African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

FINANCIAL INCLUSION, MONETARY POLICY AND POVERTY LEVEL IN NIGERIA

Ajisafe, R. A.[1] Anyakudo, I. O.[2], Akinkuotu F.[3] and Okunade, S. O.[4]

[1,2&4]*Department of Economics, Obafemi Awolowo University, Ile-Ife, Nigeria.*
[3]*Department of Marketing, Federal Polytechnic, Ado-Ekiti, Nigeria.*
[1]rajisafe@oauife.edu.ng

ABSTRACT
This study examined the effect of financial inclusion and monetary policy on poverty level in Nigeria for the period of 1986-2015 using ARDL approach to cointegration. It was evident from the result that financial inclusion and monetary policy had impact on poverty level depending on how financial inclusion or monetary policy is measured. However, it was also observable from the result that economic growth had not transcended to the poor in form of improved standard of living rather it had fostered what could be referred to as vicious cycle of poverty in Nigeria. Also, loans and advances to SMEs by deposit money bank (LASME) had expected effect on poverty level both in the short and long run in Nigeria. The study concluded that only the financial inclusion proxied by loans and advances to SMEs by deposits money banks (LASME) had a desirable effect on poverty level, while an increase in deposits to rural branches of deposit money banks (DRB) impoverished the poor rural dwellers in Nigeria. Hence, the effect of money supply (MS) may not be efficiently rendered with the associated high inflation rate which frequently had adverse effect on the poor populace.
Keywords: Financial inclusion, monetary policy, poverty, Nigeria

INTRODUCTION
Nigeria like many other developing countries is faced with various problems ranging from high poverty level, high unemployment rate, environmental degradation and poor sanitation. Some other surfaced challenges include underdeveloped 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 and Osabuohien, 2014). A large number of Nigerian populations are concentrated in the rural areas which are mostly financially excluded. Also, in developing countries, 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).
Poverty is endemic in Nigeria most especially in rural and financially excluded or unbanked areas. Despite the efforts of the CBN to ensure all-inclusive finance through the use of monetary

ISSN: 2408-7920

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

policy, poverty is still on continual increase (Onaolapo, 2015). In Nigeria, it could be 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). However, the introduction of this inclusive-financing was aimed at bringing the disadvantaged section of the society into the fold of financial services at affordable cost (Mbutor and Uba, 2013).

Moreover, the governments of Nigeria has made financial inclusion a priority objective, and this is evidenced by the evolving policy strategy on financial inclusion, coupled with regulatory reforms and new funding vehicles, as announced by the Federal Government in 2011. Thus, the Nigerian Government set a target of reaching full inclusion by 2020 by increasing usage of payments from 21.6 percent of adults in 2010 to 70 percent by 2020 as reported in 2012 National Financial Inclusion Strategy (Aguera, 2015). The financial inclusion strategy is considered relevant to achieving Central Bank of Nigeria's (CBN's) objective of maintaining external reserves and safeguarding the international value of the Naira. This objective among others is believed to be achievable, as financial inclusion brings about increased access to finance for micro, small and medium scale enterprises, leading to greater productivity, increased non-oil export, stabilize demand for the Naira and subsequently improve the welfare of the citizenry and consequently sustainability of the economy.

On the empirical side, evidences have shown a distinct rise in income level in countries with a high number of commercial bank branches and higher number of bank branches (NBB) per 100,000 adults and more number of deposit accounts per 1000 adults was observed in high income countries, than countries in the low and middle income categories (Khan, 2011). Specifically, the growing body of works on the relationships between finance and poverty are centered on the relationship between financial development (deepening) and poverty reduction (Dauda and Makinde, 2014; Onakoya and Onakoya, 2014;Inoue and Hamori, 2010;Jeanneney and Kpodar, 2008). These studies have concluded that financial development is vital for poverty reduction, although some authors found a positive relationship between financial development and poverty in Nigeria (Ahmad and Malik, 2009); while some authors were of the opinion that impact of finance on poverty reduction in Nigeria remains in doubt (Fowowe and Abidoye, 2012; Nwigwe, Omonona and Okoruwa, 2012; Khan *et al.*, 2011; Odhiambo, 2010). Based on the foregoing, further investigation needs to be undergone as controversies abound in the literature on the relationship between finance and poverty in Nigeria.

However, it must be noted here that financial inclusion and financial development are not synonymous. On the relationship between financial inclusion and monetary policy in Nigeria, to the best of our knowledge, only Mbutor and Uba (2013) has been found to examine the relationship between the two variables, and found that a growing financial inclusion could improve the effectiveness of monetary policy in Nigeria. However, on the relationship between financial inclusion and poverty level, Ajide (2015), Onaolapo (2015) and Chibba (2009) opined that inclusive finance greatly influenced poverty reduction given the current global financial crisis, and concluded that the need to scale-up financial inclusion effort is now more imperative in recent times. These authors have only considered the effects of financial inclusion on the poverty level ignoring the role of monetary policy in the relationship. Thus, the dynamic

ISSN: 2408-7920

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Vol. 4, No. 2 (2018), pp. 253-268
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http://doi.org/10.26437/ajar.04.02.2018.22

relationship among these variables is greatly lacking empirical consideration and this constitutes a gap to be filled.

From the forgoing arguments, this study intends to examine the effect of financial inclusion and monetary policy on poverty reduction in Nigeria. This is because there is a consensus among available literatures that an expansion of formal financial services to all the segments of the economy with effective monetary policy translates into a reduction of informal financial services, a process which increases the reach and effectiveness of monetary policy transmission mechanisms, while ensuring financial transparency and stability and subsequently reduces poverty level.

