Bullion

Volume 44 | Number 4 Article 3

12-2020

Impact of financial deepening on socio-economic development in Nigeria: 1991 - 2018

Igonibo Dumoteim Abili
Central Bank of Nigeria, ABILI18916@cbn.gov.ng

Impact of Financial Deepening on Socio-economic Development in Nigeria: 1991 - 2018

Igonibo Dumoteim Abili
Yenagoa Branch, CBN

ABSTRACT

This study investigates the relationship between financial deepening and socio-economic development in Nigeria. The specific objectives examined the impacts of broad money supply, private sector credit and financial openness on human development index in Nigeria from 1991 to 2018. Time series data on each of the variables were analyzed using Fully Modified Least Squares and Granger Causality test. The unit root test results revealed that all the variables in the model became stationary after first difference and are all I (1). The cointegration test result revealed that the variables had long run relationships. The cointegrating regression result indicated that broad money supply had significant negative relationship with HDI. A 1 percent increase in broad money supply would lead to 0.0103 reductions in the HDI score. On the other hand, private sector credits and financial openness index were found to exert significant positive impact on HDI. The causality test results indicate that unidirectional causality runs from broad money supply and credit to the private sector, to HDI. It was equally found that bidirectional causality exists between financial openness and HDI as well as joint causality flowing from all the explanatory variables to HDI. This finding implied that the explanatory variables collectively have the power of predicting changes in HDI. Hence, it was concluded amongst others that CBN should support more cross-border mobility of capital in order to provide opportunities for free flow of financial products and services to facilitate the process of socio-economic development.

Keywords: Financial Deepening, Financial Inclusion, Economic Development.
JEL Classification:E61, E65, F43, F47

1.0 Introduction

1.1 Background to the Study

Global recognition has been given to the deepening of financial systems. According to World Bank (2015), greater access to financial services for both households and businesses tend to reduce income inequalities and stimulate economic growth. From the economists' viewpoint, financial deepening is germane to economic development, Tuaneh and Ewubare (2016). Basically, improved access to financial services can make remarkable difference in the process of economic development through poverty reduction and more equitable income distribution. Nwannaand Chinwudu (2016) observed that financial deepening was intended to improve economic conditions in the economy through greater competitive efficiency in the financial markets and the associated positive spill-over effects in the real sector.

In furtherance of global recognition of the role of deepening, the United Nations(UN), the World Bank, the Group of Twenty (G-20) and the World Economic Forum (WEF) have all underscored the need for countries to provide greater access to financial products for both individuals and

[1]The author is a staff of Central Bank of Nigeria, Yenagoa Branch. The views expressed herein are solely his and do not represent or reflect the policy position of the CBN where he works.

firms as a pathway to reducing poverty and equitable income distribution. Countries are tasked to prioritize financial inclusion in their monetary policy frameworks to increase opportunities for the development of their economies. It is believed that financial sector policies that promote competition and offer appropriate incentives to individuals provide better opportunities for poverty reduction and more equitable allocation of resources, World Bank (2012). In addition, the Supply-Leading hypothesis underscores the growing popularity of financial deepening in creating and expanding the level of liquidity and driving overall economic efficiency.

Like other monetary authorities in developing economies, the Central Bank of Nigeria (CBN) has continued to promote the deepening of the Nigerian financial system to engender rapid growth and sustainable development. With monetary policy tools, the CBN promotes real sector development with increased opportunities for reducing poverty and income inequality.

As a pathway to sustainable deepening of the Nigerian financial system, the CBN launched the National Financial Inclusion Strategy (NFIS) in 2012 with a target of reducing the rate of financial exclusion from 46.3 percent in 2010 to 20 percent in 2020. To deepen the inclusiveness of the financial system and provide more opportunities for socio-economic development, the CBN introduced other policy initiatives. Among them are, the Anchor Borrower's Programme (ABP) and licensing of 25 Mobile Money Operators,CBN (2017).

The CBN increased the capital requirement of microfinance banks (MFBs) in order to ensure that they are well positioned to deliver sustainable micro-financing services in accordance with the overall objective of NFIS. Despite the growing advocacy on Enhancing Financial Innovation and Access (EFInA), the pace of financial deepening and overall inclusion has remained sub-optimal. As at 2016, 41.6 percent of adults in Nigeria were financially excluded, EFInA (2016).
The CBN (2017) report revealed that, it was paradoxical that despite efforts to deepen the Nigerian financial system, high occurrences of income gap, poverty and low labour absorption capacity had continued to prevail in the Nigerian economy. Although numerous attempts have been made in the past to explain the effectiveness of financial deepening, emphasis has been on economic growth with little or no attention given to development. This study, therefore, seeks to bridge this research gap by estimating the empirical link between financial deepening and socio-economic development in Nigeria from 1991to 2018.

1.2 Statement of the Problem

Enhancing financial services to improve social welfare has remained the core of the financial deepening objective of the CBN. The policy framework requires the CBN to play a central role in regulating the financial sector to create enhanced and enabling environments for businesses to thrive. However, some externalities particularly from fiscal policy, have affected the implementation of monetary policy in Nigeria which has constrained the ability of the CBN to deliver on its mandate of promoting a sound financial system. Policy makers and other stakeholders in the Nigerian economy have divided opinions on whether deepening the Nigerian financial system will foster inclusive growth through poverty reduction, employment generation and equitable income distribution amongst other. This is because of available statistics on Nigeria's core development indices.
The World Bank (2018) revealed that the GNI index measure of income inequality averaged 45.27 percent between 2009 and 2018. The International Labour

Organization Statistics, ILOSTAT(2018) showed that the labour force participation rate (percentage of total population ages 15 and above) averaged only 55.39 percent between 2009 and 2018. This has brought the debate on the macroeconomic effectiveness of financial deepening in promoting economic development through employment generation and more equitable income distribution. Again, the level of development in the Nigerian financial system suggests that monetary policies geared towards promoting financial deepening are somehow ineffective in facilitating economic development.

