitalization to Gross Domestic Product (MKT/GDP) and Total savings to Gross Domestic Product (TS/GDP) as our independent variables. The study employed Cointegration Test, Augmented Dickey Fuller Unit Root Test, Granger Causality Test and Vector Error Correction Model were used to examine the extent to which the independent variables affect dependent variable. The static regression result shows that all the independent variables have positive effect on the dependent variables. The Augmented Dickey Fuller result shows non stationarity at level and stationarity at first difference. The cointegration result shows long run relationship, the Granger Causality Test shows multivariate relationship running through the independent to the dependent variable and the dependent to the independent variables. The vector error correction result shows adequate speed of adjustment to equilibrium. The study conclude that Nigerian financial sector development have significant relationship with macroeconomic stability.

Akani and Momodu (2016) examined whether there is a dynamic long run relationship between financial sector development and Nigeria National Savings in addition to determining the direction of causality among the variables. Time series data were sourced from Central Bank of Nigeria (CBN) Statically Bulletin from 1980 – 2014. The study modeled Gross National Savings as the percentage of Gross Domestic Product (GDP) as our dependent variable while our independent variables were Commercial Banks Credit as percentage of GDP (CBC/GDP), All Share Price Index as the percentage of GDP (ASPI/GDP), Broad money supply as a percentage of GDP (M2/GDP) to captured the level of financial deepening, Interest Rate (INTR), Exchange Rate (EXR) and Inflation Rate (INFR) were used. The study employed the Johansen. Cointegration Test, Augmented Dickey Fuller Unit Root Test, Granger Causality Test and Vector Error Correction Model were used to examine the relationship between the dependent and the independent variables. The empirical results demonstrate vividly that there is a long run dynamic and significant relationship between financial sector development proxy by national savings and a negative long run relationship between national savings and inflation rate in Nigeria. The static regression result indicates that all the independent variables except inflation rate have positive effect on National Savings. The Unit Root Test indicates non-stationarity at level. The study concludes that financial sector impact significantly to Nigerian total saving. It therefore recommends for financial sector deepening and well management Strategies to enhance National Savings in Nigeria.

Literature Gap

This chapter presented the theoretical foundation, conceptual and empirical review on finance and economic growth. There are many variables that are exogenous that affect the economic growth. In this study, the researcher focused on financial intermediation and economic development while other studies examined and focused on financial intermediation and private investment.

METHODOLOGY

The study adopted the quasi-experimental research design. This is because the variable under study cannot be manipulated or is not under the control of researcher. The study is designed after correlation or regression research methodology. Here we try to see how two or more variables can relate or influence each other. Data were sourced from Central bank of Nigeria statistical Bulletin

Model Specification

Following the previous works of Akani and Uzah (2018) we model the relationship between financial intermediation and economic development in Nigeria as follows

$$PI = \beta_0 + \beta_1 BSC + \beta_2 BSD + \beta_3 FD + \beta_4 COI + \mu \quad 1$$

Where

PI = Private Investment

BSC = Banking sector credit

BSD = Banking sector deposit

FD = Financial deepening

COI = Cost of financial intermediation proxy by real interest rate

ϕ_0, α_0 = Constant

$\beta_1 - \beta_5$ = Coefficients of independent variables

μ_i = Error Term

A-Priori Expectation

Base on theories such as financial intermediation theory and empirical results examined in this study, the variables are expected to have a positive effect on the dependent variables. The mathematical implication is stated as follows: $\beta_1, \beta_1, \beta_1, \beta_1 > 0$

Data Analysis Techniques

Econometric Analysis

Appropriate levels of analysis will be conducted, in each case ranging from the global analysis (that reveals the overall utility of the models) to analysis of relative statistics that test the hypotheses. This study applies unit root test first so as to uncover the true nature of stationary-properties of all the variables under consideration. This is necessary in order not to run into the problem of spurious regression since unit root problems are common features encountered in most time series studies. However, the simple regression model will be employed as the estimation technique for this study. Johansen and Juselius Co-integration Test would be applied to determine the long run equilibrium of the variables in the model, while the Granger Causality Test would also be applied in checking the underlying structure of the dynamics relationship between the variables.

