Impact of Financial inclusion and Poverty Reduction on Economic Growth in Nigeria: A Structural VAR Approach

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Abstract

Financial inclusion is the process that ensures access, usage and availability of the formal financial system to all members in an economy. It is important to have an all-inclusive financial system to facilitate the allocation of resources, which reduces the cost of capital. The study examined the impact of financial inclusion and poverty reduction on economic growth in Nigeria from 1981 to 2020. The unit root test indicated that real gross domestic product, commercial bank branch, money supply and poverty rate are stationery at first difference.The SVAR result shows that money supply has a positive shock impact on real gross domestic product in Nigeria. Commercial bank branch has a positive shock impact on real gross domestic product in Nigeria. Poverty rate has a negative impact on real gross domestic product in Nigeria. The study recommends that Government should increase its effort for pursuing financial inclusion as it is not only helping to have economic growth as espoused in literature, but also effectuates stabilization policy (monetary policy) in Nigeria.

Key words: Financial inclusion, Poverty, Economic growth
JEL CODE: *G18 I30 O40*

1. Introduction

Financial inclusion has assumed a greater level of importance among policy makers and researchers across the globe. This is as a result of its efficient role as a driver of economy, and also, the promise it holds as a tool for economic development, particularly in the area of wealth creation, employment generation, poverty reduction, improving welfare and general standard of living (Charles-Anyaogu, 2020).Financial inclusion is the process that ensures access, usage and availability of the formal financial system to all members in an economy. It is important to have an all-inclusive financial system to facilitate the allocation of resources, which reduces the cost of capital. Also, easy access to financial services can help to improve daily transactions and reduce the use of often exploitative informal credits.Financial inclusion has positive impacts on individuals level of income and thereby, economy as whole. Enhancing financial inclusion modernizes the agriculture, promotes innovation, surges entrepreneurship and increases growth (Kelkar, 2010).

For low income group, access to credit creates entrepreneurship as well as investment opportunities, output increases and hence growth increases (Islam & Mamun, 2011). Financial inclusion is an enabler and accelerator of economic growth, job creation and development.

Affordable access to and use of financial services helps families and small business owners generate income, manage irregular cash flow, invest in opportunities, strengthen resilience to downturns, and work their way out of poverty.Financial inclusion is a state in which all people have easy access to appropriate, desired financial products and services in order to manage their money effectively.Poverty is one of the most persistent problems faced by countries the world over; and although several attempts have been made to reduce the problem, it is still as present as ever. Both developing and developed countries are still trying to tackle the issue, and the economy feels its effects as it hurts the productive capacity. The development of the financial sector has been identified as an effective instrument in the reduction of poverty. Many theories and empirical evidences have backed up the claim that the development of the financial sector has a direct impact on poverty which in turn increases the access of financial services to the poor. This increased access has a positive impact on economic growth, leading to poverty reduction.

In 2015, the leaders of 193 countries pledged to reduce inequality through millennium Development Goals (SDGs) under Goal 10. Without curbing inequality, meeting SDG goal 1, which is to eliminate poverty, will be impossible. Hence advancing the access of financial services to the poor and underprivileged groups is now a global priority. This is because the fruits of economic growth are expected to be enjoyed by the entire population. As such, governments have put in several policies and programs that are expected to reach a large proportion of the populace. Financial inclusion is one of such policies that have been recognized to target most of the population(Zhang, Wang & Wang, 2009).

Given this introduction and background, the paper is structured into five sections. Section one introduced the paper, section two is the literature review, section three is the methodology, section four is the results and discussions and finally section five which presents conclusion and recommendations.

2 Theoretical frameworks

The earlier theories of economic development/growth recognized labour, capital, institutions, etc., as the factors for economic growth, while the importance of finance for economic growth has been frequently ignored by earlier economists due to existence of Modgillani–Miller theorem and efficient market hypothesis. Both the theories assumed that the market is perfect and there are no frictions, that is, the capital market is perfect. The assumption that firms and individual investors can borrow and lend at the same rate is not applicable in real world. However, the early theories of economic development also believed in the need for a developed and extensive financial system that could tap savings and thereby channelize the funds for generating a wide spectrum of business activities. But modern theories of development strongly advocate that financial development is a must because it creates enabling conditions for economic growth through either a 'supply-leading' (financial development spurs growth) or a 'demand-following' (growth generates demand for financial products) channel (Mohan, 2006). Further, modern

development theories also show that the lack of access to finance is a significant factor responsible for persistent income inequality as well as slower rate of economic growth. Moreover, a large body of empirical literature on finance suggests that developing the financial sector and improving access to finance may accelerate economic growth along with a reduction in income inequality and poverty (Kakwani & Pernia, 2000).