CONCEPT OF FINANCIAL INCLUSION

Financial inclusion is defined as the access to and use of formal financial services. The idea is that finance should be available to as many as possible for a variety of uses: accounts to receive income or transfers, savings accounts to store money safely and prudently, credit sources for personal or business borrowings, and insurance products to tide against bad times. As The World Bank (2014) points out, the concept of financial inclusion could range from "access and use of services provided responsibly and sustainably" to "delivery of financial services at affordable costs to disadvantaged and low-income segments of society." The goal for the purposes of this paper is to use a concept that is measurable and relevant for public policy. Hence, as elaborated as follows, the definition has been narrowed down to a tractable form.

The increasing importance of financial inclusion as a catalyst for economic growth and sustainable development has been well documented in the literature. Financial inclusion is today widely considered as a right of all citizens to social inclusion, better quality of life and a tool for strengthening the economic capacity and capabilities of the poor in a nation. Policymakers have thus, viewed financial inclusion as a basic access for all citizens, highlighting its non-excludability and also its non-rivalries. Considering that financial inclusion meets these two criteria, it can be concluded that "financial inclusion" though may be different from a typical public good like defence, but there should be no doubt that, it can be regarded as a "quasi-public good".

Empirical Review

On the empirical side, there is dearth of empirical studies on the relationship among financial inclusion, monetary policy and poverty level. The trends of works in this area have been concentrated on the relationship between financial development and poverty; financial inclusion and poverty; and monetary policy and poverty. Dauda and Makinde (2009) examined the nexus between financial sector development and poverty reduction in Nigeria using annual time series from 1980 to 2010. The evidences from both the VAR and impulse response showed that the indirect effect of economic growth exerts the strongest influence on poverty reduction in the short run but could be detrimental to the poor in the long run due to the adverse effect of income inequality. The study concluded that the relationship between poverty and the financial deepening proxied by broad money supply (M2) is negative and significant. Hence, the McKinnon conduit effect is the likely main transmission channel through which the poor benefit from the financial sector development in the long run. And also that credits to private sector,

ISSN: 2408-7920

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http://doi.org/10.26437/ajar.04.02.2018.22

contrary to the general belief, have failed to cause a reduction in the incidence of poverty in Nigeria. Nwigwe, Omonona and Okoruwa (2012) argued that while microfinance has developed some innovative management and business strategies, its impact on poverty reduction remains in doubt.

With a view to understanding how Islamic microfinance as a financial inclusion strategy can be applied in alleviating poverty and maintain sustainable development in Nigeria, Onakoya and Onakoya (2014) analysed the principles of Islamic finance and conceptualized its operational details to see the linkage between the real economies and sustainable development. The study employed triangulation method, which is the use of different data collection techniques within one study in order to achieve more accurate results. They employed a descriptive research method by collecting data from urban and rural areas; survey questionnaires coupled with semi structured interviews were adopted. With the understanding that microfinance is a sub-division of the financial sector, the survey conducted in Ogun State, a sub-national government of Nigeria revealed that Islamic microfinance in concert with the right fiscal and monetary policies framework, will contribute positively to poverty alleviation in Nigeria.

Jeanneney and Kpodar (2008) investigated how financial development helps to reduce poverty directly through McKinnon conduit effect and indirectly through economic growth. The results obtained with data for a sample of developing countries from 1966 through 2000, using the system GMM estimator, suggest that the poor benefit from the ability of the banking system to facilitate transactions and provide savings opportunities but to some extent fail to reap the benefit from greater availability of credit. Also that financial development is accompanied by financial instability which is detrimental to the poor. Nevertheless, the benefits of financial development for the poor outweigh the cost.

Inoue and Hamori (2010) examined empirically whether financial deepening has contributed to poverty reduction using unbalanced panel data for 28 states and union territories between 1973 and 2004. Using dynamic generalised method of moments (GMM), they found that financial deepening and economic growth alleviate poverty, while international openness and inflation rate have the opposite effect. Odhiambo (2010) empirically analysed the causal relationship between financial development and poverty alleviation in Zambia from 1969 to 2006. She examined the effect of three proxies for financial development, namely: M_2/GDP, private credit/GDP, and domestic money bank assets; on per capita consumption, a proxy for poverty levels. Using a bivariate causality test based on an Error Correction Model (ECM), she found that financial development seems to cause poverty reduction when private credit and domestic money bank assets are used, while the reverse causality is found when M_2/GDP is used.

Khan *et al.* (2011) analysed the relationship between financial sector development and poverty for different countries. The study divided financial sector into four sectors; Banking sector, Insurance companies, Stock market and Bond market, for the purpose of estimating effect of financial sector development on poverty. For banking sector, the following variables were used; central bank assets to GDP, deposits money banks assets to GDP, bank deposits, concentration, overhead costs and net interest rate. For insurance company, non-life insurance was used as the variable; to capture the effect of stock market variable, stock market turnover ratio was used. For bond market, both market capitalization to GDP and public bond market capitalization to GDP were used. The results of the OLS estimation indicated that there is negative and highly significant relation between poverty and central bank assets, coefficient of Deposits Money Bank

ISSN: 2408-7920

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http://doi.org/10.26437/ajar.04.02.2018.22

Assets to GDP is also negative. Meanwhile, the coefficient of concentration is positive which means more concentration more poverty. The study concluded that the banking sector variable (CBA, DMB and BD) proved the negative relation of poverty and financial sector development because all the banking sector variables are negative. Similarly, stock market variables also show the negative relation and they are highly significant.