Ordinary least squares (OLS) are a method for estimating the unknown parameters in a linear regression model. Huthcheson (2011) defined ordinary least square (OLS) regression as a generalized linear modeling technique that may be used to model a single response variable which has been recorded on at least an interval scale. This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation.

OLS technique may be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded. In single explanatory variables, the relationship between a continuous response variable (Y) and a continuous explanatory variable (X) may be represented using a line of best-fit, where Y is predicted, at least to some extent, by X. If this relationship is linear, it may be appropriately represented mathematically using the straight line equation $Y = a + \beta x$

For the multiple explanatory variables additional variables are added to the equation. The form of the model is the same as in a single response variable (Y), but this time Y is predicted by multiple explanatory variables (X_1 to X_5).

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad 2$$

The interpretation of the parameters (a and β) from the above model is basically the same as

for the simple regression model, but the relationship cannot be graphed on a single scatter plot. a indicates the value of Y when all variables of the explanatory variables are zero. Each β parameter indicates the average change in Y that is associated with a unit change in X, whilst controlling for the other explanatory variables in the model. Model-fit can be accessed through comparing deviance measures of nested models. For example, the effect of variable X_3 on Y in the model can be calculated by comparing the nested models

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad 3$$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \quad 4$$

The change in deviance between these models indicates the effect that X_3 has on the prediction of Y when the effects of X_1 and X_2 have been accounted for (it is, therefore, the unique effect that X_3 has on Y after taking into account X_1 and X_2). The overall effect of all three explanatory variables on Y can be assessed by comparing the models

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad 5$$

$$Y = a. \quad 6$$

The significance of the change in the deviance scores can be accessed through the calculation of the F-statistic using the equation provided above (these are, however, provided as a matter of course by most software packages). As with the simple OLS regression, it is a simple matter to compute the R-square statistics.

Unit Root Test

A unit root test is a statistical test for the proposition that in a autoregressive statistical model of a time series, the autoregressive parameter is one. (Econtermsy(t), where t a whole number, modeled by:

$$y(t+1) = ay(t) + \text{other terms}$$

Where a is an unknown constant, a unit root test would be a test of the hypothesis that a=1, usually against the alternative that |a| is less than 1. Variables such as inflation, interest rates, exchange rate and unemployment rate appears to be persistent and are frequently modeled as units root process. Unit roots technique is usually used to examine whether the series for two variables are stationary or not. Macroeconomic time series are usually not stationary. In most such series are made stationary by calculating logarithms or taking first or second differences. There are many tests used to determine stationary but in this study, the stationary of the variables will be tested by using Augmented Dickey-fuller unit root test.

The Augmented Dickey Fuller (ADF) unit root test is used to test the stationarity property of a time series data in order to avoid the spurious regression problem. The ADF unit root test is specified as

$$\Delta V_t = \alpha V_{t-1} + \sum_{i=1}^p \beta_i \Delta V_{t-i} + \varepsilon_t \quad 7$$

$$\Delta V_t = \alpha V_{t-1} + \sum_{i=1}^p \beta_i \Delta V_{t-i} + \gamma_1 t + \varepsilon_t \quad 8$$

$$\Delta V_t = \alpha V_{t-1} + \sum_{i=1}^p \beta_i \Delta V_{t-i} + \gamma_1 t + \gamma_2 t^2 + \varepsilon_t \quad 9$$

Note: The null hypothesis is rejected on the ground that the absolute value of the calculated ADF test statistic is larger than the absolute value of the Mackinnon critical value.

Cointegration Test

Cointegration is a statistical property of time series variables. In a situation where two or more series are individually integrated (in the time series sense) but some linear combination of them has a lower order of integration, then the series are said to be cointegrated. According to (C T Eviews 2010) cointegration refers to a scenario where linear combination of non-stationary variables is stationary. For these non-stationary time series variables, there is a possibility of estimation by differencing in cases where the differences are stationary. For estimation of the cointegrating relationship to be undertaken, it requires that all the time series variables in the model be integrated of order one I(1). The next step after recognizing the order of integration of the variables as I(1) or above is to test whether the variables in question can cointegrate or not.