In an underdeveloped financial system, where availability of funds is less and that too at higher costs, fewer would be the economic activities that can be financed and hence, lower the resulting economic growth. The developed financial systems also encounter difficulties in serving low-income groups for financing their consumption and other needs. The poor people are generally excluded by formal financial institutions due to lack of required securities needed for the purpose (World Bank, 2002). Therefore, as mentioned earlier, they have to resort to high-cost informal sources such as moneylenders, thereby leading to the benefits of growth getting concentrate in the hands of those already served by the formal financial system (RBI, 2008).

So, without an inclusive financial system, poor individuals and small enterprises have to trust on their own limited savings and earnings to invest in education and entrepreneurship to take advantage of growth opportunities (World Bank, 2008). Therefore, access to safe, easy and affordable credit and other financial services by the poor and vulnerable groups, especially in disadvantaged areas and lagging sectors, is recognized as a prerequisite for accelerating economic growth and reducing income disparities and poverty (Kakwani and Pernia, 2000).

For financial inclusion, a well-settled and evenly distributed banking sector is needed because only formal agencies of credit are able to meet the need of demand of credit for households at an adequate level, in a timely manner and at low cost (Chhikara and Kodan, 2011). Further, a well-functioning financial system does create equal opportunities; allows economically and socially excluded people to integrate better into the economy, actively contribute to development and protect themselves against economic shocks (World Bank, 2008a; RBI, 2008); and also, helps in equal distribution of benefits of economic growth. The strong linkage (between rural and aggregate national-level financial market) reduces seasonal, sectoral and regional fluctuations in the potential demand and supply of credit for rural populations so as to help them participate in investments outside the rural sector (Moll, 1989). Access to rural credit may also stimulate new investments and induce new technologies.

2.1 Empirical Literatures
Joseph (2020) investigates the effect of financial inclusion on inclusive growth in Nigeria covering the periods of 1981 to 2017. The study employed the following variables: rural loan, number of bank branches, money supply-GDP ratio, private sector credit to GDP ratio and GDP per capita and adopted Auto-Regressive Distributed Lag (ARDL) model. The study found that financial inclusion, in the form of rural loan, number of bank branches and level of liquidity have a positive and significant effect on inclusive growth in the short and long run, while interest rate impede inclusive growth. The study recommends more and improved financial services are made available to rural dwellers and the economy in general to help them participate and contribute more to national productivity.Usman and Adigun (2019) examine the

relationship between financial inclusion and money supply in Nigeria from 1981 to 2016. Total loans of rural banks, total deposit of rural banks, the number of Automated Teller Machines (ATM) per 100,000 adults and total number of commercial bank branches are the variables included in the model. The study employed Multiple Regression and Error Correction Model and the result revealed important positive relationships between currency supply and total loan of rural banks (t=4.651, p=0.001),total credit to individuals(t=4.427, p=0.0001), number of bank branches (t=1.734, p=0.094) and the number of ATMs per 100,000 adults(t=3.605, p=0.0012). suggested that Central Bank of Nigeria (CBN) should implement financial policies that will generate a positive investment climate through market based interest rate that will inspire investments and absolutely impact money supply and hence lead to rise in the financial inclusion level.