1.3 Objectives of the Study

This study broadly examined the role of financial deepening in promoting socio-economic development. The specific objectives include:

i. Examine the relationship between broad money supply and human development index in Nigeria;
ii. Determine the impact of credit to the private sector on human development index in Nigeria;
iii. Explore the impact of financial openness on human development index in Nigeria and
iv. Determine if there is a significant causal relationship between financial deepening and human development index in Nigeria.

1.4 Hypotheses

The hypotheses are stated as follows:
H01: There is no significant relationship between broad money supply and human development index in Nigeria.
H02:Credit to the private sector does not significantly impact on human development index in Nigeria.
H03: Financial openness has no significant impact on human development index in Nigeria.
H04: There is no significant causality between financial deepening measures and human development index in Nigeria.

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Conceptual Issues

2.1.1 Concept of Financial Deepening

Financial deepening implies the ability of financial institutions to effectively mobilize savings for investment purposes. It also presupposes active operations of financial institutions in the financial markets, which in turn entails the supply of quality financial instruments and financial services, Ndekwu(1998). This is in accordance with the assertion of Nnanna and Dogo (1999) that financial deepening represents a system free from financial repression. Mbutor and Uba (2016) offered a general view of financial inclusion, making available financial services such as savings, credit and insurance to the disadvantaged and low-income population at affordable costs. They further explained that the inclusiveness of the financial system entails a condition of allowing easy access to use of formal system services by the population. Deepening of the financial system is considered to play a critical role in the development of the financial system. According to the Alliance for Financial Inclusion (AFI), access to financial services is the grounding principle of financial inclusion. AFI's Financial Inclusion Data (FID) Working Group, defines the three main dimensions as access, usage and quality. Today, financial inclusion is a significant international policy goal, included as an enabler of many of the UN Sustainable Development Goals (SDGs).

The need to improve the liquidity position and deepen the financial system in developing countries has led to various liberalization policies on the part of governments around the world. Financial deepening focuses more on the process of financial intermediation. Financial markets

undertake this vital role of intermediation, by channelling funds from surplus units (savers) to deficit units (investors). Some of the liberalization policy targets were designed to affect interest rates, money supply and credit availability to the private sector. The goal of these policy objectives was to achieve rapid economic advancement through the financial system. The inclusiveness of the financial system entails households and firms having reasonable access to financial products and services that meet their growing financial needs, delivered in a responsible and sustainable manner, World Bank (2015).

Socio-economic development involves improvement of lifestyles of individuals through improved education, health and life expectancy as well as skill development, employment and income (labour force participation). It is the process of economic and social transformation based on cultural and environmental factors. Therefore, it can be understood as the process of social and economic development within the society. It is measured with indicators such as reduction in income inequality, poverty reduction, life expectancy, literacy and levels of employment amongst others.

Fritz (2010) argued that socio-economic development emphasizes progress in terms of economic and social factors within a geographic unit. Essentially, economic development is the process of raising the level of prosperity through increased production, distribution and consumption of goods and services. Social development on the other hand, refers to the complexity of social dynamics and focuses on the social concerns of people as objectives of development and people-centred approaches to development. Indicators of social development provide comparative information on areas such as income, poverty, employment, employment security, education, health, crime and civic participation, Fritz (2010).

Aye (2015) investigated the causality between financial development and economic growth in Nigeria over the coverage period 1961-2012. A bootstrap rolling window estimation was used to evaluate Granger causality between financial deepening and economic growth over different time periods. The results revealed that there was no causality between the two series. The tests further revealed that while financial deepening has predictive influence for economic growth at some periods, economic growth has predictive control for financial deepening at other periods.

Socio-economic development of any region equally depends on various factors such as per capita income, level of agricultural development, level of industrial development, level of urbanization, occupational structure, level of educational development, health status, transport and communication. Per capita income is widely accepted as a general measure of development. It is customary to identify whether a region has been backward or advanced in the levels of development using the estimates of per capita income. The regions which enjoy higher per capita income are deemed to be more developed than the states or regions with low per capita income.

2.2 Theoretical Literature

2.2.1 Supply-Leading Hypothesis

The Supply-Leading hypothesis is based on the assumption that financial deepening fosters growth. The existence and development of financial markets are therefore key to increasing the level of savings and investments. The conventional view of the Supply-Leading hypothesis postulates that the direction of causality flows from financial development to economic growth. If transaction costs are high, exchange among economic

agents will not occur. The need to reduce allied costs for exchange to take place has led to the emergence of financial institutions and markets for effective financial intermediation in the financial sector.

A well-developed financial sector provides critical services to reduce transaction costs and increase the efficiency of intermediation. It mobilizes savings, identifies and funds good business projects, monitors the performance of managers, facilitates trading and the diversification of risks and fosters exchange of goods and services. Agbetsiafa (2003) observed that these services result in more rapid accumulation of physical and human capital, and faster technological innovation, thus inducing faster long-term economic growth. In addition, Ohwofasa and Aiyedogbon (2013) argued that the Supply-Leading hypothesis centres on the assumption that well-functioning financial institutions have the capacity to drive total economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from non-growth sectors to more modern growth inducing sectors, and also promote competent entrepreneurs in the various sectors of the economy.

More importantly, the Supply-Leading theory explicitly demonstrates how financial intermediaries overcome market frictions and lower costs of transferring information or wealth between households and firms. Some of the arguments are of the view that in one way or another financial intermediaries give individuals or firms the opportunity to achieve economies of scale, an option that may not have been available. Thus, intermediaries enhance economic efficiency and growth because they help allocate capital to its best possible use. According to Mckinnon (1973), an efficient financial sector tends to reduce transaction and monitoring costs and asymmetric information with benefits of improved financial intermediation. Overall, the Supply-Leading hypothesis has it that growth in the real sector is largely determined by the extent of financial development. Consequently, financial deepening is expected to create opportunities for increased and sustained growth of the economy.

