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The impact of financial inclusion on monetary policy in Nigeria

Mbutor O. Mbutor* and Ibrahim A. Uba

Research Department, Central Bank of Nigeria, Nigeria.

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Financial inclusion is currently hot topic in policy spheres because of its potency in encouraging economic growth. And because it improves the sensitivity of aggregate demand to interest rate it has been argued to be useful for the success of monetary policy. However, little attention has been devoted to computing the exact effect of financial inclusion on monetary policy. This paper presents a simple model showing the impact of financial inclusion on monetary policy in Nigeria between 1980 and 2012. The result of the study supports the notion that growing financial inclusion would improve the effectiveness of monetary policy. However, the coefficient of the number of bank branches has the wrong sign and this is explained by the fact that, in opening branches, banks mainly pursue profits but not financial inclusion which is a policy objective, so that there are clusters of branches which are under-utilized while numerous locations which are considered not favourable for balance sheets are under-branched.

Key words: Financial inclusion, monetary policy, economic.

INTRODUCTION

There is currently high energy activity by policy makers in pursuing financial inclusion. This is because it has been shown that countries with higher degrees of financial inclusion tend to post higher economic growth. According to Khan (2011), "empirical evidence indicates a distinct rise in income level of the countries with higher number of branches and deposits of commercial banks and higher number of bank branches per 100,000 adults and more number of deposit accounts per 1000 adults is observed in high income countries than countries in the low and middle income countries". At the micro level of the economy increasing financial inclusion portends so many positive developments with respect to improving the growth rate of the economy. There is evidence that people who are financially included tend to be more productive, consume more and invest more (Ashraf et al., 2006).

Given the enormous advantages which come with financial inclusion and the desire of the Central Bank of Nigeria to advance financial inclusion, it is imperative that it (financial inclusion) is discussed in the plainest of languages in order to broaden the debate, not about the usefulness of financial inclusion as that is taken for granted; in fact, khan (2011) says that the pursuit of financial inclusion is not just a policy option but is compulsory; it is about the various workable strategies to accelerate its rate of reach, and deepen the acceptability of such policies and strategies.

Definitions of financial inclusion sound cliché but we mention for emphasis sake that it simply implies enabling access to financial resource and services for economic agents, especially, those on the lower wrung of the income ladder at an affordable cost. Financial inclusion strategies aim at increasing the number of people with accounts in banks and other formal financial institutions- savings, current and credit. It also pursues the promotion of the use of formal payment media, including cheques, ATM cards, internet payments, mobile payments and

*Corresponding author. E-mail: mbukor@yahoo.co.uk.

Table 1. Targets for financial inclusion in Nigeria

	Target	2010	2015	2020
% of total adult pop.	Payments	21.6%	53%	70%
	Savings	24%	42%	60%
	Credit	2%	26%	40%
	Insurance	1%	21%	40%
	Pension	5%	22%	40%
Units per 100,000 adults	Branches	6.8	7.5	7.6
	MBA branches	2.9	4.5	5.0
	ATMS	11.8	42.8	59.6
	POS	13.3	442.6	850.0
	Mobile agents	0%	3162%	62%
% of pop	KYC ID	18%	59%	100%

Sourced from the Financial Inclusion Strategy Document for Nigeria.

others by the populace. The financial inclusion strategy document states that "financial inclusion is achieved when adult Nigerians have easy access to a broad range of formal financial services that meet their needs at affordable cost." Although there has been progress over time in the extent of financial inclusion in Nigeria, the country still lags other peer-level countries in many of the indicators of inclusion. In the period, 2008 to 2010 the percentage of completely excluded fell from 53 to 46, while those served by the informal sector fell from 24 to 17. At the same time, 'formal other' doubled from 3 to 6% and formally banked rose from 21 to 30%" (CBN, 2012). Comparatively, Nigeria has a formal payments penetration of 21.6 per cent that is lower than the level of 46% in both South Africa and Kenya. In terms of access to savings products, Nigeria has 461 savings accounts per 1000 and this poorly compares with 2,063 savings accounts per 1000 in Malaysia. Credit penetration as an index of financial inclusion is worse in Nigeria compared to other peer countries. It posts only 2% access to formal products that is a far cry from 32% in South Africa. Also, insurance penetration in South Africa is about 30% and only 1% in Nigeria. These comparisons are intended to show a picture of where the country is in terms of financial inclusion. The government, with the instrumentality of the CBN has set specific targets with accompanying actionable plans to advance financial inclusion in the country (Table 1).