Fowowe and Abidoye (2012) concluded that measure of financial development does not significantly influence poverty in Sub-Saharan African countries. However, macroeconomic variables such as low inflation and trade openness can help reduce the level of poverty after applying the Systems GMM estimator on panel data for the selected Sub-Saharan African countries. Boukhatem (2015) provided an empirical assessment of the direct contribution of financial development to poverty reduction in 67 low and middle-income countries over the period 1986-2012. Using panel OLS and system GMM, the results showed the important contribution of financial development to the reduction of poverty independently of the econometric techniques used. The study also found that instability related to the financial development would worsen the condition of poor population and would vanish the positive effects of financial development. The study therefore suggested that pro-poor public investment policy in low and middle-income countries are required in tandem with financial development to ensure a reduction in the level of poverty.

Jin (2017) analysed the relationship between inclusive finance and poverty alleviation in a panel of 86 countries in Asian, African and Latin American countries from 2004 to 2013 by using generalized method of moments. The results revealed that the impact of inclusive finance on poverty alleviation (proxied by Gini coefficient) was different in Asia, Africa and Latin America. For Asian countries, inclusive finance is negatively related to poverty alleviation which implied that the development of inclusive finance can be used to narrow the income gap between the rich and poor; for African and Latin American countries, there was a clear inverted U-shaped relationship between the development of inclusive finance and poverty alleviation, which indicated that the inclusive finance will first widen income gap, and when the financial development reaches a high stage, it can also be used to narrow the income gap and alleviate poverty. The study also found that export trade indicators in Asian countries were not statistically significant in achieving poverty alleviation. Though, the usage of natural resources had an impact on poverty alleviation in African countries, but its effect was positive which implied that the usage of natural resources cannot raise the standard of living or alleviate poverty in Africa. However, the industrial structures alleviated poverty and narrowed income gap in Latin American countries. Therefore, the study concluded that in order to narrow the income gap between the rich and the poor and alleviate poverty, the first is to promote the development of inclusive finance, improve the financial system, eliminate barriers and let middle and low-income class get access to financial services.

Onaolapo (2015) examined the effects of financial inclusion on economic growth and poverty reduction of Nigeria for the period of 1982 to2012 using the Ordinary Least Square (OLS) method via STATA 10. The study tested hypothesis on poverty reduction and found that loan to rural areas (a proxy to financial inclusion) has a significant positive effect on per capital income (a proxy to poverty reduction). The study also found that Deposits from Rural Areas (DRA) as surrogate for financial inclusion has almost neutral effect on economic growth in Nigeria and

ISSN: 2408-7920

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http://doi.org/10.26437/ajar.04.02.2018.22

therefore concluded that inclusive bank financial activities greatly influenced poverty reduction but marginally determined national economic growth in Nigeria.

Ajide (2015) examined the effect of financial inclusion on poverty reduction in Nigerian rural communities using data covering the periods of 1996 to 2013. The study employed Autoregressive Distributed Lag Model (ARDL) Bound test and the results showed that there was a long-run relationship among the variables. The study also found that financial inclusion was an important strategy for poverty reduction in rural communities in both short and long run. He concluded that as the beneficial effect of financial inclusion on rural poverty reduction was dampened or even cancelled out by cost of borrowing and degree of financial openness. Thus, the policy makers must consider the rate of interest charged by banks and the financial exposure or openness of rural communities in Nigeria because the level of financial literacy is often low in rural areas.

Chibba (2009) investigated the nexus among financial inclusion, poverty reduction and millennium development goals in an explanatory survey and posited that the conventional approaches to tackling poverty and other millennium development goals (MDGs) are useful and necessary but they are not sufficient to address the challenge and that financial inclusion offers incremental and complementary solutions to tackle poverty, to promote inclusive development and to address the MDGs. Findings from this study pointed to four key pillars that are required to strengthen financial inclusion and the nexus among the three concepts, these are; private sector development, financial literacy, microfinance and public sector support.

Mbutor and Uba (2013) presented a simple model showing the impact of financial inclusion on monetary policy in Nigeria between 1980 and 2012. The Johansen- Juselius test for co-integration and Ordinary Least Square (OLS) were employed for the estimation and the result of the Johansen- Juselius test for co-integration confirmed the existence of long run relationship among the variables. The results also indicated that total number of loans and advances of commercial banks and aggregate deposits and loans of rural bank branches (proxies to financial inclusion) have expected negative relationship with inflation rate (proxy to monetary policy). However, the study found that the number of bank branches (third proxy to financial inclusion) has a positive relationship with monetary policy tool which implies that, in opening branches, banks mainly pursue profits but not financial inclusion so that there are clusters of branches which are under-utilized in commercial areas while numerous locations which are considered not favourable in terms of profits especially rural areas are under-branched. Finally, the study concluded that growing financial inclusion improves the effectiveness of monetary policy.

Bissoon *et al.* (2016) investigated the impact of monetary policies on stock markets based on a sample of five open countries with growing stock market over the period 2004 to 2014. Using a random effect model and panel vector error correction model to examine the short run and long run relationship between the variables, the study found a negative relationship between interest rate and stock return and found a positive relationship between money supply and stock return. The study concluded that in both short run and long run, monetary policy variables explain changes in stock return.