The three main methods for testing for cointegration are: The Engle-Granger two-step method (null: no cointegration, so residual is a random walk), The Johansen procedure, Phillips-Ouliaris cointegration Test available with R (null: no cointegration).

There are two common methods for testing cointegration and estimating the relationship among cointegrated variables namely the Engle-Granger (1987) Two Step Procedure and Johansen's (1988) maximum likelihood method. In the Engle-Granger two-step procedure, variables entering the cointegrating vector are tested for integration of the order, $I(1)$. Thus, the first step in this procedure is pre-testing the variables for their order of integration. The second step is estimating the long-run equation relationship and obtaining the residual. The third step is testing whether the residual is stationary. If the residual is stationary, then the variables are said to be cointegrated such as they do have long run relationship. The final step is estimation of the error correction model (ECM) including the lagged value of the residual as the explanatory variable. The ECM model is estimated to see the short run relationship between the variables. The Johansen maximum likelihood method is an alternative to the Engle-Granger Two Step Procedure. This procedure is a multivariate generalization of the Dickey-Fuller test. It has been observed that unit root tests have limited power to distinguish between a unit root and a close alternative and because of this; the pure unit root assumption is typically based on convenience rather than on strong theoretical or empirical facts. Most econometricians believe that near-integrated process, which explicitly allow for a small (unknown) deviation from the pure unit root assumption be more appropriate in a way to describe many economic time series, see Elliott, (1998) and Stock (1991). Common practice among econometricians is to test whether nature of time series data are stationary or non-stationary in order not to obtain spurious result before using any econometric technique.

Considering that all the variables are non-stationary and integration of order one or $I(1)$, and also these are co-movement between assets quality and profitability of deposit money banks then cointegration technique would also be appropriate format to investigate the short and long causality in error correction model (ECM). Johansen (1988) approach provides the number of cointegration equation among the variables. The error correction model (ECM) is among the cointegration equations. It is useful for short run dynamics with long run equilibrium relationship. These are several techniques for ECM in the existing literature. In this study, sophisticated econometrics techniques like Vector Error Correction Model (VECM) which is used for empirical investigation of the assets quality and profitability of deposit money banks in short and long run would be used. The VECM is more useful in Multivariate framework. To test for the presence of long-run equilibrium relationship, the Johansen's and Juselius (1990) and Johansen (1991) multivariate cointegration technique is employed. The cointegration test is based on the following equation.

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Where α and β are 4×4 matrices and k is the lag length. The tests used here involved cointegration with linear deterministic trend in the vector auto regression (VAR).

Granger Causality Test

In conducting an econometric study, the direction of causal relationship among variables is determined according to the information obtained from the theory. In this study, Granger Causality test was used in order to test the hypotheses regarding the presence and the direction of the causality between assets quality and profitability of deposit money banks. For the purpose of this,

the direction of causality determines the direction of the relationship among variables and Granger Causality test has three different directions in respect of this and they include the following:

One way causality

In a single equation model, Y is the dependent variable and X independent variable. The Granger, (1969) approach to this, is to see how much of the current Y can be explained by past values of Y and then to see whether adding lagged values of X can improve the explanation. In this case, Y is said to Granger-caused by X if x helps in the prediction of Y, or equivalently if the coefficient on the lagged X's are statistically significant. Here, there is a causality relationship from X towards Y. Independent variable is the cause and causes a one way effect on dependent variable, which shows the presence of one-way causality and the relationship is determined as Y on X.

Two way causality

In this case of two way causality, there can be reciprocal effect between variables. In this case, X Granger cause Y and Y Granger cause X. The Statement of "X Granger cause y and y Granger cause X does not imply that Y is the effect or the result of X. what it simply means is that Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term.