2.2.2 Demand-Following Hypothesis

Robinson (1952) pioneered the Demand-Following hypothesis. In contrast to the Supply-Leading thesis, the Demand-Following thesis argues that financial development primarily follows economic growth and that the engines of growth must be sought elsewhere. Rising incomes from the agricultural or rural sector provides funds for which the financial intermediaries exist to service. Economic growth provides the demand which the finance sector fulfils. The primary function of intermediaries is to solicit funds from surplus units and allocate them among deficit units. The proponents of the Demand-Following hypothesis argue that expansion of the real sector fosters the development of the financial sector due to increase in macroeconomic outcomes.

It is argued in monetary economics literature that the Demand-Following perception of the development of the financial markets is merely a lagged response to economic growth. Simply put, growth in the real sector of the economy is perceived to trigger demand for financial products. That is, as the economy expands, it triggers increased demand for more financial services and thus leads to greater financial development. Gurley and Shaw(1955) contends that if incomes grow at a warranted pace, the demand for financial assets shall also grow at a specifiable pace. In addition, transactions demand for money keeps abreast with growing incomes. The accumulation of assets and rise in income levels stimulate

demand. Financial development therefore follows economic development as economic growth is believed to cause financial institutions to develop their financial base and increase credit.

The Keynesian theory of financial deepening asserts that financial deepening occurs due to an expansion in government expenditure. In order to reach full employment, the government should inject money into the economy by increasing government expenditure. An increase in government expenditures increases aggregate demand and income, thereby raising demand for money Mckinnon (1973). Robinson (1952) posits that it is the necessity for high economic growth that creates demand in the financial sector. Thus, in these views, it is the improvements in the economy that drive higher demand for the use of money, which consequently promotes financial development. In other words, financial markets develop and progress as a result of increased demand for their services from the growing real sector. Hence, causality is believed to run from economic growth to financial development, given that an increase in economic growth causes a rise in demand for financial services and this consequently leads to the expansion of the financial sector.

2.2.3 Choice of Hypothesis

This study is built on the Supply-Leading hypothesis which assumes that financial deepening is beneficial to the growth of the economy. The rationale for anchoring this study on the Supply-Leading hypothesis is based on the theory that the financial sector promotes rapid and diverse growth of the real sector leading to sustainable development.

2.3 Empirical Literature

Different empirical studies have been conducted across the globe on the development impacts of financial deepening with various empirical evidences.

Karimo and Ogbonna (2017) examined the direction of causality between financial deepening and economic growth in Nigeria for the period 1970–2013. The study adopted the Toda–Yamamoto augmented Granger causality test and the results showed that the growth-financial deepening nexus in Nigeria follows the Supply-Leading hypothesis. This means that it is financial deepening that leads to growth and not growth leading to financial deepening. Among others, the study recommended that policy efforts should be geared towards removing obstacles that undermine the growth of credit to the private sector and restore investors' confidence in the stock market.

Bakang (2016) analysed the effects of financial deepening on economic growth in the Kenyan banking sector using quarterly time series data from 2000 to 2013. In the study, financial deepening was measured by four alternative indicators such as liquid liabilities as ratio to nominal GDP; credit to private sector as ratio to nominal GDP; banks' assets as ratio to banks' plus central banks assets and banks' deposits as ratio to nominal GDP. On the other hand, economic growth was measured by real GDP. The study revealed that the banking sector in Kenya has been an important source of economic growth. The empirical results specifically revealed that liquid liabilities, credit to the private sector, central bank assets and other banks' deposits have positive and statistically significant effects on GDP. The study therefore recommended improvements to the existing policies in order to encourage the public save more money with banks so as to stimulate the deepening of the financial system.

Ghildiyal, Pokhriyal and Mohan (2015)

estimated the causal impacts of financial deepening on economic growth in the case of India using Auto regressive Distributed Lag (ARDL) Bound testing approach, a new approach as an improvement over the other traditional techniques of cointegration. Furthermore, in using the Granger Error Correction Model (ECM) technique, the study also examined the causal impact in the short run. The findings suggested that there was an equilibrium relationship in the long run between financial deepening and economic development. The results also suggested that financial deepening caused economic growth in the long run and in the short run. It was therefore concluded that government had to put more effort towards financial deepening in order to enhance the pace of economic growth. The study recommended that efforts be put to provide easy credit to private sector, stock market development and to foster foreign trade.

Agbelenko and Kibet (2015) empirically examined the relationship between financial development and economic growth in the West African Economic and Monetary Union (WAEMU) for the period 1981-2010. Using the General Moment Method (GMM), the study found a positively and statistically significant effect of financial development on economic growth and the causality was bi-directional. In addition, the variables of foreign direct investment and real exchange rate contributed positively to economic growth in the region while inflation and openness discouraged economic growth in the region. The study suggested that policy makers should pursue targets of macroeconomic policies that may attract foreign direct investments while controlling inflation and trade openness.

Chinweze (2017) investigated the impact of financial deepening in reducing poverty in Nigeria. Human Development Index was used as proxy for reducing poverty due to its multi-dimensional nature while the ratios of credit to the private sector, broad money supply and market capitalization to GDP were used to proxy financial deepening. Data sourced from Central Bank of Nigeria Statistical Bulletin (2015) and World Development Indicators published by the World Bank from 1981 to 2015 were used to analyse this relationship by adopting the multi-linear econometric model and using the Error Correction Model. Unidirectional causality running from financial deepening to poverty reduction was observed. The study concluded that financial deepening was beneficial in reducing poverty in Nigeria. The study therefore recommended policy makers to embark on policies enhancing financial inclusion and financial intervention programmes in Nigeria.

3.0 Methodology

3.1 Research Design

This study made use of ex post facto research design given the nature of the data required for the empirical analysis. Onyia (2012) observed that ex post facto design was ideal for collecting numerical quantitative data on phenomena that occurred in the past.