ISSN: 2408-7920

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http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

RESEARCH METHODOLOGY

It has been well established that financial development/inclusion and monetary policy promotes poverty reduction. In this case, we follow the work of Mbutor and Uba (2013), Jin (2017) and Ajide (2015) to specify the model for the study as shown in equation (1).

$$POV_t = f(DRB_t, LASME_t, IR_t, MS_t, Y_t, INF_t) \quad (1)$$

Where POV_t represents poverty level at time t proxied by household consumption per capita, IR_t is the interest rate at time t, MS_t is the money supply at time t, Y_t is the economic growth at time t proxied by real GDP and INF_t is the inflation rate at time t. For the purpose of this study, financial inclusion is measured by two indicators, namely; Deposits of Rural Branches of deposit money banks (DRB); and Loans and Advances to Small and Medium Enterprises (SMEs) by deposit money banks (LASME).

The study applies the autoregressive distributed lag (ARDL) model to establish the effects of financial inclusion and monetary policy on poverty level in Nigeria. The problem of endogeneity and non-stationarity of variables can be partly solved by developing a dynamic framework. The fundamental importance of this model is that we can simultaneously discuss long run and short run relationship within the same framework regardless of whether the variables are integrated of the same order, that is, whether all variables are I(1) or I(0) or the combination of I(1) and I(0) variables. In other to examine the contribution of financial inclusion and monetary policy on poverty level in Nigeria, the log-linear form of equation (3.7) is formulated;

$$\ln POV_t = \alpha + \beta \ln DRB_t + \phi \ln LASME + \delta \ln MS_t + \pi \ln IR_t + \eta \ln Y_t + \sigma \ln INF_t + \varepsilon_t \quad (2)$$

Where ε_t is the stochastic error term which is white noise in its characteristics and represents all other factors that affect poverty reduction. From equation (2), the autoregressive distributed lag model is formulated. Moreover, to overcome the problems of endogeneity and serial correlation in which any of the variables correlates with the error term, more dynamics are added to the short run variables in the model. Thus, the ARDL model is specified below:

$$\begin{aligned}\Delta \ln POV_t = {} & \alpha + \sum_{j=1}^{p} \theta_j \Delta \ln POV_{t-j} + \sum_{j=0}^{p} \beta_j \Delta \ln DRB_{t-j} + \sum_{j=0}^{p} \phi_j \Delta \ln LASME_{t-j} + \sum_{j=0}^{p} \delta_j \Delta MS_{t-j} \\ & + \sum_{j=0}^{p} \pi_j \Delta \ln IR_{t-j} + \sum_{j=0}^{p} \eta_j \Delta \ln Y_{t-j} + \sum_{j=0}^{p} \sigma_j \Delta \ln INF_{t-j} + \lambda_1 \ln POV_{t-1} + \lambda_2 \ln DRB_{t-1} \\ & + \lambda_3 \ln LASME_{t-1} + \lambda_4 MS_{t-1} + \lambda_5 IR_{t-1} + \lambda_6 Y_{t-1} + \lambda_7 INF_{t-1} + \varepsilon_t \end{aligned} \quad (3)$$

The equation (3) comprises the short run and the long run relationships among the variables. With an assumption of the existence of long run equilibrium relationship among variables, the Error Correction Model of equation (3) was expressed to reflect short run and long run effect of financial inclusion and monetary policy on poverty level; and the speed of adjustment of poverty level to changes in financial inclusion and monetary policy; and other variables in the long run. In equation (4) below, ρ measures the speed of adjustment and $\rho_2, ..., \rho_7$ are the long run parameters. Here, the short run dynamic coefficients of the model's convergence to equilibrium

ISSN: 2408-7920

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

are θ , β,ϕ , δ, π , η and σ while ρ is the speed of adjustment. The below ECM could be viewed as comprising the short run transitory effects and the long run impacts.

$$\Delta \ln POV_t = \alpha + \sum_{j=1}^{p} \theta_j \Delta \ln POV_{t-j} + \sum_{j=0}^{p} \beta_j \Delta \ln DRB_{t-j} + \sum_{j=0}^{p} \phi_j \Delta \ln LASME_{t-j} + \sum_{j=0}^{p} \delta_j \Delta MS_{t-j}$$
$$+ \sum_{j=0}^{p} \pi_j \Delta \ln IR_{t-j} + \sum_{j=0}^{p} \eta_j \Delta \ln Y_{t-j} + \sum_{j=0}^{p} \sigma_j \Delta \ln INF_{t-j} + \rho ECM_{t-1} + \varepsilon_t \quad (4)$$

The data utilized for the regression analysis in this study is annual time series data from 1986 to 2015 obtained from the Central Bank of Nigeria (CBN) Statistical bulletin, 2015 edition and World Development Indicators (WDI) from World Bank database, 2015 edition. Specifically, real GDP, interest rate (IR), money supply, deposits of rural branches of deposit money banks (DRB), loans and advances to small and medium enterprises deposit money banks (LASME) were sourced from Central Bank of Nigeria (CBN) Statistical bulletin,2015 edition while household consumption per capital and inflation rate (INF) were sourced from World Development Indicators (WDI), 2015 edition.

RESULTS AND DISCUSSION

Preliminary Analysis

The results of Unit root test in Table 1 and Table 2 showed that poverty reduction, money supply, deposits to rural branches of deposit money banks, loans and advances to small and medium scale enterprises and nominal gross domestic product are stationary at first difference in both Augmented Dickey-Fuller and Phillips-Perron tests. Meanwhile, interest and inflation rates are stationary at level in both tests. The results of the two tests showed that there was no higher order of integration such as I(2) in the model. Thus, ARDL model is applicable given its dynamic advantage. That is, ARDL model is capable of estimating a model comprising variables of different orders of integration, provided these variables are I(1) and I(0).