Dandibi, Wurim, and Umaru, (2019) examine the impact of financial inclusion and financial literacy on the performance of agro-based SMEs in Yobe State, Nigeria using cross sectional data and administering 315 questionnaire. The study used financial literacy, availability, accessibility, affordability and usability and employed Ordinary least square model (OLS). The result revealed that availability, accessibility, affordability and usability of financial services all have significant effect on the performance of agro-based SMEs in Yobe State. Also, financial literacy fully mediated the relationship between the availability of financial services and the performance of agro-based SMEs in Yobe State while partially mediating the relationship between accessibility and affordability of financial services and performance. Anthony-Orji, Orji, Ogbuabor, and Onoh, (2019) investigates the impact of monetary policy shocks on financial inclusion in Nigeria using the Vector Autoregressive Model (VAR). Financial inclusion, interest rate, money supply, and deposit rates of bank deposit are the variables in the model. Findings of the study reveal that shocks to minimum rediscount rate, interest rate, broad money supply and deposit rates of deposit banks all have significant impact.Brownbridge, Bwire, Rubatsimbira and Grace (2017) assess the strength of the impulse response of inflation to the monetary policy variable using consumer price index (CPI), nominal exchange rate, nominal gross domestic product (GDP) and the policy interest rate as variables in the analysis. The study employed panel vector error correction (PVEC) methodology and panel vector auto-regressions (PVARs). The results suggest that economies with higher levels of financial inclusion exhibit stronger impulse responses, although this does not necessarily imply that higher levels of financial inclusion are the cause of stronger monetary transmission mechanisms as the degree of financial inclusion may be correlated with other aspects of development which also affect the monetary transmission mechanism.Abdullahi and Fakunmoju (2017) examines the effect of financial inclusion on SMEs contribution to sustainable economic growth between 1970 and 2015 in Nigeria using time series data and used the following variables in the model. The study employed Ordinary least square model (OLS) and revealed that financial inclusions have positive effect but do not significantly affect sustainable economic growth at 5%. It was recommended that sustainable growth and development can be achieved in Nigeria if SMEs operators have access to loans facilities.Gretta (2017), in his work on Financial Inclusion and Growth studied the impact of financial inclusion on the growth of the economies in developing countries such as the Middle East and North Africa (MENA) and the BRICS region and tried to identify the various channels of transmission between financial literacy, financial intermediaries and growth. The study applied a VAR regression in order to quantify the relationship between financial inclusion in terms of financial activities, financial

literacy and growth and to study its impact on the economic growth in the MENA region. His findings showed the importance of financial inclusion in the MENA and BRICS region.Similarly, Okoye, Adetiloye, Erin and Modebe (2017), in their study; financial inclusion as a strategy for enhanced economic growth and development investigated the outcome of financial inclusion on economic growth and development in Nigeria over the period 1986 to 2015 using the Ordinary Least Squares technique. They measured financial inclusion in the study using loan to deposit ratio, financial deepening indicators, loan to rural areas, and branch network. Measures of financial deepening adopted in the study are ratios of private sector credit to GDP and broad money supply to GDP. Economic growth was proxies by the researchers as growth in GDP over successive periods while per capita income was adopted as a measure of poverty, hence an index of development. The study showed that credit delivery to the private sector has not significantly supported economic growth in Nigeria and that financial inclusion has promoted poverty alleviation in Nigeria through rural credit delivery. The study recommended that the monetary authorities should deepen financial inclusion efforts through enhanced credit delivery to the private sector as well as strengthen the regulatory framework in order to ensure efficient and effective resource allocation and utilization. Onaolapo (2015), in his study examined the effects of financial inclusion on the economic growth of Nigeria (1982-2012).According to the researcher, data for the study were collected from secondary sources like Statistical Bulletins of the Central Bank of Nigeria (C.B.N.), Federal Office Of Statistics (F.O.S.) and World Bank. Primary data used for the study consisted of some bank parameters as Branch Network, Loan to Rural Area, Demand Deposit, Liquidity Ratio, Capital adequacy, and Gross Domestic Product. Ordinary least square was employed in analysing the data. The overall results of the regression analysis show that inclusive Bank financial activities greatly influenced poverty reduction($R2=0.74$) but marginally determined national economic growth and financial Intermediation through enhanced Bank Branch Networks, Loan To Rural Areas, and Loan To Small Scale Enterprise given about 50% relatedness between variables on either sides of the equations.