3.1.1 Data Collection Method and Sources

Annual time series data covering the period from 1991 to 2018 were collected for socio-economic development index and indices of financial deepening from sources such as the United Nations Development Programme (UNDP) and CBN Statistical Bulletin, various editions.

3.2 Model Specification

This study adaptedamultivariate model with some modifications based on the work of Chinweze (2017) which investigated the impact of financial deepening on reducing poverty in Nigeria using Human Development Index (HDI) as the dependent variable and broad money

supply, private sector credit and market capitalization as independent variables. However, this study made notable improvements on the model by introducing financial openness index as part of the explanatory variables. This was informed by the growth of financial integration and its role in shaping the process in stimulating economic development.

The model is specified functionally as follows:

HDI = f(MRG, CRP, FIO) (4)

Where: HDI = Human development index, proxy for socio-economic development

MRG = Broad money supply

CRP = Credit to the private sector as a ratio of GDP

FIO = Financial openness

The econometric form of the model is expressed linearly as:

$$HDIt = \pi 0 + \pi 1 MRGt + \pi 2 CRPt + \pi 3 FIOt + et \quad (5)$$

Where: HDI, MRG, CRP and FIO are the variables of interest defined earlier in equation (4).

π0 = constant parameter

π1 – π3 = Coefficients of the explanatory variables

et = Random error term

The a priori expectations that define the expected signs of the slope parameters are provided as:

π1 >0, π2 >0, andπ3 >0.

The vector auto regressive (VAR) model for testing for evidence of causal relationship between financial deepening indicators and HDI is configured as:

$$HDI_t = \sum_{i=1}^{P} \beta_{11} HDI_{t-i} + \sum_{i=0}^{P} \beta_{12} MRG_{t-i} + \sum_{i=0}^{P} \beta_{13} CRP_{t-i} + \sum_{i=0}^{P} \beta_{14} FIO_{t-i} + u_{1t} \quad (6)$$

$$MRG_t = \sum_{i=1}^{P} \beta_{21} MRG_{t-i} + \sum_{i=0}^{P} \beta_{22} HDI_{t-i} + \sum_{i=0}^{P} \beta_{23} CRP_{t-i} + \sum_{i=0}^{P} \beta_{24} FIO_{t-i} + u_{2t} \quad (7)$$

$$CRP_t = \sum_{i=1}^{P} \beta_{31} CRP_{t-i} + \sum_{i=0}^{P} \beta_{32} HDI_{t-i} + \sum_{i=0}^{P} \beta_{33} MRG_{t-i} + \sum_{i=0}^{P} \beta_{34} FIO_{t-i} + u_{3t} \quad (8)$$

$$FIO_t = \sum_{i=1}^{P} \beta_{41} FIO_{t-i} + \sum_{i=0}^{P} \beta_{42} HDI_{t-i} + \sum_{i=0}^{P} \beta_{43} MRG_{t-i} + \sum_{i=0}^{P} \beta_{44} CRP_{t-i} + u_{4t} \quad (9)$$

Where: B11 - B44 = (k x k) coefficient matrices

U1 – U4 = vector of random error terms

K = dimensional white noise process with E (Ut) = 0

P = optimal lag order

The null hypothesis of no causality is tested at 5 percent level of significance.

3.2.1 Variables Description

a. Human development index (HDI): This is a statistic composite index of life expectancy, education, and per capita income indicators, which are used to rank countries into four tiers of human development. A country scores a higher HDI when the life span is higher, the education level is higher, and the GNI (PPP) per capita is higher. It is a conglomerate of socio-economic indicators and used here as a dependent variable.

b. Broad money supply (MRG): This comprises of narrow money in addition to savings and time deposits, as well as foreign denominated deposits. In this study, the total volume of money supply in the economy as a ratio of GDP is used.

c. Credit to the private sector (CRP): This measures loans and other financial products provided to the private sector of the Nigerian economy in accordance with CBN's monetary policy measures of direct credit control. It is measured as a ratio of GDP. Increase in credit availability to the private sector is expected to boost economic development.

d. Financial openness index (FIO): This defines the index of capital account openness measured based on the IMF Annual Report on Exchange Arrangements and Exchange Restrictions. Increase in financial openness is expected to stimulate the financial deepening process and increase opportunity for economic development.

3.3 Estimation Techniques

The Fully Modified Ordinary Least Squares (FM-OLS) developed by Phillips and Hansen (1990) was used to provide optimal estimates of cointegrating regressions. The FM-OLS method is a modification of the conventional Classical Least Squares also known as Ordinary Least Squares (OLS) as it accounts for serial correlation effects and for the

endogeneity in the regressors that results from the existence of a cointegrating relationship. The asymptotic behaviour of FM-OLS can be studied in models with full rank I(1) explanatory variables, models with I(1) and I(0) explanatory variables and models with only stationary regressors, Phillips (1995). The FM-OLS is specifically applied to estimate the long coefficients of the explanatory variables. In addition to the FM-OLS, the Vector Auto regressive (VAR) Granger causality test was applied in testing for the direction of causality between the measures of financial deepening and social development indicators. Descriptive statistics was equally used to determine the average values of the variables over the sample period and the spread of the observations of each of the variables around their respective mean values. More importantly, diagnostic tests were conducted in the course of this study. Below is a review of the pre-test and post estimation diagnostic tests.