The short and long run effects of financial inclusion and monetary policy on poverty reduction in Nigeria are to be determined. However, in order to estimate this model, it is important to establish the cointegration or long run relationship among these variables by applying the ARDL bounds testing approach. With a view to establishing cointegration through ARDL bounds test approach, it is equally necessary to identify the appropriate lag to calculate the F-statistic. The ARDL model is sensitive to the lag order; and in addition, optimum lag order would be helpful in reliable and consistent result in the analysis (Uddin *et al*, 2013). For the purpose of this study, Akaike Information Criterion (AIC) and Schwarzt Information Criterion (SIC) will be considered given their superiority over other information criteria. They impose stricter penalties on the variables in the model. Table 3 presents the maximum lag length selected by Information Criteria.

ISSN: 2408-7920

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

Table 1: The Result of Augmented Dicky-Fuller (ADF) Test

Augmented Dicky-Fuller (ADF)			
Variable	Level	First Difference	Order
POV	-1.4049 (0.5679)	-7.6556* (0.0000)	I(1)
DRB	-2.6989 (0.0853)	-2.9876* (0.0040)	I(1)
LASME	-2.6544 (0.0924)	-6.1491* (0.0000)	I(1)
MS	-0.7637 (0.8162)	-3.1732 (0.0308)**	I(1)
IR	-3.3744** (0.0191)		I(0)
GDP	-0.4075 (0.8968)	-5.3592* (0.0001)	I(1)
INF	-3.1211** (0.0343)		I(0)

Source: Authors' Computation

Table 2: The Result of Phillips-Perron (PP) Test

Phillips-Perron (PP)			
Variable	Level	First Difference	Order
POV	-1.8336 (0.3585)	-7.6243* (0.0000)	I(1)
DRB	-1.8056 (0.3714)	-2.9876* (0.0040)	I(1)
LASME	-2.0403 (0.2688)	-5.7566* (0.0001)	I(1)
MS	-0.1666 (0.9335)	-3.1934** (0.0294)	I(1)
IR	-3.3340** (0.0210)		I(0)
GDP	-0.4071 (0.8969)	-5.3451* (0.0001)	I(1)
INF	-3.1371** (0.0331)		I(0)

Source: Authors' Computation,

Note: All variables are in natural logarithm and the values in the parenthesis () are the probability values while (*) and (**) indicates significant at 1% and 5% level respectively. POV, MS, IR, DRB, LASME, GDP and INF represent poverty level, money supply, interest rate, deposits to rural branches of deposit money banks, loans and advances to small and medium scale enterprises, nominal gross domestic product and inflation rate respectively

ISSN: 2408-7920

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http://doi.org/10.26437/ajar.04.02.2018.22

Table 3: The Result of Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-209.0425	NA	0.798935	19.64022	19.98737	19.72200
1	-71.51346	175.0369*	0.000326	11.59213	14.36933	12.24636
2	18.38730	57.20957	5.11e-05*	7.873882*	13.08113*	9.100553*

Source: Author's computation from Eview 9 Package
*Note: * indicates lag order selected by the criterion; LR, FPE, AIC, SC and HQ indicate sequential modified LR test statistic, Final Prediction Error, Akaike Information Criterion, Schwarzt Information Criterion and Hannan-Quinn respectively.*

The result in Table 3 showed that all the criteria except modified LR test statistic selected maximum lag length of 2. Thus, as explained earlier, Akaike Information Criterion (AIC) and Schwarzt Information Criterion (SIC) uniformly selected maximum lag length of 2, and therefore the ARDL bounds test and subsequent Error Correction Model (ECM) were estimated using maximum lag length of 2.

In order to calculate the F-statistic which is to be compared with the critical values provided by Pesaran *et al.* (2001), the unrestricted intercept and no trend autoregressive distributed lag (ARDL) model was estimated. The bound test result is presented in Table 4 below. The ARDL(1, 2, 0, 1, 2, 1, 2) was estimated with AIC employed.

Table 4: The Results of Bound Test (Unrestricted Intercept and No Trend)

Bound Test			Pesaran*et al.* (2001)Critical Values		
Test Statistic	Value	K	Significance	Lower Bounds I(0)	Upper Bounds I(1)
F-statistic	**4.158566**	6	10%	2.12	3.23
			5%	**2.45**	**3.61**
			2.50%	2.75	3.99
			1%	3.15	4.43

Source: Authors' Computation and Pesaran et al. (2001) Critical Bound Table. *Note: K is the number of variables minus 1*

Table 4 showed the result of bound test and critical values provided by Pesaran *et al.* (2001). The F-statistic is compared with the critical bounds at 5% level of significance with unrestricted intercept and no trend (Upper bound is 3.61 and Lower bound is 2.45). Specifically, the F-statistic (4.16) is greater than the upper bound critical value (3.61), and we therefore concluded that there is an evidence to reject the null hypothesis of no long run relationship among the variables. Hence, the alternate hypothesis is accepted that there is long run equilibrium relationship among financial inclusion, monetary policy and poverty reduction in Nigeria.

Regression Results

The long run estimation of the ARDL (1, 2, 0, 1, 2, 1, 2) was reported to ascertain the effects of financial inclusion and monetary policy on poverty reduction in both the short run and long run. Table 5 presented the results of the short run and long run effects of financial inclusion and monetary policy on poverty reduction in Nigeria. In the short run, financial inclusion proxied

ISSN: 2408-7920

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Vol. 4, No. 2 (2018), pp. 253-268
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http://doi.org/10.26437/ajar.04.02.2018.22

deposits of rural branches of deposit money banks (DRB), interest rate (IR), gross domestic product (GDP) and inflation rate (INF) had significant negative effects on poverty reduction proxied by consumption per capita ($p<0.05$) while only financial inclusion proxied by loans and advances to small and medium enterprises by deposit money banks (LASME) had significant positive effect on poverty reduction proxied by consumption per capita ($p<0.05$). The result implied that only loans and advances to small and medium enterprises by deposit money banks (LASME),interest rate (IR) and inflation rate (INF) conformed to apriori expectation including money supply (MS) though not significant ($p>0.05$).