Lack of Causality

This means that there is no relationship among variables, therefore no causality. In this case, in order to apply Granger causality test, the series that belong to variables should be stationary. Therefore, it is necessary to make test, the series that belong to variables should be stationary. Gujaranti (1995) submits that recent studies have shown that the conventional F-test for determining joint significance of regression-derived parameters, used as a test of causality, is not valid if the variables are non-stationary and the test statistics does not have a standard distribution. In this study, Granger causality test would be applied in order to determine the presence of the relationship among variables and its direction. The Granger's causality test (Granger, 1969) is carried out by using the following equations:

According to Tari (2005) the equation suggests that if the addition of the information about the variables x to the model contributes to the estimate of the variables y, the variable x is the cause of the variable y. Here equation 5 shows a causality relationship from x to y and the equation 3.15 from y to x. Analyzing the model presented above, Granger causality test is carried out as $H_0: \beta = 0$ and $H_1: \beta \neq 0$ when H_0 hypotheses is accepted, X is not the cause of Y, But if H_1 hypotheses is accepted, then X is the cause of Y. If both hypotheses are rejected, this means that there is a two-way causality between X and Y. The Granger testing works in a way that, if "F" table value, H_0 hypotheses is accepted as "there is no causality from X to Y. But if "F" value is higher than the table value, H_0 hypotheses is rejected and it is causality from X to Y. All these calculations are applied in the same way in order to test whether there is causality from Y to X.

The main objective of this study is to investigate the causality between the independent and the dependent variables. Granger (1996) proposed the concept of causality and exogeneity: a variable

Y_t is said to cause X_t , if the predicted value of X_t is ameliorated when information related to Y_t is incorporated in the analysis. The test is based on the following equation below

$$Y_t = \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \dots + \alpha_n X_{t-n} + \mu_{1t} \tag{11}$$

and

$$X_t = \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \dots + \beta_n Y_{t-n} + \mu_{2t} \tag{12}$$

Where X_t and Y_t are the variables to be tested while μ_{1t} and μ_{2t} are white noise disturbance terms and n is maximum number of lags. The null hypothesis $\alpha_1 = \beta_1 = 0$ for all 1's is tested against the alternative hypothesis $\alpha_1, 0$ and $\beta_1, 0$, if the coefficient of α_1 are statistically significant, that of β_1 are not, then X causes Y , If the reversal is true than Y causes X . However, where both coefficient of α_1 and β_1 are significant then causality is bi-directional.

RESULTS AND DISCUSSION

Table 1: Presentation of Unit Root Test

Variab le	ADF STAT	Mackinnon value 1%	5%	10%	P- Value	Order of Integrat ion	Decision	Remark
PI	- 2.984099	- 3.667294	- 2.957110	- 2.617434	0.0497	1(I)	Reject H0	Stationar y
BSC	- 3.507052	- 3.653730	- 2.957110	- 2.617434	0.0143	1(I)	Reject H0	Stationar y
BSD	- 5.285030	- 3.661661	- 2.960411	- 2.619160	0.0001	1(I)	Reject H0	Stationar y
FD	- 8.396422	- 3.661661	- 2.960411	- 2.619160	0.0000	1(I)	Reject H0	Stationar y
COI	- 7.974944	- 3.670170	- 2.963972	- 2.621007	0.0000	1(I)	Reject H0	Stationar y

Source: Extracted by Researcher from E-View 9.0 (2024)

The time series properties of our data were examined by conducting the unit root test of stationarity using the Augmented Dickey-Fuller (ADF) test and cointegration test using Engle Grange cointegration procedure. The results for the stationarity test using Augmented Dickey-Fuller (ADF) test are presented in table above.

