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Effects of Monetary Policy on Financial Inclusion: An Empirical Evidence from Nigeria

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A B S T R A C T

The study conducted an empirical analysis on the effects of monetary policy on financial inclusion in Nigeria from 1985 to 2019. The study employed time series research design and data were collected from the secondary source via CBN statistical bulletin. The study used autoregressive distance lag(ARDL) to achieve the objective of the study. The findings indicated that lending rate has a negative and insignificant effect on number of bank branches; money supply has a positive effect but insignificant effect on credit to SMEs; and liquidity ratio has a positive but insignificant effect on bank demand deposit. Therefore, the study concluded that monetary policy does not have significant effect on financial inclusion in Nigeria from 1985 to 2019. The study recommended that Central Bank of Nigeria as a monetary authority should redirect and redesign its monetary policy tools towards determining the financial inclusion system in the country in order to capture citizens that are financial excluded.

1. Introduction

Monetary policy is essentially the tool for executing the mandate of monetary and price stability. Monetary policy is essentially a programme of action undertaken by the monetary authority to control and regulate the supply of money in the public and the flow of credit with a view to achieving predetermined macroeconomic goals (Chinwuba, Akhor & Akwaden (2015; Dwivedi, 2005). According to Onwuteaka, Okoye, and Molokwu (2019), monetary policy is a key factor of macroeconomic management in opened economy to stimulate economic stability and to promote economic development through its impact on economic variables. It is generally believed that monetary policy influences macroeconomic variables which include employment creation, price stability, gross domestic product growth and equilibrium in the balance of payment in developing country (Khaysy & Gang, 2017; Srithilat & Sun, 2017; Anowor & Okorie, 2016; Precious, 2014).

Fawowe (2020) stated that the concept of financial inclusion was introduced in the early 2000s and its source could be traced to research finding which stressed poverty and low level of economic growth as a direct result of financial exclusion. The motivation for financial inclusion is designed at ensuring all adult members of the society have easy access to extensive financial products, personalized towards their needs and provided at reasonable costs. Such products include payments, savings, credit, insurance and pensions (Onaolapo, 2015). Financial inclusion in itself is access to basic, useful and affordable financial products and services that meet the needs of the excluded (unbanked and under-banked). Such needs include – payments, savings, credit and insurance, delivered to them in a sustainable and suitable way (Femi-Lawal, 2017). This is driven by innovation and technology, e.g. mobile devices. And its implementation and adoption will culminate in bringing the excluded to the mainstream of banking and result into economic development as more monies are expended and saved (Abdullahi, & Fakunmoju, 2017). The drive for FI is aimed at ensuring that all adult members of the society have easy access to a broad range of financial products, designed according to their needs and provided at affordable costs. These products include payments, savings, credit, insurance and pensions (Babajide et al., 2015).

Nigeria like many other developing countries such as Brazil, Ghana, Venezuela, South Africa among others are faced with various problems ranging from high poverty level, high unemployment rate, environmental degradation and poor sanitation (Ajisafe, Anyakudo, Akinkuotu & Okunade, 2018; Khaysy & Gang 2017; Afonsoa, Araújoc & Fajardoe 2016). Some other surfaced challenges include underdeveloped

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financial sector, high level of government debts, constraints posed by lack of access to credits by firms and individuals; high inflation and devaluation rates which discouraged savings; poor physical infrastructure and weak institutions; inaccessibility to loans and other financial advances by most poor people due to lack of collaterals and poor credit records (Efobi, Beecroft & Osabuohien, 2014). A large number of Nigerian populations are concentrated in the rural areas which are mostly financially excluded (Otiwu, Okere, Uzowuru & Ozuzu, 2018). Also, access to formal financial services by the majority of poor population remains limited due to limited available financial institutions such as deposits money banks, banking outlets and other financial service providers (Bayero, 2014). This is further buttress by Abdullahi and Fakunmoju (2017).

Despite the efforts of the CBN to ensure all-inclusive finance through the use of monetary policy, there is still evidence of high rate of poverty level in Nigeria; low number of Nigerians in the low income category (Onaolapo, 2015). It is observed that people in the rural areas who are financially excluded are majorly living in abject poverty. Moreover, low-income consumers which are majorly the poor are at greater risk of financial exclusion, not only prevents people from escaping from poverty, but can also result in people falling deeper into the cycle of poverty (Bayero, 2014). This is evidenced that Nigeria suffers from the institutional and market failures that keep countries perpetually keeps its citizenry poor (Ajibola & Adeyemi, 2018) couple with the several challenges in the monetary policy which frequent changes is the major (Ufoeze et al., 2018) despite employment of different strategies of monetary policies (Ogbole, 2010).