Table 5: The Short Run and Long Run Estimation from ECM

Dependent Variable: POV				
Short Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DRB)	-0.049088	0.013031	-3.767051	0.0093*
D(LASME)	0.237502	0.047003	5.052964	0.0023*
D(LASME(-1))	-0.103977	0.041206	-2.523373	0.4511
D(IR)	-0.033583	0.010882	-3.086254	0.0215**
D(MS)	0.243827	0.179851	1.355712	0.2240
D(MS(-1))	-0.427648	0.238223	-1.795160	0.1228
D(GDP)	-0.378371	0.128437	-2.945958	0.0257**
D(INF)	-0.004677	0.001731	-2.702125	0.0355**
ECT(-1)	-1.668291	0.190060	-8.777713	0.0001*
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DRB	-0.029424	0.007161	-4.108952	0.0063*
LASME	0.314585	0.040828	7.705171	0.0003*
IR	-0.039980	0.008769	-4.559022	0.0039*
MS	0.529151	0.062647	8.446620	0.0002*
GDP	-0.462914	0.084918	-5.451272	0.0016*
INF	0.005854	0.001002	5.842893	0.0011*
C	5.147411	0.520685	9.885849	0.0001*

Source: Authors' Computation *Note: All variables are in natural logarithm while (*) and (**) indicates significant at 1% and 5% level respectively. POV, MS, IR, DRB, LASME, GDP and INF represent poverty reduction, money supply, interest rate, deposits to rural branches of deposit money banks, loans and advances to small and medium scale enterprises, nominal gross domestic product and inflation rate respectively*.

Specifically, financial inclusion proxied by loans and advances to small and medium enterprises by deposit money banks (LASME) had significant positive effect on poverty reduction proxied by consumption per capita while reverse was the case when financial inclusion was proxied by

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

deposits of rural branches of deposit money banks (DRB) . A one percent increase in deposits of rural branches of deposit money banks (DRB) would increase poverty level by reducing consumption per capita by about 0.049% in the short run. Alternatively, an increase of one percent in loans and advances to small and medium enterprises by deposit money banks (LASME) would reduce poverty level by increasing consumption per capita by about 0.238% in the short run.

Similarly, monetary policy variables (interest rate and money supply) were correctly signed. The result indicated that one percent increase in the rate of interest will determine about 0.034% increase in poverty level by reducing consumption per capita in the short run. However, an increase of one percent in money supply though not significant will lead to a reduction in poverty level by increasing consumption per capita by about 0.243% in the short run. Moreover, contrary to theoretical propositions, economic growth had not led to poverty reduction in Nigeria. The result showed that a one percent increase in economic growth proxied by gross domestic product will increase poverty level by about 0.378% in the short run. In addition, a one percent increase in the rate of inflation will also lead to an increase in poverty level by reducing consumption per capita by about 0.005% in the short run.

In the long run, financial inclusion was proxied by deposits to rural branches of deposit money banks (DRB financial inclusion proxied by loans and advances to small and medium enterprises by deposit money banks (LASME), inflation rate, money supply, gross domestic product and inflation rate had significant effects on poverty reduction in Nigeria. Similarly to short run effect, the loans and advances to small and medium enterprises by deposit money banks (LASME) had a positive effect on poverty reduction in Nigeria. An increase of one percent in loans and advances to small and medium enterprises by deposit money banks (LASME) will determine about 0.315 per cent increase in consumption per capita thereby reducing poverty level. Also, the deposits to rural branches of deposit money banks (DRB) had a similar effect on poverty reduction. One percent increase in financial inclusion was proxied by deposits to rural branches of deposit money banks (DRB) will lead to about 0.029 percent increase in the level of poverty.

Furthermore, interest rate exerts a negative and statistically significant influence on poverty reduction in the long run. One percent increase in interest rate will determine about 0.0399% decrease in the consumption per capita and increases poverty level in Nigeria. However, money supply had a positive and statistically significant effect on poverty reduction in the long run. The result showed that an increase of one percent in money supply will reduce poverty level by increasing consumption per capita by about 0.529% in the long run. This implies that money supply is an effective tool to reduce poverty level in the long run. In addition, economic growth proxied by gross domestic product exerts a negative and statistically significant impact on poverty reduction by reducing per capita consumption in the long run. The result indicated that a one percent increase in GDP will determine about 0.463% decrease in per capita consumption and thus increases poverty level in Nigeria.

The coefficient of the Error Correction Term (ECT) is the speed of adjustment of poverty level to shocks in financial inclusion, monetary policy and other control variables in the model. The negative coefficient value of ECT indicates that the above long run relationship is stable and any disequilibrium formed in the short run will be temporary and get corrected over a period of time. The negative and statistically significant coefficient value of ECT indicates a stable process of

ISSN: 2408-7920

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

adjustment to the long run equilibrium and it implies that the system corrects its preceding period's disequilibrium by about 166.8% yearly.

Diagnostic Tests

The robustness of the two estimated models (Long run and ECM) was tested via serial correlation test, heteroskedasticity test and stability test.

Table 6: Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.5768	Prob. F(2,14)	0.5745
Obs*R-squared	1.8271	Prob. Chi Square(2)	0.4011

Source: Authors' Computation.