In other to estimate the impact of financial intermediation on Nigeria economic development, we tested for the presence of unit root in the panel data set. This was necessitated because we wanted to ensure that the parameters estimated are stationary panel series data. We utilized the Augmented Dickey-Fuller (ADF), to reject the null hypothesis that the data are non-stationary, the ADF statistics must be more negative than the critical values and significant. The result of the unit root

test is depicted in the table above as revealed, there was presence of stationarity since the ADF Statistical is less than the critical values at 1%, 5% and 10% respectively

Table 2: Presentation of Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.578971	91.82317	55.75366	0.0197
At most 1*	0.456749	98.00649	69.81889	0.0307
At most 2	0.312887	26.09077	47.85613	0.8863
At most 3	0.278652	14.45782	29.79707	0.8140
At most 4	0.115271	4.332186	15.49471	0.8750

Source: Extracted by Researcher from E-View 9.0 (2024)

From the unit root test in tables above, we noticed that private investment which is the dependent variable in the specified equations have the same order of integration with other independent variables, we then estimated their linear combination without the constant term and obtain their residual which was tested for unit root test of stationary using Augmented Dickey Fuller. The outcome of the test is given below:

From the tables above, the result shows the existence of cointegration among the variables because the residual obtained from the linear combination of none stationary series is stationary at both 5% and 1% critical values. Hence there is necessity to estimate an Error Correction Model (ECM) that is the model in equation number.

Table 3: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-494.8311	NA	6.43e+08 19910495	34.47111	34.70685	34.54494
1	-419.0047	120.2765*	*	30.96584*	32.38028*	31.40883
2	-406.0805	16.04385	54227671	31.79865	34.39180	32.61079
3	-376.8817	26.17819	66387666	31.50908	35.28093	32.69038
4	-315.7988	33.70092	18863672	29.02061	33.97116	30.57106*

Source: Authors Computation, 2024 (Eview-9.0)

This pre-estimation test table 3 indicates lag order selected by the criterion LR: sequential modified LR test statistics (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion and HQ: Hannan-Quinn information criterion. To run the VAR analysis for the period of 1990-2022, this study takes 1 lags to estimate the VAR test

Table 4: Presentation of Error Correction Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PI(-1)	-0.123199	0.294241	-0.418700	0.6969
PI(-2)	0.556972	0.473107	1.177265	0.3044
PI(-3)	-0.580741	0.383479	-1.514399	0.2045

PI(-4)	0.760650	0.508862	1.494807	0.2093
BSC	-0.022915	0.081506	-0.281147	0.7925
BSC(-1)	0.046201	0.073111	0.631929	0.5617
BSC(-2)	-0.035099	0.064340	-0.545523	0.6144
BSC(-3)	0.000854	0.060810	0.014042	0.9895
BSD	-0.014701	0.224263	-0.065554	0.9509
BSD(-1)	0.475777	0.309691	1.936297	0.0493
BSD(-2)	-0.042489	0.196483	-0.216249	0.8394
BSD(-3)	0.292622	0.305521	0.957780	0.3924
BSD(-4)	0.163936	0.260859	0.628445	0.5638
FD	-0.237363	0.156319	-1.518447	0.2035
FD(-1)	0.018029	0.078632	0.229290	0.8299
FD(-2)	-0.019968	0.107135	-0.186384	0.8612
FD(-3)	0.029343	0.083362	0.351995	0.7426
FD(-4)	-0.037945	0.100684	-0.376876	0.7254
COI	-0.190263	0.105786	-1.798558	0.1465
COI(-1)	-0.062565	0.092773	-0.674388	0.5370
COI(-2)	0.100859	0.076734	1.314388	0.2590
COI(-3)	-0.093523	0.079183	-1.181109	0.3030
C	-48.19412	40.03192	-1.203892	0.2950
ECM(-1)	-0.380379	0.422490	-0.900327	0.4189
R-squared	0.759757	Mean dependent var		-1.18E-15
Adjusted R-squared	0.681703	S.D. dependent var		0.910696
S.E. of regression	1.598706	Akaike info criterion		3.519403
Sum squared resid	10.22344	Schwarz criterion		4.698106
Log likelihood	-26.03134	Hannan-Quinn criter.		3.888558
F-statistic	8.211912	Durbin-Watson stat		2.758279
Prob(F-statistic)	0.000055			

Source: Authors Computation, 2024 (Eview-9.0)