There are several studies such as Enueshike and Okpebru (2020); Onwuteaka, Okoye, and Molokwu (2019); Waddock (2018); Ahmad, Afzal and Ghani (2016); Babajide, Adegboye and Omankhanlen (2015); Adegbite and Alabi (2013) among other studies on financial inclusion and monetary policy separately across the globe. Most of these studies mentioned above focus on economic growth and development of different economies. Also, there is dearth in the literature to capture lending rate, money supply, liquidity ratio as they are associated with banks branches, credit to small and medium enterprises, and banks demand deposit. It is further observed studies that attempted to investigate the connectivity between financial inclusion and monetary policy are scare and the results between financial inclusion and monetary policy are mixed (Marwa, 2019; Ajisafe, Anyakudo, Akinkuotu, & Okunade, 2018; Sanjaya & Arun, 2016; Mbutor & Uba, 2013) among other. It is on this note that this study attempts to see the kind and level of association that exists between financial inclusion and monetary policy in Nigeria

2. Objectives of the Study

The main objective of the study is to assess monetary policy and financial inclusion in Nigeria. Other specific objectives include:

i. To investigate the effects of lending rate on banks branches in Nigeria
ii. To investigate the effects of money supply on credit to small and medium enterprises in Nigeria
iii. To investigate the effects of liquidity ratio on banks' demand deposit in Nigeria.

3. Literature Review

Conceptual Review

Financial Inclusion

Financial Inclusion is the ability of some individual to access and use basic financial services. Such services include savings, loans, and insurance in a manner that is reasonably convenient, reliable and flexible in terms of access and design. According to Nwanko and Nwanko (2014), financial inclusion is the provision of access to and usage of diverse, convenient, affordable financial services. Fakunmoju (2016) described financial inclusion as the range, quality and availability of financial services to the underserved and financially excluded.

Monetary Policy

A policy could be described as a rule, strategy, plan, guiding principle, procedure or guideline for developing and sustaining a course of action on continuing and consistent bases (Onwuteaka, Okoye, & Molokwu, 2019). Nwoko, Ihemeje and Anumadu (2016), monetary policy refers to the combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the level of economic activities. It can also be described as the art of controlling the direction and movement of monetary and credit facilities in pursuance of stable price and economic growth in the economy (Onwuteaka et al., 2019).

Theoretical Foundation

Finance-Growth Theory

Theories on the finance growth nexus advocate that financial development creates a productive environment for growth through 'supply leading' or 'demand-following' effect. Theories also perceive the lack of access to finance as a critical factor responsible for persistent income inequality as well as slower growth. Therefore, access to safe, easy and affordable source of finance is recognized as a pre-condition for accelerating growth and reducing income disparities and poverty which creates equal opportunities, enables economically and socially excluded people to integrate better into the economy and actively contribute to development and protect themselves against economic shocks (Serrao, Sequeira & Hans, 2012).

Therefore, this study is anchored on finance growth theory. Finance growth theory is anchored on because of what the theory stresses on. The theory believes that human desires to expand so there is need for the finance to meet the needs and wants of the people. Expansion of human race implies that some arrears will not be captured by the financial system and those areas will need funds. One of the purposes of adoption of financial inclusion is to capture areas that cannot access funds due to the fact that there is expansion in the wants, needs and desires of human, thus, the adoption of finance growth theory.

Empirical Review

Enueshike and Okpebru (2020) examined effects of financial inclusion on economic growth in Nigeria from 2000–2018. The ex-post factor research design was adopted. Secondary data was collected from the Central Bank of Nigeria Statistical Bulletin. The dependent variable of financial inclusion proxies by contribution of financial institutions to gross domestic product (GDP) was regressed on the explanatory variable of loan to small and medium enterprises (LSME), rural bank deposit (RBD) and control variable of inflation (INF). The statistical estimation of the explained and explanatory variable was done using auto-regressive distribution lag and findings from Wald tests indicated that loan to small and medium enterprise (LSME), rural bank deposit (RBD) and inflation (INF) has a significant effect on economic growth in Nigeria. The study recommended among other things that rural bank deposits (RBD) should be encouraged by Central Bank of Nigeria.

Wakdok (2018) conducted an econometric analysis on the impact of financial inclusion on economic growth in Nigeria. The study employed secondary data to obtain data from 1990-2014. The Error Correction Model was used to test the hypotheses. Based on empirical analysis, the study concluded that financial inclusion has a positive and significant impact on Economic Growth in Nigeria through financial deepening variables which are influenced by financial inclusion variables such as broad money, credit to private sector, loan deposit of the rural area and liquidity ratio of commercial banks.