3.3.1 Pre-estimation tests

a. Unit Root Test: The Augmented Dickey-Fuller (ADF) unit root procedure developed by Dickey and Fuller (1981) was adopted in this study to know if each of the variables are stationary or not. It is helpful in identifying the order of integration for each of the underlying variables. The general specification of the ADF model is provided as follows:

$$\Delta Y_t = D_0 + D_1 t + \sum_{i=1}^{z} k_i \Delta Y_{t-i} + u_t \quad (1)$$

Where: Yt= economic variable of interest

D_0 and D1t = intercept and deterministic trend

k_i= parameter estimate of the variable of interest

z = optimal lag length

Δ= First difference operator

u_t = Stochastic term

In the model above, the null hypothesis of a unit root is tested against the alternative hypothesis of no unit root at 5 percent level of significance using t-statistic or its corresponding probability value.

b. Cointegration Test: This test was carried out to determine whether or not the underlying economic time series have long run equilibrium relationships. In this study, the multivariate cointegration test proposed by Johansen and Juselius (1990) was applied to ascertain whether or not long-run relationships exists among the underlying series. Specifically, the null hypothesis of no cointegration was tested against the alternative hypothesis of cointegration at 5 percent level. The formal configuration of Johansen-Juselius cointegration model with a focus on trace and maximum Eigenvalue statistics is provided as follows:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} In\left(1-\hat{\lambda}_i\right) \quad (2)$$

$$\lambda_{max}(r, r+1) = -T\, In\left(1-\hat{\lambda} r+1\right) \quad (3)$$

Where the denotes estimated values of the characteristic roots and T = the number of observations. The trace and maximum Eigenvalue statistics are used in testing the null hypothesis of no cointegration against the alternative hypothesis of cointegration. The existence of at least one cointegrating equation at the selected level of significance and lag order implies that the variables under investigation have long run relationship.

3.3.2 Post-estimation tests

a. T-test: The test is used to determine if each of the regression estimates (constant and slope parameters) are statistically significant or not. The computed t-value is compared with the critical t-value at 5 percent significance level. A regression coefficient parameter is considered to be statistically significant if the computed t-statistic is greater than the critical t-value at 5 percent level.

b. Coefficient of Determination (R2): This test provides information on the explanatory power of the explanatory variables. It is useful when measuring the percentage of variations in the response

variable that is attributed to the explanatory variables. More importantly, it is helpful in determining whether the entire model is significant or not. The benchmark for the coefficient of determination to be reliable is 50 percent.

c. F-test: The F-test is used to ascertain if the entire model is statistically significant. The calculated F-value is to be compared with the critical F-value at 5 percent significance level. The test can be conducted using the probability value of the empirical F-statistic and comparing it with the significance level of 5 percent (0.05). If the former is less than the later, the overall model is regarded as statistically significant.

d. Serial correlation test: The serial correlation test also known as autocorrelation was conducted to determine if the residuals are serially independent or not. Evidence of serial dependence in the residuals implies that the model is serially correlated. This study applied the correlogram test based on the Q-statistics. The null hypothesis of no serial correlation was tested against the alternative of serial correlation at 5 percent level.

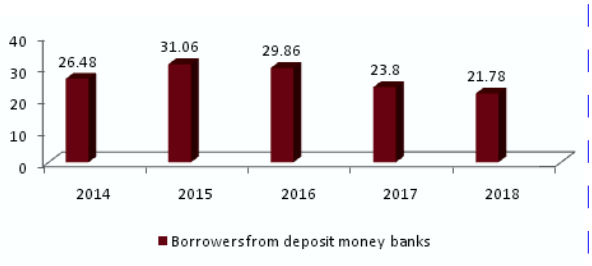
e. Heteroscedasticity test: This test is applied to know if the residuals have constant variance. Thus, the null hypothesis of homoscedasticity was tested against the alternative hypothesis of heteroscedasticity at 5 percent level.

4.0 Results and Discussion

4.1 Trend Analysis

The descriptive statistics are presented in the figures and tables below.
Although the CBN expressed its commitment in increasing access to credit through the ABP and other credit creation channels, the proportion of borrowers per 1000 adult population continued to fluctuate as reported in figure 1.

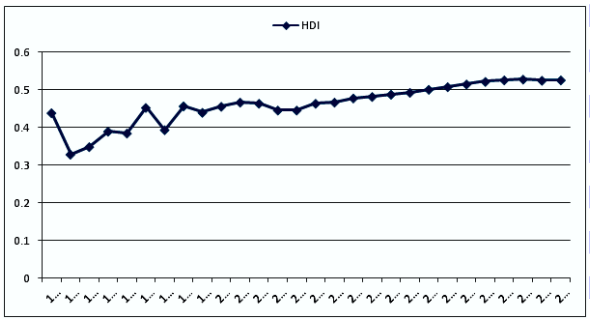
∆Figure 1: Borrowers from Deposit Money Banks per 1000 adults.



Source: Author's computation, with data from the IMF Financial Access Survey, 2019.

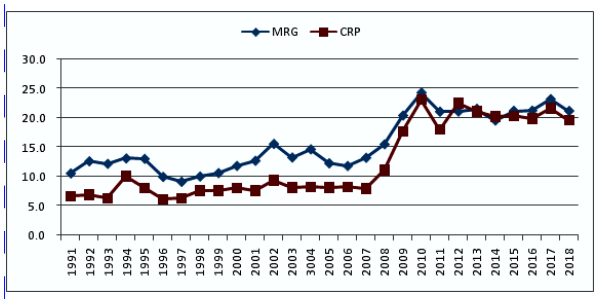
As observed from Figure 1, borrowers from Deposit Money Banks (DMBs) increased from 26.48 persons per 1000 in 2014 to an all-time high value of 31.06 persons per mille in 2015. It trended downwards from 29.86 persons per mille in 2016 to 21.78 persons per 1000 in 2018. This shows that access to funds from the financial sector by businesses and individuals had continued to reduce over time.

Figure 2: Plot of HDI



Source: E-views Results Output 2020
It was observed from the result that HDI varied between 0.328 and 0.525 during 1991 and 2018. From 1991 to 2010 it averaged 0.438. This is an indication that Nigeria's performance in terms of average life expectancy, mean years of school and standard of living was not really impressive. However, the performance improved between 2011 and 2018 because the HDI score in each of these latter years was 0.5 and above.