3 Model Specification
The model of the study is specified as
$$RGDP = F(MS, CBB, PR) \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.1)$$
Where:
RGDP = Real Gross Domestic Product
FD1 = Financial Deepening Index expressed as Broad Money Supply to GDP
CBB = Commercial Bank branches
PR = Poverty rate

3.2 Measurement, Sources and Description of Variables

Variables	Brief Description of Variable	Sources of Data	Period	Apriori Expectation
RGDP	Real Gross Domestic product. Measured at local currency unit(LCU)	World Development Indicators	1981-2020	+
CBB	Number of commercial Bank Branches	CBN Statistical Bulletin	1981-2020	+
PR	Poverty rate measured as international measuring standards like the $1 and $2 per day	World Development Indicators	1981-2020	-
FDI	Financial Deepening Index expressed as Broad Money Supply to percentage to GDP	World Development Indicators	1981-2020	+

3.3 Structural Vector Auto Regressive (SVAR) Model

For the purpose of achieving the objectives of this research work, the study employed structural VAR which would determine the effects of financial inclusion and poverty reduction on economic growth in Nigeria. The goal of VAR analysis is to determine the interrelationship among the variables not to determine the parameters estimates (Enders, 20015).VAR is a system of equations which expresses each variable in the system to be a function of its own lags and lags of the remaining variables in the system. Thus, it treats all variables to be potentially endogenous. VAR is an econometrics tool that shows the dynamic interrelationship between stationary variables. VAR is a model which consists only of endogenous variables and allows for the variables to depend not only on its own lags (Enders, 2015).

$$Y_t = b_{10} - b_{12}Z_t + \gamma_{11}y_{t-1}\gamma_{12}Z_{t-1}\varepsilon_{yt} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(3.2)}$$

$$Z_t = b_{20} - b_{21}y_t + \gamma_{21}y_{t-1} + \gamma_{22}z_{t-1} + \varepsilon_{Zt}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(3.3)}$$

From equations (3.2) and (3.3), y_t and z_t are endogenous variables, b_{12} and b_{21} captures the contemporaneous effect of z_t on y_t and y_t on z_t respectively. The coefficients γ_i captures the lagged relationship between the variables, while ε_{yt} and ε_{zt} are structural errors.

Where the C_1 is the impulse responses of y_{t-1} to a unit shock in ε_t.

$$MS_t = \alpha_{10} - \alpha_{20}CBB_t - \alpha_{30}PR_t - \alpha_{40}RGDP_t + \sum_{t-1}^p \beta_{10}^t MS_{t-1} + \beta_{10}^t CBB_{t-1} + \beta_{12}^t PR_{t-1} + \beta_{133}^t RGDP + \mu_t^{MS}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(3.4)}$$

$$CBB_t = \alpha_{20} - \alpha_{30}MS_t - \alpha_{40}PR_t - \alpha_{50}RGDP_t + \sum_{t-1}^p \beta_{20}^t CBB_{t-1} + \beta_{30}^t MS_{t-1} + \beta_{40}^t PR_{t-1} + \beta_{50}^t RGDP_{t-1}\mu_t^{CB}\quad\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{(3.5)}$$

$$PR_t = \alpha_{30} - \alpha_{40} MS_t - \alpha_{40} CBB_t - \alpha_{50} RGDP_t + \sum_{t-1}^{p} \beta_{30}^t PR_{t-1} + \beta_{40}^t MS_{t-1} + \beta_{50}^t CBB_{t-1} +$$
$$+ \beta_{50}^t RGDP_{t-1} \mu_t^{PR} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.6)$$

$$RGDP_t = \alpha_{40} - \alpha_{50} MS_t - \alpha_{60} CBB_t - \alpha_{70} PR_t + \sum_{t-1}^{p} \beta_{40}^t RGDP_{t-1} + \beta_{50}^t MS_{t-1} + \beta_{60}^t CBB_{t-1} +$$
$$\beta_{70}^t PR_{t-1} \mu_t^{GDP} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.\dots\dots(3.7)$$

3.4 Identification of Restrictions

In analyzing the dynamic effects of a VAR model, identification of restrictions is a necessary steps in order to ensure that impulse response functions provide proper structural interpretations. This is achieved by imposing appropriate contemporaneous restrictions on parameters of the model which conventionally drives from economic theory and apriori expectation. This allows for the recovery of the structural shocks from the reduced form VAR model.

The structural shocks: $e^{FD1} e^{CBB} e^{PR} e^{RGDP}$ are orthogonal. This assumption implies that the variance-covariance matrix which is derived using orthogonality restrictions and normalization of errors. Financial deepening is affected by the change in commercial bank branch and poverty rate but is not affected by the change real gross domestic product. Therefore, $A_{14} = 0$.