Otiwu, Okoro, Uzowuru and Ozuzu (2018) study tried to establish the relationship between financial inclusion and economic growth with focus on microfinance for the period 1992 to 2013 in Nigeria. The study adopted ordinary least square method and employing the Johansen cointegration tests to test run and short relationship among variables. The dependent variable economic growth was proxied by gross domestic product and the explanatory variables were total deposits mobilized by SMEs, total loans and advances to SMEs, number of bank branches and investment. Findings indicate total deposits mobilized, number of bank branches and investment have an insignificant effect on economic growth while total loans and advances shown a significant effect on economic growth.

The study conducted by Chitokwindo, Mago and Hofisi (2014), examined financial inclusion in Zimbabwe. The study used a qualitative research methodology and exploratory approach. The results show that financial exclusion comes in different forms and it is responsible for poverty and inequality in rural areas. Hence, there is need for developing the rural banking sector for local resource mobilization and business development. An investigation by Nwankwo and Nwankwo (2014), examined the sustainability of financial inclusion to rural dwellers in Nigeria using descriptive study and content analysis. The study observed that the sustainability of financial inclusion to rural dwellers in Nigeria remains the mainstream for economic growth in any country. This is because there has been an increase in the use of mobile phones in the Sub-Saharan Africa which gives a foundation for the revolution of mobile money transfer systems.

Nwanne (2015) examined the relationship between financial inclusion and economic growth in Nigerian rural dwellers using descriptive study and content analysis. He found out that the sustainability of financial inclusion to rural dwellers in Nigeria remains the mainstream for economic growth in any country. Mbutor and Uba (2013), showed the impact of financial inclusion on monetary policy in Nigeria. Using data from 1980 - 2012, the result supports the notion that growing financial inclusion would improve the effectiveness of monetary policy and SMEs economic output.

Egbatunde (2012), used Ordinary Least Square (OLS) framework and co-integration test. The study found that rural economic growth of SMEs output is co-integrated with bank credits and financial inclusions indicators in Nigeria. Within the OLS framework, the evidence of positive relationship exist between rural economic growth of SMEs output and commercial bank rural loans as well as commercial bank loans to agriculture and rural economic growth, while deposits of rural dwellers were negatively impacted on rural economic growth. Based on these results, it was argued that the rate at which commercial bank credits is given to rural dwellers contributed to rural economic growth in Nigeria.

Research Methodology

The study adopted time series research design. The study made used of secondary data and the data were obtained from statistical bulletin of Central Bank of Nigeria from 1985 to 2019. Regression analysis was employed as statistical techniques using econometrics

Model Specification

The study shall adapt the model of Odeleye and Olusoji (2016) on financial inclusion, monetary policies and economic development in Nigeria which stated below:

$RGDPt = \beta_0 + \beta_1DDt + \beta_2CPSt + \beta_3MSt + \beta_4LIQRt + \beta_5FDt + \mu t$ ………..(1)

Where RGDP represents real gross domestic product in year t; DD represents demand deposits of all commercial banks in year t; MS represents money supply in year t; LIQR represents liquidity ratio in year t; and FD represents financial deepening in year t.

In order to achieve the objective of the study which is to conduct an empirical analysis on financial inclusion and monetary policy in Nigeria, the model above in equation (1) is therefore modified as thus:

$$BB_t = \beta_0 + \beta_1 LR_t + \mu_t \quad \ldots\ldots\ldots\ldots\ldots\ldots(2)$$
$$CSMEs_t = \beta_0 + \beta_1 MS_t + \mu_t \quad \ldots\ldots\ldots\ldots(3)$$
$$BDD_t = \beta_0 + \beta_1 LIQR_t + \mu_t \quad \ldots\ldots\ldots\ldots(4)$$

Where
BB_t= Bank Branches in period t (Dependent Variable); $CSMEs_t$= Credit to Small and Medium Enterprises in period t (Dependent Variable); BDD_t= Banks Demand Deposits in period t (Dependent Variable); MS_t= Money Supply in period t (Independent Variable);$LIQR_t$= Liquidity Ratio in period t (Independent Variable); LR_t= Lending Rate in period t (Independent Variable); β_1- β_4= Parameters of the variables .β_0 = Constant Parameter; μ_t = Error Term in year t

Bank Branches (BB): These are the number of deposit money banks branches in Nigeria. Credit to Small and Medium Enterprises (CSMEs): This is the total number of funds given to SMEs as loan in Nigeria. Banks Demand Deposits (BDD): These are the total customers deposit in the deposit money banks. Lending Rate (LR): This is the rate charged by deposit money banks on the loans given to SMEs in Nigeria Money Supply (MS): This is the total quantity of money in circulation outside the deposit money bank Liquidity Ratio: This is the rate that is mandatory for the deposit money bank by the apex that specify banks' ability to meet their financial obligation.