Over-Parameterized Result is presented in the above table to check for corrections of short run in the models. From the table model 1 shows that the ECM is properly sign with negative sign. The R^2 shows that 75.9% and 68.1% variations in the dependent variable could be trace to variation in the model; this is again justified by the f statistics and the probability value. From the result presented above it is evidence that banking intermediation have significant relationship with private real domestic investment. The result indicates that the variables adjust by 38 percent annually. Base on the validity of lag I, the study found that banking sector credit have positive but no significant effect on private real investment such that a unit increase increased private real investment by 0.004 percent, banking sector deposits have positive and significant effect on private real investment such that a unit increase increased private real investment by 0.46 percent, financial deepening have positive but no significant effect on private real investment such that a unit increase increased private real investment by 0.01 percent cost of financial intermediation have negative and no significant effect on private real investment such that a unit increase reduced private real investment by 0.06 percent. The positive effect of the variables is also in line with the

deregulation of the economy in the last quarter of 1986. The findings of the study is in line with the findings of Inimino, Abuo and Bosco (2018) that monetary Policy Rate has negative and significant effects on domestic private investment, the findings of Adebola and Dahalan (2012) found the existence of long run relationship when investment is taken as dependent variable., Adelegan (2018) have positive but insignificant relationship. He advocates further deepening of the financial sector. Such financial deepening will most likely improve the contribution of banks' credit to the performance of the domestic private sector investment, the findings of Adelowokan Adesoye & Balogun (2015) that exchange rate volatility has a negative effect with investment and growth while exchange rate volatility has a positive relationship with inflation and interest rate in Nigeria. Adesoye & Balogun (2015) error correction method, impulse responses function, co-integration and Augmented Dickey Fuller, the findings of Agwu (2015) that the past income level, capital investment, government size and interest rate are the major determinants of domestic investment in Nigeria, hence these variables have a positive effect on private investment in Nigeria, while exchange rate and inflation have an insignificant effect on private investment in Nigeria, the findings of Aigheyisi (2017) that his finding agrees with that of Dantama and Usman (2012). Government fiscal deficit has been fingered as having serious effect on domestic private investment in Nigeria. The findings of Ajayi (2014) that Africa has a substantial resources gap that needs to be closed to create an environment that is conjunctive for sustained growth and development. He also finds that because Africa is looking outside for resources it has become a net creditor to the rest of the world and the findings of Akeju (2014) that a real exchange rate moves along the same direction with terms of trade in the long run.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study estimates the impact of the financial intermediation and domestic real investment. Time series data was source from Central Bank of Nigeria Statistical bulletin from 1990-2021. Real domestic investment was modeled as the function of banking sector credit, banking sector deposits, financial deepening and cost of financial intermediation. Over-Parameterized Result is presented in the above table to check for corrections of short run in the models. From the table model 1 shows that the ECM is properly sign with negative sign. The R^2 shows that 75.9% and 68.1% variations in the dependent variable could be trace to variation in the model; this is again justified by the f statistics and the probability value. From the result presented above it is evidence that banking intermediation have significant relationship with private real domestic investment. The result indicates that the variables adjust by 38 percent annually. Base on the validity of lag I, the study found that banking sector credit have positive but no significant effect on private real investment such that a unit increase increased private real investment by 0.004 percent, banking sector deposits have positive and significant effect on private real investment such that a unit increase increased private real investment by 0.46 percent, financial deepening have positive but no significant effect on private real investment such that a unit increase increased private real investment by 0.01 percent cost of financial intermediation have negative and no significant effect on private real investment such that a unit increase reduced private real investment by 0.06 percent.

Recommendations

- i. Nigeria interest rate such as interest rate should be properly factored into the macroeconomic policy objective to encourage cross boarder flow of financial asset and investment into the Nigeria financial market.
- ii. Policies should be formulated to manage the volatility in bank deposits and diversify Nigeria economy for better macroeconomic performance that will enhance real domestic investment.
- iii. The macroeconomic environment and policies should be revisited, existing policies that threaten investment and the financial market should be abolished and new policies that will enhance economy growth should be formulated for increase in real domestic investment.
- iv. There is need to formulate expansionary monetary policy that will not conflict with the objective of price stability and external balance to enhance investment borrowing that will impact positively on Nigeria real domestic investment.

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