Table 7: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.103342	Prob. F(14,28)	0.3964
Obs*R-squared	15.28794	Prob. Chi-Square(14)	0.3588
Scaled explained SS	9.855554	Prob. Chi-Square(14)	0.7727

Source: Authors' Computation.

Table 8: Ramsey RESET Test

	Value	Df	Probability
t-statistic	0.367872	5	0.7280
F-statistic	0.135330	(1, 5)	0.7280

Source: Authors' Computation, 2017.

In Table 6, serial correlation test result showed that the probability values (0.5745 and 0.4011) are greater than 0.05 level of significance, which implies that, the null hypothesis of no serial correlation cannot be rejected. Thus, we accepted the null hypothesis and therefore concluded that the model of equation (3.10) has no serial correlation. Similarly, Table 7 is the Breusch-Pagan-Godfrey heteroskedasticity test which showed that the model is homoscedastic giving the probability values (0.3922, 0.3286 and 0.9989) which are greater than 0.05 level of significance, and this implies that the null hypothesis of homoscedasticity cannot be rejected. Thus, we accept the null hypothesis and therefore concluded that the model has equal variance (homoscedastic). Furthermore, in Table 8, the Ramsey Reset test was presented where there is no evidence to reject the null hypothesis with the probability value (0.7280) which is greater than 0.05 level of significance. In addition to the above test, stability test of equation was also tested through Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ) tests. The result is as shown in figure 1 and 2.

ISSN: 2408-7920

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

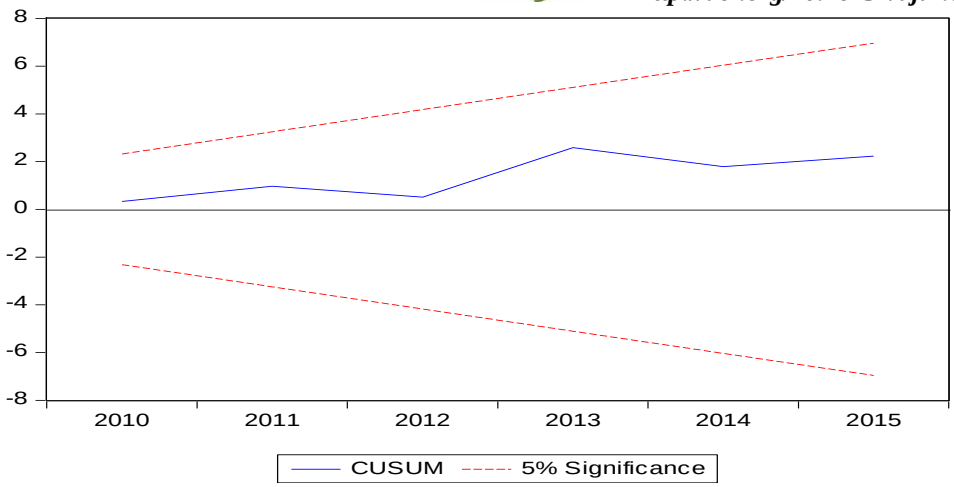

Figure 1: CUSUM test for stability

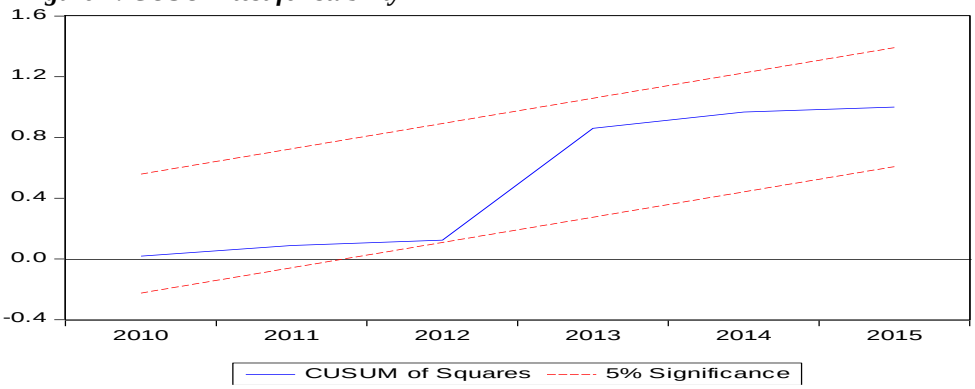

Figure 2: CUSUM of Squares test for stability

Discussion of Findings

The results of the short and long run impact of financial inclusion (deposits to rural branches of deposit money banks and loans and advances to SMEs by deposit money banks) on poverty reduction indicated that only financial inclusion proxied by loans and advances to SMEs by deposit money banks (LASME) has expected sign, that is, LASME is positively related to the poverty reduction. This result is in line with Jin (2017); Onaolapo (2015); Ajide (2015). However, financial inclusion proxied by deposits to rural branches of deposit money banks (DRB) was negatively related to poverty reduction in the long run. The result supported the findings of Onaolapo (2015). The implication of this evidence is that the more loans available to Small and Medium Enterprises (SMEs) and by extension to other private sectors, the increase in per capita consumption and a reduction in poverty level in Nigeria. On other hand, an increase in deposits to rural branches of deposit money banks by rural people reduced the living standard of rural people by decreasing per capita consumption since income can only be saved (as deposits in banks) or consumed, that is the more money is deposited in banks, the less available for consumption given the financial constraints and limited income of rural people. Moreover, monetary policy proxied by money supply (MS) had no significant positive effect in the short run but exerted a significant positive relationship with poverty reduction in the long run.