Commercial bank branch is assumed is affected by changes in poverty rate but is not affected by the change in financial deepening and real gross domestic product therefore A_2 and $A_{24} = 0$.

Poverty rate is affected by the changes in financial deepening and commercial bank branch. Therefore, $A_{34} = 0$.

Real gross domestic products affected by the changes in financial deepening, commercial bank branch and poverty rate.

The rationale behind identification scheme is to develop SVAR models for financial inclusion, and poverty rate on economic growth in Nigeria that embody sensible economic interpretations and generate from impulse responses and variance decomposition. However, the study is able to impose 6 restrictions on the matrix for SVAR model.

$$\begin{bmatrix} FD1 \\ CBB \\ PR \\ RGDP \end{bmatrix} = \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{bmatrix} \begin{bmatrix} 1 & A_{12} & A_{13} & A_{14} \\ A_{21} & 1 & A_{23} & A_{24} \\ A_{31} & A_{32} & 1 & A_{34} \\ A_{41} & A_{42} & A_{43} & 1 \end{bmatrix} \begin{bmatrix} FD1_{t-1} \\ CBB_{t-1} \\ PR_{t-1} \\ RGDP_{t-1} \end{bmatrix} + \begin{bmatrix} 1 & \alpha_{12} & a_{13} & 0 \\ 0 & 1 & \alpha_{23} & 0 \\ \alpha_{31} & a_{32} & 1 & 0 \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & 1 \end{bmatrix} \begin{bmatrix} U_t^{FD1} \\ U_t^{CBB} \\ U_t^{PR} \\ U_t^{RGDP} \end{bmatrix}$$

Where

$$A = \begin{bmatrix} 1 & A_{12} & A_{13} & A_{14} \\ A_{21} & 1 & A_{23} & A_{24} \\ A_{31} & A_{32} & 1 & A_{34} \\ A_{41} & A_{42} & A_{43} & 1 \end{bmatrix}, C = \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{bmatrix}, Z = \begin{bmatrix} FD1 \\ CBB \\ PR \\ RGDP \end{bmatrix}, Z_{t-1} \begin{bmatrix} FD1_{t-1} \\ CBB_{t-1} \\ PR_{t-1} \\ RGDP_{t-1} \end{bmatrix}, U_t = \begin{bmatrix} U_t^{FD1} \\ U_t^{CBB} \\ U_t^{PR} \\ U_t^{RGDP} \end{bmatrix}$$

$$and\ a = \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix} such\ that\ U_t \sim iid\ (0, \alpha^2)$$

z_t is a 4×1 vector of dependent variables; Z_t is a 4×1 vector of lagged variables; A is a 4×4 matrix of the parameters to be estimated and identified with 1 as a diagonal elements, C is a 4×1 vector of constants, a is a 4×4 matrix of the coefficients of lagged variables and μ_t is a 4×1 vector of the structural/ orthogonal zed errors which are assumed to be serially uncorrelated with a mean of zero and a constant variance.

4. Results and Discussion

This section presents and discusses the results revealed from the study. This includes; descriptive statistics, unit root tests, SVAR stability test, impulse response function, variance decomposition and diagnostics test.

4.1 Descriptive statistics

Table 4.1 Descriptive statistics

Statistics	LRGDP	LCBB	LMS	PR
Mean	5.622215	3.331655	1.187891	23.93500
Median	5.535047	3.237292	1.129151	23.60000
Maximum	5.999595	3.764101	1.437414	32.90000
Minimum	5.263785	2.793790	0.957288	12.10000
Std. Dev.	0.255950	0.311647	0.149989	5.554603
Skewness	0.147048	-0.077643	0.370895	-0.432554
Kurtosis	1.468914	1.600352	1.592157	2.935100
Jarque-Bera	4.051195	3.305212	4.220455	1.254372
Probability	0.131915	0.191550	0.121210	0.534093
Sum	224.8886	133.2662	47.51564	957.4000
Sum Sq. Dev.	2.554904	3.787825	0.877373	1203.291
Observations	40	40	40	40

Source: Researcher computation using E-views 10.