4. Data Analysis and Interpretation

Unit Roots Test for Monetary Policy and Financial Inclusion

Table 1. Unit Root Test Results for the Variables

Variables	ADF Values	5% Critical Values	Prob	Order of Integration
Lending Rate	-5.9155	-2.9862	0.0001	1(1)
Money Supply	-5.7694	-2.9511	0.0000	1(1)
Liquidity Ratio	-7.1622	-3.5530	0.0000	1(1)
Bank Branches	-7.6209	-3.5630	0.0000	1(1)
Credit to SMEs	-32.91749	-2.9810	0.0090	1(1)
Bank Demand Deposit	-4.2524	-2.9540	0.0021	1(1)

Source: Researcher's Computation

Table 1 showed the result of Augmented Dickey Fuller (ADF) test which was employed as unit root test tool. The ADF test allows for heterogeneous coefficients with the null hypothesis that all series follow a unit root process and to reject this, the ADF values must be greater than the critical value ignoring the sign. The results showed that the ADF values of the variables-lending rate, money supply, liquidity ratio, bank branches, credit to SMEs and bank demand deposit are greater than the 5% critical values. This implied that the data are stable to achieve the objectives of the study.

Co-integration Test

The study adopted Johansen co-integration Test to ascertain the long run relationship between monetary policy and financial inclusion

Table 2. Lending Rate and Bank Branches Co-Integration Result

Hypothesized No. of CE(s)	Trace Test Statistics	5% Critical Value	Max-Eigen Statistic	5% Critical Value
None	24.80094	15.49471	18.14648	14.26460
At Most 1	6.654448	3.841466	6.65448	3.841466

Source: Researcher's Computation

Table 2 demonstrated that there is co-integration between lending rate and bank branches in Nigeria from 1985 to 2019 as the trace statistic value is greater the critical value at None (Trace statistic = 24.80094 > Critical Value=15.49471). Also, the Max-Eigen statistic value is greater than the critical value at None (Max-Eigen= 18.14649 > critical value of 14. 26460). Therefore, the hypothesis that there is no co-integration is rejected.

Table 3. Money Supply and Credit to SMEs Co-Integration Result

Hypothesized No. of CE(s)	Trace Test Statistics	5% Critical Value	Max-Eigen Statistic	5% Critical Value
None	17.2401	15.49471	17.13675	14.26460
At Most 1	0.103345	3.841466	0.103345	3.841466

Source: Researcher's Computation

Table 3 demonstrated that there is co-integration between money supply and credit to SMEs in Nigeria from 1985 to 2019 as the trace statistic value is greater the critical value at None (Trace statistic= 17.24010> Critical Value= 15.49471). Also, the Max-Eigen statistic value is greater than the critical value at None (Max-Eigen= 17.13675>critical value of 14.26460). Therefore, the hypothesis that there is no co-integration is rejected.

Table 4. Liquidity Ratio and Bank Demand Deposit Co-Integration Result

Hypothesized No. of CE(s)	Trace Test Statistics	5% Critical Value	Max-Eigen Statistic	5% Critical Value
None	15.49471	11.66756	14.26460	7.035673
At Most 1	4.631883	3.841466	4.631883	3.841466

Source: Researcher's Computation

Table 4 revealed that there is a co-integration between the variables as the values for trace and max-eigen statistics are lesser than the critical value (Trace Statistic= 15.49471>critical value of 11.66756; Max-eigen= 14.26460 < critical value 7.035673). Thus, the null hypothesis that there is no cointegration is rejected

Autoregressive Distance Lag (ARDL) Regression for Monetary Policy and Financial Inclusion
ARDL Regression for Lending Rate and Bank Branches

Table 5. ARDL Results for Lending Rate and Bank Branches

Independent Variable	Coefficient	Std. Error	T-statistic	Probability
C	7.202681	2.793936	2.577969	0.0149
LogLending Rate	-0.276437	0.815206	-0.3391101	0.7368
R-Square		0.141686	F-Statistic	1.674246
Adjusted R-Squared		0.040140	Prob(F-Statistic)	1.674246
S.E of Regression		0.962421	Durbin-Watson	2.439292

Dependent Variable: LogBank Branches

Table 5 presented the regression results for lending rate and number of bank branches in Nigeria from 1985 to 2019. It is revealed that the coefficient of multiple determination (R^2) is 0.141686 which is about 14.17 per cent. This implies that 14.17% of the variations in the number bank branches is explained by lending rate in the model for the period under review. The results further indicated that there is negative and insignificant effect of lending rate on number of bank branches (β =-0.276; P-value=0.737) for the period under review. Thus, the study accepted the hypothesis that lending rate does not have significant impact on banks' branches in Nigeria.