ISSN: 2408-7920

African Journal of Applied Research
Vol. 4, No. 2 (2018), pp. 253-268
http://www.ajaronline.com
http://doi.org/10.26437/ajar.04.02.2018.22

CONCLUSION

This study examined the effect of financial inclusion and monetary policy on poverty level in Nigeria for the period of 1986-2015 using ARDL approach to cointegration. In conclusion, it is evident from the result that financial inclusion and monetary policy had unpredictable impact on poverty level depending on how financial inclusion or monetary policies are measured. In order words, the effect on poverty reduction was basically dependent on the proxy used to measure financial inclusion and monetary policy in Nigeria. However, it was also observable from the result that economic growth had not transcended to the poor in form of improved standard of living rather it had fostered what could be referred to as vicious cycle of poverty in Nigeria. Also, loans and advances to SMEs by deposit money banks (LASME) has expected effect on poverty reduction both in the short and long run in Nigeria. Based on the result of Error Correction Model, the study concluded that only the financial inclusion proxied by loans and advances to SMEs by deposits money banks (LASME) has a desirable effect on poverty reduction while an increase in deposits to rural branches of deposit money banks (DRB) impoverished the poor rural dwellers in Nigeria. Hence, the effect of money supply (MS) was rendered unless by the associated high inflation rate which frequently had adverse effect on the poor populace.

REFERENCES

Aguera, P. (2015). Financial Inclusion, Growth and Poverty Reduction. Finance for All: Promoting Financial Inclusion in Central Africa. *ECCAS Regional Conference, Brazzaville, Congo, March 23rd, 2015.*

Ahmad, E. and Malik, A. (2009). Financial Sector Development and Economic Growth: An Empirical Analysis of Developing Countries. *Journal of Economic Cooperation and Development, 30, 1, 17-40*

Ajide, F. M. (2015). Financial inclusion and rural poverty reduction: Evidence from Nigeria. Electronic copy available at: http://ssrn.com/abstract=2690992

Bayero, M.A. (2014). Effects of Cashless Economy Policy on financial inclusion in Nigeria: An Exploratory study. *Procedia - Social and Behavioral Sciences 172, 49 – 56.*

Bissoon, R., Seetanah, B., Bhattu-Babajee, R., Gopy-Ramdhany, N. and Seetah, K. (2016). Monetary Policy Impact on Stock Return: Evidence from Growing Stock Markets. *Theoretical Economics Letters, 6, 1186-1195*

Boukhatem, J. (2015). Assessing the Direct Effect of Financial Development on Poverty Reduction in a Panel of Low- and Middle Income Countries, *Research in International Business and Finance*, http://dx.doi.org/10.1016/j.ribaf.2015.11.008

Chibba, M. (2009). Financial Inclusion, Poverty Reduction and the Millennium Development Goals. *European Journal of Development Research, 21, 213–230. doi:10.1057/ejdr.2008.*

Dauda, R.O.S. and Makinde, K.O. (2013). Financial Sector Development and Poverty Reduction in Nigeria: A Vector Autoregression Analysis (1980-2010), *Asian Economic and Financial Review*, 2014, 4(8), 1040-1061.

ISSN: 2408-7920

Efobi, U., Beecroft, I., & Osabuohien, E. (2014). Access to and use of bank services in Nigeria: Micro-econometric evidence. *Review of development finance*, *4*(2), 104-114.

Fowowe and Abidoye (2012): A quantitative assessment of the effect of financial development on poverty in African countries. *Available from http//www.csae.ox.ac.uk.*

Inoue and Hamori (2010): How has financial deepening affected poverty reduction in India? Empirical analysis using State-Level Panel Data. *Institute of Developing Economies Discussion Paper No.249*

Jin, D. (2017). The inclusive finance have effects on alleviating poverty. *Open Journal of Social Sciences, 5, 233-242.*

Jeanneney, S.G. and Kpodar, K. (2008): Financial Development and Poverty Reduction: Can there be a Benefit without a Cost? *International Monetary Fund Working Paper, WP/08/62*

Khan, H.G.A., Khan, A.D., Ahmad, A. and Siraj, A.E. (2011). Financial sector development and poverty reduction. *Global Journal of Management and Business Research 11(5), 1-23.*

Mbutor, M. O. and Ibrahim A. U. (2013). The impact of financial inclusion on monetary policy in Nigeria. *Journal of Economics and International Finance*, 5(8), 318-326

Nwigwe, C.A., Omonona, B.T. and Okoruwa, V.O. (2012). Microfinance and poverty reduction in Nigeria: A critical assessment. *Australian Journal of Business and Management Research, 2(4),*33-40.

Odhiambo, N.M. (2010). Financial deepening and poverty reduction in Zambia; An Empirical Investigation. *International Journal of Social Economics, 37(1), 41-53.*

Onaolapo, A. R. (2015). Effects of financial Inclusion on the economic growth of Nigeria. *International Journal of Business and Management Review, 3,(8),*11-28.

Onakoya, A.B. and Onakoya, A.O. (2014). Alternative financial inclusion strategy: Islamic expectations from Ogun sub-national government, Nigeria. *Singaporean Journal of Business Economics and Management Studies 2(11),*11-20.

Pesaran, M.H., Y. Shin., and Smith R. (2001) Bounds testing approaches to the analysis of level relationships, *Journal of Applied Econometrics*, 16, 289-326.

Udoh, E. and Ogbuagu, U. R. (2012). Financial Sector Development and Industrial Production in Nigeria (1970-2009): An ARDL Co-integration Approach. *Journal of Applied Finance and Banking, 2, 4*, 49-68.

ISSN: 2408-7920