Table 4.1 shows the result of descriptive statistics of the study, it indicates that the standard deviations of the variables employed are not far away from their means except poverty rate (5.554603). The Skewness of the distribution in the table shows that real gross domestic product, and money supply are positively skewed and less than one while commercial bank branch and poverty rate are negatively skewed and also less than one, this means that all the variables employed are normally distributed. The Kurtosis in the table shows that all the variables employed are normally distributed because their values are less than 3. The Jarque-Bera test for normality, it necessitate the rejection of the null hypothesis and conclude that all the variables employed are normally distributed as their p-values are greater than 5%.

4.2 Unit Root Test

The study estimated unit root test of both Augment Dickey Fuller and Phillips Perron in order to identify the order of integration of the variables under study.

Augment Dickey Fuller and Phillips Perron unit root test

Table 4.2 Augment Dickey Fuller and Phillips Perron unit root test

|	Test at level		Test at first difference		Order of Integration
Variables	ADF test	PP test	ADF test	PP test	
LRGDP	-0.761801	-0.434123	-4.036978	-3.975280	I(1)
LCBB	-1.345945	-1.354757	-6.613456	-6.615706	I(1)
MS	-1.558242	-0.816385	-4.530998	-4.875958	I(1)
PR	-0.762689	-0.153510	-3.073519**	-3.058159**	I(1)

Source: Researcher computation using E-views 10.
*Asterics **indicates stationary 5% level of significance.*

Table 4.2 presents the result of Augment Dickey Fuller and Phillips Perron unit root test, it clearly shows that real gross domestic product, commercial bank branch, money supply and poverty rate are stationery at first difference e.i. are (I) process in both ADF and PP tests.

4.3 SVAR Stability Test

The SVAR stability test was employed to check whether all the Eigen values are less than one or all the moduli are lies inside the unit circle. The figure 4.1 shows that all the moduli lies inside the unit circle. This indicates that SVAR model is stable, it implies that the impact of the shocks are finite and calculable. Hence, the SVAR satisfies its condition.
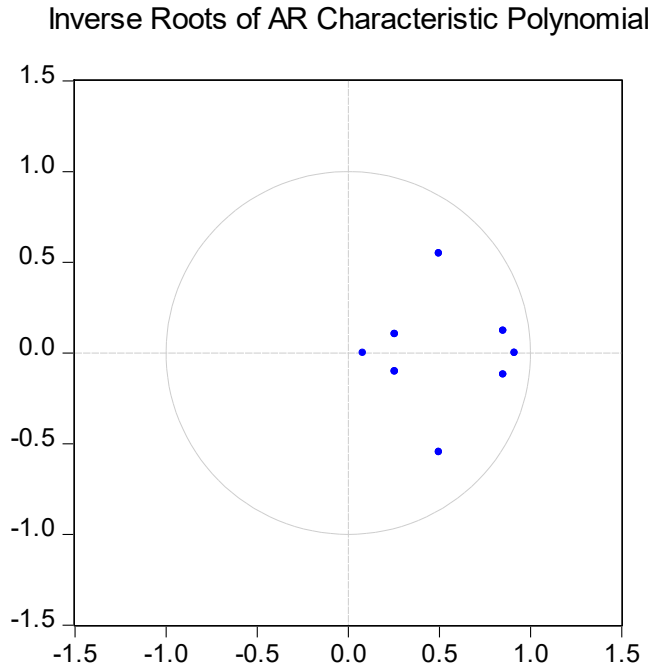
Figure 4.1 SVAR Stability Test
Source: Researcher computation using E-views 10.

A VAR model is said to be stable if all its moduli i.e. characteristics polynomial are less than unity and also if they lie within a unit circle.