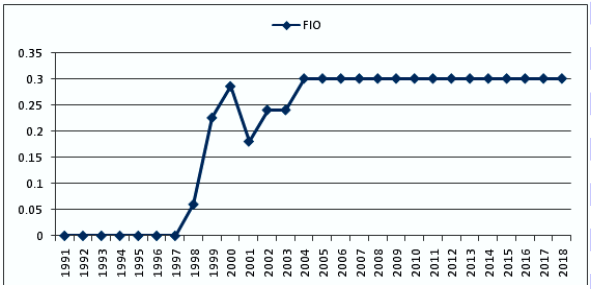
Figure 3: Plot of broad money supply and private sector credit (% of GDP)



Source: E-views Results Output, 2020

As observed from figure 3, broad money exceeded credit to the private sector over the period except in 2012 and 2014 when credit to the private sector marginally exceeded broad money supply. This is indicative that broad money supply has remained a dominant tool employed by CBN to engender financial deepening.

Figure 4: E-views Results Output, 2020



Source: Compiled by the Researcher with data computed based on Chinn & Ito

Figure 4 shows that financial openness index increased to 0.06025 in 1998. It further increased to 0.2863 in 2000 but fluctuated between 2000 and 2003. It remained stable at the value of 0.30125 for the rest of the period (2004-2018).

Table 1: Descriptive statistics for the variables

	HDI	MRG	CRP	FIO
Mean	0.461071	15.63571	12.41429	0.205504
Median	0.464500	13.30000	8.250000	0.301250
Maximum	0.527000	24.30000	23.10000	0.301250
Minimum	0.328000	9.200000	6.200000	0.000000
Std. Dev.	0.053325	4.749286	6.246523	0.131137
Jarque Bera	3.250056	2.958258	4.077515	4.814098
Probability	0.196906	0.227836	0.130190	0.090081
Observations	28	28	28	28

Computed by the researcher with data from CBN Statistical Bulletin, UNDP and Chinn & Ito

4.1.1 Unit Root Test Results

The results of the unit root test are displayed in Table 2

Table 2: ADF unit root test results

Variables in the model	T-statistic/p-value for levels test	T-statistic/p-value for first difference test	Order of integration
HDI	-1.643 (0.447)	-11.374 (0.000)	I(1)
MRG	-2.208 (0.466)	-4.696 (0.005)	I(1)
CRP	-2.138 (0.503)	-5.394 (0.001	I(1)
FIO	-1.348 (0.853)	-3.640 (0.047)	I(1)

Computed by the researcher with data from CBN Statistical Bulletin, UNDP and Chinn & Ito

4.1.2 Cointegration Test Results

The Johansen-Juselius multivariate cointegration test results are presented in Table 3.

Table 3: Cointegration test results Series: HDI MRG CRP FIO

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.731133	70.50016	47.85613	0.0001
At most 1 *	0.581493	37.66173	29.79707	0.0051
At most 2 *	0.428495	15.88517	15.49471	0.0437
At most 3	0.073113	1.898103	3.841466	0.1683
None *	0.731133	32.83844	27.58434	0.0096
At most 1 *	0.581493	21.77656	21.13162	0.0406
At most 2	0.428495	13.98706	14.26460	0.0552
At most 3	0.073113	1.898103	3.841466	0.1683

Computed by the researcher with data from CBN Statistical Bulletin, UNDP and Chinn & Ito
NB: * implies rejection of the hypothesis at the 0.05 level

4.1.3 Cointegrating Regression Model

The result of the cointegrating regression model estimated using FM-LS is reported in table 4

Dependent Variable: HDI
Method: Fully Modified Least Squares (FM-LS)
Sample (adjusted): 1991 2018

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MRG	-0.010321	0.004240	-2.434380	0.0231
CRP	0.010724	0.003101	3.458190	0.0021
FIO	0.299063	0.050587	5.911809	0.0000
C	0.427667	0.029563	14.46647	0.0000
R-squared	0.818673	Mean dependent var		0.461926
Adjusted R-squared	0.795021	S.D. dependent var		0.054145
S.E. of regression	0.024514	Sum squared resid		0.013821
Long-run variance	0.000652			

Computed by the researcher with data from CBN Statistical Bulletin, UNDP and Chinn & Ito

4.1.4 Post-estimation tests

The post estimation tests for the cointegrating regression model in table 5 are presented as follows:

Table 5: Wald test result for joint significance of the regression estimates

Test Statistic	Value	df	Probability
F-statistic	35.87348	(3, 23)	0.0000
Chi-square	107.6205	3	0.0000
Null Hypothesis: C(1)=C(2)=C(3)=0			
Null Hypothesis Summary:			
C(1)		-0.010321	0.004240
C(2)		0.010724	0.003101
C(3)		0.299063	0.050587

Computed by the researcher from the cointegrating regression model
Correlogram Test
This is a residual based (error term) test.

Table 6: Correlogram test for serial correlation

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. *| . |	. *| . |	1	-0.129	-0.129	0.5023	0.478
. | . |	. | . |	2	0.074	0.058	0.6720	0.715
. | . |	. |* . |	3	0.068	0.087	0.8248	0.844
. |**. |	. |**. |	4	0.257	0.279	3.0712	0.546
. |* . |	. |* . |	5	0.076	0.155	3.2793	0.657
. | . |	. | . |	6	0.061	0.066	3.4188	0.755
. | . |	. *| . |	7	-0.056	-0.110	3.5417	0.831
. | . |	.**| . |	8	-0.059	-0.223	3.6854	0.884
. | . |	. *| . |	9	0.025	-0.120	3.7120	0.929
. | . |	. | . |	10	0.013	-0.022	3.7204	0.959
. | . |	. | . |	11	-0.047	0.036	3.8271	0.975
. *| . |	. | . |	12	-0.107	0.003	4.4258	0.974

Computed by the researcher from the cointegrating regression model

4.1.5 Granger Causality Test Results

The results of the Granger causality test are reported in Table 7.