ARDL Regression for Money Supply and Credit to SMEs

Table 6. ARDL Results for Money Supply and Credit to SMEs

Independent Variable	Coefficient	Std. Error	T-statistic	Probability
C	0.464018	0.436922	1.062014	0.2964
LogMoney Supply	0.015761	0.056796	0.277491	0.7832
R-Square		0.987071	F-Statistic	1183.399
Adjusted R-Squared		0.986237	Prob(F-Statistic)	0.0000
S.E of Regression		0.290289	Durbin-Watson	2.389033

Dependent Variable: LogCredit to SMEs

Table 6 displayed the regression results for money supply and credit to SMEs in Nigeria from 1985 to 2019. It is shown that the coefficient of multiple determination (R^2) is 0.987 which means that about 98.7% of the changes in the credit to SMEs is caused by money supply for the period under review. The results further indicated that there is positive but insignificant effect of money supply on credit to SMEs (β =-0.015761; P-value=0.7832) for the period under review. Due to the value of p-value, thus, the study accepted the hypothesis that money supply does not have significant impact on credit to SMEs in Nigeria.

Autoregressive Distance Lag (ARDL) Regression for Liquidity Ratio and Banks' Demand Deposit

Table 7. ARDL Results for Liquidity Ratio and Banks' Demand Deposit

Independent Variable	Coefficient	Std. Error	T-statistic	Probability
C	-0.193428	0.506868	-0.381614	0.7054
LogLiquidity Ratio	0.144244	0.136372	1.057723	0.2984
R-Square		0.995442	F-Statistic	3385.294
Adjusted R-Squared		0.995148	Prob(F-Statistic)	0.0000
S.E of Regression		0.164150	Durbin-Watson	1.197682

Dependent Variable: LogBank Demand Deposit

The regression results for liquidity ratio and bank demand deposit in Nigeria from 1985 to 2019 is shown in Table 7. It is shown that the coefficient of multiple determination (R^2) is 0.9954 which means that about 99.54% of the variations in the bank demand deposit is caused by liquidity ratio for the period under review. The results on F-statistic showed that the model is fit for the hypothesis to achieve the objective of the study (F-Statistic = 3385; Prob(F-Statistic) = 0.000). The results further indicated that there is positive but insignificant effect of liquidity ratio on bank demand deposit (β =-0.144244; P-value=0.7052) for the period under review. This revealed that the coefficient value for liquidity ratio is positive but the p-value is greater than 0.05% significant level. Due to the value of p-value, thus, the study accepted the hypothesis that liquidity ratio does not have significant impact on bank demand deposit in Nigeria.

5. Discussion of Findings

Despite the positive influence of money supply, and liquidity ratio on credit to SMEs and bank demand deposit, and negative influence of lending rate on number of bank branches, it is observed that there is no significant influence of the independent variables- money supply, lending rate and liquidity ratio on the dependent variables-bank branches, credit to SMEs and bank demand deposit respectively. This means that the monetary policy tools employed in this study are not large enough to influence the dimensions of financial inclusion to a noticeable degree. It could be said that monetary policy is not enough to be important in determining financial inclusion in Nigeria for the period under review. This shows that monetary policy is solely significant for stabilizing the economy but not to enhance the financial inclusion process in Nigeria. The findings of this study agree with studies of Marwa (2019); Evan (2016) Lenka and Bairwa (2016); Brownbridge, Bwire, Rubatsimbira and Tinyinondi (2016). However, disagrees with the findings of Anarfo et al (2019); Mehrotra and Yetman (2014); Mbutor and Uba (2013)

6. Conclusion and Recommendations

The study found that there is a positive effect but insignificant effect of lending rate on bank branches; there is a positive effect but insignificant effect of money supply on credit to SMEs and there is a negative and insignificant effect of liquidity ratio on bank demand deposit. Based on this, the study concluded that monetary policy does not have significant effect on financial inclusion in Nigeria from 1985 to 2019. Therefore, it is recommended that the Central Bank of Nigeria as a monetary authority should redirect and redesign its monetary policy tools towards determining the financial inclusion system in the country in order to capture citizens that are financial excluded. Also, Central Bank of Nigeria (CBN) should implement financial policies that will generate a positive investment climate through monetary policy instruments that will inspire number of bank branches, credit to SMEs and bank demand deposit.

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