4.5 Impulse Response Functions (IRF)

Impulse Response Functions (IRFs) are one of the useful tools of the unrestricted VAR approach for examining the interaction between the variables in this study. They reflect how individual variables respond to shocks from other variables in the system. When graphically presented, the IFRs give a visual representation of the behavior of variables in response to shocks. The results can be presented in the figure 4.2 below:
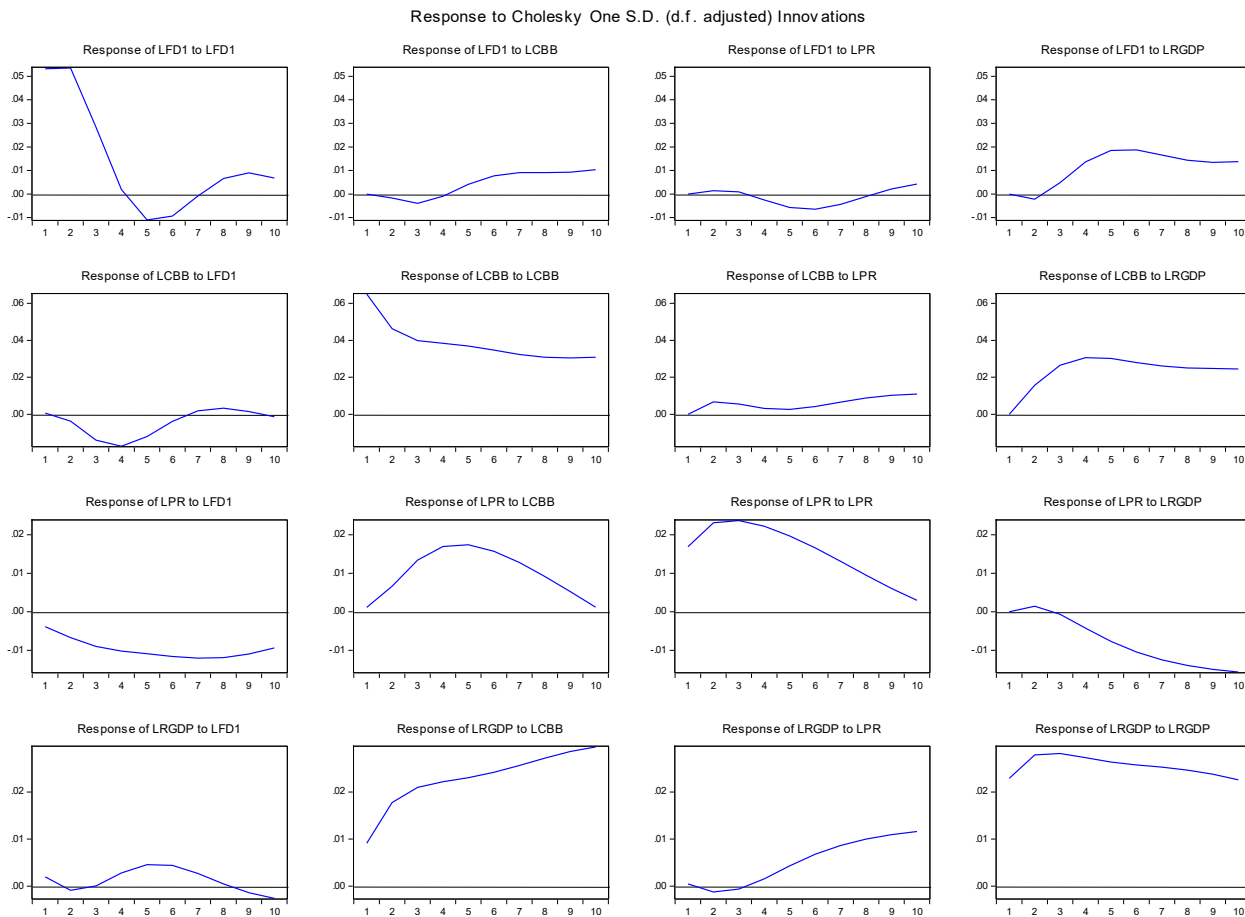
Figure 4.2 Generalized Impulse Response

Source: Researcher computation using E-views 10.

Dynamic movements of each to one standard error shock to each other variables, particularly to the real gross domestic products (GDP) are analyzed by using orthogonalised impulse response functions (IFRs). Presented in graphs above. There are four shocks namely; financial deepening to proxied to money supply (shock 1), commercial bank branch (shock 2), poverty rate (shock 3) and real gross domestic product shock (shock 4). Each shock occurs over a 10 period time.