Table 7: Granger causality tests results

Null hypothesis tested: There is no evidence of causality in the series

Flow of causality	Chi-square (X^2) calculated	P-value	Inference
MRG→ HDI	48.622	0.000	Reject null hypothesis
HDI→ MRG	1.0314	0.960	Accept null hypothesis
CRP → HDI	39.599	0.000	Reject null hypothesis
HDI→ CRP	0.482	0.993	Accept null hypothesis
FIO→ HDI	37.441	0.011	Reject null hypothesis
HDI→FIO	29.230	0.000	Reject null hypothesis
MRG, CRP, FIO→HDI	109.802	0.000	Reject null hypothesis

Computed by the researcher with data from CBN Statistical Bulletin, UNDP and Chinn & Ito

4.2Major Findings

4.2.1 Descriptive Statistics

The descriptive statistics offered some important information on the distribution of the series over the study period. The result showed that the average score of HDI is 0.461 whereas broad money supply and credit to the private sector have mean values of 15.635 percent and 12.414 percent respectively. This finding is an indication that on the average, monetary policy stance places emphasis on increasing monetary aggregates in meeting the goal of financial deepening. The average value of financial deepening index as reported in the last column and row one is 0.2055. The standard deviation shows that the observations for each variable cluster closely around their respective mean values. This is welcoming as each of the standard deviations are less than their corresponding mean values. The Jaque-Bera statistics and their corresponding probability values provide enough evidence for accepting the null hypothesis of normal distribution in the series.

4.2.2 Pre-estimation tests

ADF unit root and Johansen-Juselius cointegration tests form the basis for the pre-estimation tests. The ADF unit root test results in table 2 shows that all the variables are not stationary at levels. Thus, the null hypothesis of unit root cannot be rejected for each of the variables. The variables were differenced once and they were all found to be stationary after first differencing. The first difference stationarity of the series is very informing and justifies the theoretical condition for using the FM-LS in accordance with the assertion of Phillips & Hansen (1990) and Phillips (1995). More importantly, the Johansen-Juselius cointegration test results revealed that at 5 percent level of significance, the trace statistic shows evidence of three cointegrating vectors while maximum Eigenvalue statistic indicates two cointegrating equations. Based on the findings, the null hypothesis of no cointegration is rejected. Hence, the long-run relationship exists among the variables in the model. Consequently, the cointegration model is estimated.

4.2.3 Cointegrating Regression Model

The cointegrating regression result in tables 3 and4 shows that broad money supply has a significant negative relationship with HDI. A 1 percent increase in broad money supply leads to 0.0103 reductions in the HDI score. This finding is contrary to the a priori expectation and suggests that increasing the monetary aggregates alone while holding other indices of financial deepening constant is not adequate to engender socio-economic development. On the other hand, private sector credits and financial openness index were found to exert significant positive impact on HDI. These findings are in conjunction with the theoretical expectation and agree with the results of Karimo and Ogbonna (2017)on the nexus of financial deepening and economic growth and Chinweze (2017) on the benefits of financial deepening. The coefficient of determination shows that the 81.86 percent variations in HDI are as a result of collective changes in all the explanatory variables. The long run variance (0.00065) is very low thereby indicating that the model is good for long term forecasting.

4.2.4 Post-estimation diagnostics test results

The Wald test result reported in table 5 shows that the slope parameters (coefficients of the regressors) are jointly significant at 5 percent level of significance. This is because the probability value (0.000) of the F-statistic (35.873) falls below 0.05. Hence, all the variables are considered as jointly important in accounting for changes in HDI. The correlogram test result shows no evidence of serial correlation at 5 percent level of significance for all the twelve (12) selected lags. This is because the associated probability values of the Q-statistics for each of the 12 lags are more than 0.05. Hence, this provides enough evidence for accepting the null hypothesis of no serial correlation in the residuals.

4.2.5 Granger Causality Test Results

The Granger Causality test results presented in table 7 indicates that uni-directional causality runs from broad money supply and credit to the private sector towards HDI. This result agrees with the findings of Chinweze (2017). The result equally shows that bi-directional causality exists between financial openness and HDI. It was further observed that joint causality runs from all the regressors to HDI. This finding implies that the explanatory variables collectively have the power of predicting changes in HDI.

5.0 Conclusion and Recommendations

5.1 Conclusion

Financial deepening has continued to gain popularity in economics literature following the growing interconnectivity between the financial and real sector. Thus, this study examines the role of financial integration in socio-economic development using FM-LS and Granger Causality tests as data analysis methods. The result of the FM-LS shows that broad money supply has significant negative relationship with HDI. The result further reveals that private sector credits and financial openness index are positively linked to the HDI. The causality test results show that unidirectional causality runs from broad money supply and credit to the private sector towards HDI while bi-directional causality flows between financial openness and HDI. Overall, joint causality runs from all the explanatory variables to HDI. This agrees to a large extent with previous research studies such as; Ogbuagu and Ewubare (2014), Tuaneh et al (2016), Chinweze (2017) and Karimoet al. (2017). Hence, it is concluded that financial deepening is an important source of socio-economic development in Nigeria.

5.2 Recommendations

a. The CBN as the principal regulator of the Nigerian financial system should allow cross-border mobility of capital in order to provide opportunity for free flow of financial products and services and facilitate the process of socio-economic development.

b. Policy makers should ensure that the private sector is allowed greater as well as sustainable access to financial services at affordable costs to boost their productivity and contributions to socio-economic development. This can be seen in the collaborative strategic response by the financial services industry to realize huge reductions on annual costs where the CBN, in conjunction with the Bankers' Committee initiated an industry Shared Services Programme to identify cost drivers in the industry and the opportunities for collaboration with the possibility of achieving 30% cost reduction with the attendant positive impact on lending rates and bank charges.

c. The CBN and Deposit Money Banks (DMBs) should ensure that expansion of monetary aggregates through increased broad money supply is targeted at making more opportunities available for broad-based growth and sustainable development.

d. The key players in the banking sub-sector should ensure that more innovative approaches such as agent banking and mobile banking are prioritized in the financial inclusion process in order to broaden access to financial services for businesses and individuals in underserved rural areas.

References

Agbelenko, F. A., &Kibet, K. S. (2015). Financial development and economic growth in West African Economic and Monetary Union (WAEMU). *African Journal of Business Management*, *9*(17), 624-632.

Agbetsiafa, D. K. (2003). The finance growth nexus: evidence from sub-Saharan Africa. *International Advances in Economic Research*, *9*(2), 172-172.

Aye, G. C. (2015). Causality between financialdeepening and economic growth inNigeria: Evidence from a bootstrap rollingwindow approach. Journal of Economics, Business and Management. 3(8):795-801.

Bakang, M. L. N. (2016). Effects of financial deepening on economic growth in Kenya. Int Journal of Business and Commerce, 4(7), 150.

Central Bank of Nigeria (2017). Financial Inclusion Newsletter, February 2017, 2(1).

Central Bank of Nigeria (2018). *Annual statistical bulletin.*

Central Bank of Nigeria (2019). *Annual statistical bulletin*.

Chinweze, R. M. (2017). Poverty reduction in Nigeria: Is financial deepening beneficial? *Journal of Economics and Sustainable Development, 8(24),97-108.*

Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica: Journal of the Econometric Society*, 1057-1072.

Fritz, J. M. (2010). Socioeconomic developmental social work. *Peace Studies, Public Policy And Global Security–Volume VII*, 362.

Ghildiyal, V., Pokhriyal, A. K., & Mohan, A. (2015). Impact of financial deepening on economic growth in indian perspective: ARDL bound testing approach to cointegration. *Asian Development Policy Review*, *3*(3), 49-60.

Gurley, J. G., & Shaw, E. S. (1955). Financial aspects of economic development. *The American Economic Review*, *45*(4), 515-538.

International Labour Organization (2018). Nigeria - Labour force participation rate. Available on: https://www.indexmundi.com/facts/nigeria/labor-force-participation-rate.

Johansen, S., &Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, *52*(2), 169-210.

Karimo, T., & Ogbonna, O. (2017). Financial deepening and economic growth nexus in Nigeria: Supply-leading or demand-following?.Economies, 5(1), 4.

Mbutor, O. M. &Uba, I. A. (2016). Macroeconomic stability and the role of financial institutions in promoting financial inclusion in Nigeria. *CBN publication*, 40(2),31-42.

McKinnon, R. (1973). *Money and capital in economic development*. Washington, DC: Brookings Institution

Ndekwu E.G. (1998). The financial systems role in resource mobilization and investment: An analysis of financial deepening in Nigeria's financial sector", (NISER). Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 4(1),18

Nnanna, O. J. and Dogo, M. (1998), Structural reform, monetary policy and financial deepening: The Nigerian experience. *Economic and Financial Review*, 36 (2)1-29.

Nwanna, I. O.&Chinwudu, C, F. (2016). The effect of financial deepening on economic growth in Nigeria (1985 -2014). *IOSR Journal of Economics and Finance (IOSR-JEF)7(4)11-28.*

Ogbuagu, A.R.&Ewubare, D. B. (2014). Financial deepening and inflation in Nigeria, "An open economy model approach." *Journal of Economic and Sustainable Development*; 5 (25)

Ohwofasa, B. O., &Aiyedogbon, J. O. (2013). Financial deepening and economic growth in Nigeria, 1986-2011: An empirical investigation. *Journal of Economics and*

development studies, *1*(1), 24-42.
Onyia, M. (2012). Instructional materials and design: issues and challenges. *International Journal of Social Sciences and Education, 2(4), 339-344.*
Phillips, P. C. (1995). Fully modified least squares and vector autoregression. *Econometrica-Evanston Ill-*, *63*, 1023-1023.
Phillips, P. C., & Hansen, B. E. (1990). Statistical inference in instrumental variables regression with I (1) processes. *The Review of Economic Studies*, *57*(1), 99-125.
Robinson, J.C. (1952). *The generalisation of the general theory in the rate of interest and other essays.* London: Macmillan Press.
Tuaneh, G. L. &Ewubare, D. B. (2016). Financial deepening: Implications on agricultural performance (1981-2014*). International Journal of Applied Research and Technology. 5(2): 38 – 46.*
World Bank (2015). The foundations of financial inclusion: Understanding ownership and use of formal accounts. *Policy Research Working Paper 6290.*
World Bank (2015).The global financial development report 2014: Financial inclusion

APPENDIX

Secondary Time Series Data: HDI, broad money supply as a ratio of GDP, credit to the private sector as ratio of GDP and financial openness index, 1991-2018

YEAR	HDI (index)	MRG (% of GDP)	CRP (% of GDP)	FIO (index)
1991	0.438	10.6	6.7	0
1992	0.328	12.7	6.9	0
1993	0.348	12.2	6.4	0
1994	0.389	13.1	10.1	0
1995	0.384	13.1	8.1	0
1996	0.452	10.0	6.2	0
1997	0.393	9.2	6.3	0
1998	0.456	10.1	7.7	0.06025
1999	0.439	10.6	7.7	0.226059
2000	0.455	11.9	8.1	0.286309
2001	0.466	12.7	7.7	0.18075
2002	0.463	15.6	9.4	0.241
2003	0.445	13.3	8.2	0.241
2004	0.445	14.7	8.2	0.30125
2005	0.463	12.3	8.2	0.30125
2006	0.466	11.8	8.3	0.30125
2007	0.477	13.3	8.0	0.30125
2008	0.481	15.5	11.2	0.30125
2009	0.487	20.5	17.7	0.30125
2010	0.492	24.3	23.1	0.30125
2011	0.5	21.1	18.0	0.30125
2012	0.507	21.1	22.5	0.30125
2013	0.514	21.6	21.1	0.30125
2014	0.521	19.6	20.2	0.30125
2015	0.525	21.2	20.4	0.30125
2016	0.527	21.3	19.9	0.30125
2017	0.524	23.2	21.7	0.30125
2018	0.525	21.2	19.6	0.30125

Source: CBN Statistical Bulletin (2018 & 2019) , UNDP (2018)