According to the impulse response functions (IFRs) figure 4.2, one unit response of money supply shock to its own was positive in period one to four, negative in period five to seven and die positively. The response of money supply to commercial bank branch is negative in period 1 to 4 and quickly changes to positive up to period 10. The shock effect of money supply to poverty rate positive in period 1 to 3, negative in period 4 to 8 and die positively. The one unit standard deviation shock of money supply to real gross domestic product is negative in period 1 to 2 and quickly change to positive up to period 10, by implication real GDP is increasing with the increase in money supply in Nigeria all things being equal.

The response of commercial bank branch to money supply is negative in period 1 to 6, positive in period 7 to 9 and dies negatively. The response of commercial bank branch to poverty rate is positive throughout the horizon period. The shock effect of commercial bank branch to real gross domestic product is positive throughout the horizon period, this means that the shock emanates from commercial bank branch to real gross domestic product is positive.

The response of poverty rate to money supply is negative throughout the periods. The shock effect of poverty rate to commercial bank branch is positive throughout the horizon period. The one unit standard deviation shock of poverty rate to real gross domestic product is positive in period 1 to 2 and quickly change to negative up to period 10, this means that an increase in poverty rate will bring about a decrease in real gross domestic product.

The response of real GDP to money supply is negative in period 2 to 3, positive in period 4 to 8 and dies negatively. The innovation of real GDP to commercial bank branch is positive throughout the horizon period. The response of real GDP to poverty rate is negative in period 1 to 3 and dies positively.

4.6 Variance Decomposition

Forecast error variance decompositions are presented in table, (see appendix). Which help to identify the main channels of effects for the individual variables. The numbers under each variable represent the percentage of variance of the variable analyzed that was attributable to particular variable over 10 years periods. It tells us the proportion of movement in a sequence that occurs due to its own shocks versus shocks to other variables in the model. In other words, it shows the apportionment of forecasting errors of a variable to itself and other variables in the system.

The variance of money supply to itself is always caused by 100 percent in the first year. The fluctuation in money supply in both the short-run and long-run are explained by its own shock, approximately 99.26 percent in the 3 period and only to fall to about 74.65 percent in period 10.

The shock attributable to commercial bank branch is very minimal, able to explain 4 percent of commercial bank branch variability in the long-run. Also in the long-run poverty rate is explain by about 1 percent and GDP 19 percent as a result of fluctuations in the money supply.

Trade openness in the short run explained itself by 99 percent, in 3 periods was 86 percent it continues to fall in long run to 68 percent in the 10 periods. The shock attributable to real GDP in the long run is 26 percent. Poverty rate in the short run explained itself by 94 percent but it continues to fall in the long run to 45 percent. The shock of poverty rate to money supply, commercial bank branch and real GDP in the long run was 16, 21 and 16 percent variability of poverty rate respectively. Real GDP explained itself in the short run and long run by 71 and 51 percent, In the long run, shocks attributed to money supply, commercial bank branch and poverty rate are 0.54 percent, 43 percent and 3 percent.

4.7 Diagnostic Test

The diagnostic test is conducted to check the consistency and reliability of the estimated coefficients included in the model. Test such as Serial Correlation, Heteroscedasticity and normality test, SVAR stability tests are also conducted.

Table 4.2 post estimation test

Residual serial correlation LM tests		
Lags	LM-Stat	Prob
1	14.43499	0.5700
2	9.782306	0.8792
3	7.982799	0.9500
Residual heteroscedaticity tests		
Chi-square	**Df**	
177.6126	160	0.1617
Jarque-Bera	**Df**	
10.13836	8	0.2554

Source: Researcher computation using E-views 10.

From table 4.2, it is clear that the model is free from Serial correlation, Hetroskedasticity and Normality test because their p-values are greater than 5%.

5. Conclusions and Recommendations

The paper investigates theimpact of financial inclusion and poverty reduction on economic growth in Nigeria from 1981 to 2020.The results from the impulse response functions revealed that, money supply has a positive shock impact on real gross domestic product in Nigeria. Commercial bank branch has a positive shock impact on real gross domestic product in Nigeria. Poverty rate has a negative on real gross domestic product in Nigeria. The study recommends that government should increase its effort for pursuing financial inclusion as it is not only helping to have economic growth as espoused in literature, but also effectuates stabilization policy (monetary policy) in Nigeria. There is a need to take appropriate, effective and drastic steps to Deeping the extent of financial inclusion in Nigeria. As this will help to address poverty and to create productive employment opportunities.

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