It is possible to list the advantages of financial inclusion in the economy to no end of extent. However, this paper takes a specific look at the impact of financial inclusion on monetary policy in Nigeria. The financial inclusion strategy document envisages that financial inclusion will help CBN to achieve its core mandate of ensuring price and monetary stability in the economy by increasing the scope of savings, investment and consumption decisions that are made within the formal financial sector (Table 2). It is also hoped that widening financial inclusion will reduce the cost of cash management, and defend the strength of the local currency, while promoting a sound financial system in the economy.

So, the aim of this paper is to evaluate the impact of financial inclusion on the effectiveness of monetary policy in Nigeria and therefore, lays emphasis on the role of financial inclusion in transmitting monetary policy impulses to achieve the objective of monetary policy. The paper is arranged in sections. After the introduction, section II presents literature survey on links between financial inclusion and the goals of monetary policy, and presents stylized facts about financial inclusion in Nigeria. Section III discusses the methodology of analysis. In section IV, the results of econometric estimations are presented. Section V summarizes the paper with recommendations.

Thoughts on financial inclusion, growth and monetary policy implementation

There is limited literature investigating the specific relationships between financial inclusion and monetary policy transmission. Most studies have focused on the effect of financial inclusion on growth, income inequality, and poverty reduction. Cross-country evidence relates to the benefits of financial depth rather than to broad financial inclusion; whereas deep financial systems are not necessarily inclusive ones, especially when financial access is heavily skewed toward the wealthy (CGAP, 2012).

Financial inclusion is generally defined as ensuring access to formal financial services at an affordable cost in a fair and transparent manner (FATF, 2011a, p. 12 in De koker and Jentzsch, 2013). In the past decade, the multilateral agencies have promoted financial sector deepening as a means to improve economic growth, reduce poverty, and promote social inclusion. Perceived

Table 2. Core mandate of CBN.

Objectives of CBN	How financial inclusion addresses the objectives of CBN
Ensure monetary and price stability	CBN will be able to influence savings, investment and consumption behavior through interest and exchange rate changes, a direct result of increased participation of Nigerians in the former financial sector
Issue legal tender currency in Nigeria	Increased penetration of e-payments usage and cash-less efforts will reduce the cost of cash management and the cost of issuing legal tender currency
Maintain external reserves to safe guard the international value of the naira	Increased access to finance for MSMEs a s a result of financial inclusion (Credit made on the back of mobilized savings) will lead to greater productivity, increased non-oil exports and stable subsequent demand for naira
Promote a sound financial system in Nigeria	Financial inclusion will lead to development of a stable financial system funded by non-volatile savings which are robust and provide cushion against external shocks
Provide economic and financial advice to the federal govt.	CBN will be able to advise the govt. as increased participation in formal finance will lead to grater visibility of the performance of the economy

benefits of financial inclusion, preliminary data, and strong anecdotal evidence can be found in Demirgüç-Kunt et al. (2008) and De koker and Jentzsch (2013).

Mahendra (2006) defined financial inclusion as the availability of banking services at an affordable rate to the large segment of the vulnerable and low-income groups. He stated that although credit is the most significant component of financial services, financial inclusion covers various other services such as savings, insurance, payments and remittance facilities issued by formal financial institutions to those perceived to be financially excluded.

Hariharan and Marktanner (2012) defined financial inclusion as access to formal financial services such as credit, savings and insurance opportunities. They stated that lack of financial inclusion is a multifaceted socio-economic phenomenon that results from various factors such as geography, culture, history, religion, socio-economic inequality, structure of the economy and economic policy. They however noted that financial inclusion is a huge source of economic growth and development, adding that it is a strong and significant correlate of a country's total factor productivity and, therefore, possess the ability to create capital. The study concluded that financial inclusion has the potential to increase the financial sector savings portfolio, the efficiency of financial intermediation, and allows for tapping of new business opportunities.

According to Khan (2011), financial inclusion, especially when viewed in the context of overall economic inclusion has the ability to improve the financial status and standards of living of the poor and the vulnerable class of the society. He added that access to basic financial services would lead to increased economic activities and employment opportunities for rural households. He noted that this has a multiplier effect on the economy, as it would lead to higher disposable income for the rural households which will in turn lead to more savings and a robust deposit base for banks and other financial institutions.

He further stated that financial inclusion ensures greater involvement by different segments of the society in the formal financial sector, thus, increasing the effectiveness of monetary policy. He noted that a large informal sector impacts negatively on the transmission of monetary policy due to financial decisions taken by a significant segment of financially excluded households and small businesses that are independent of and un-affected by, the monetary policy actions of the central bank. Thus, as the share of the formal financial sector increases through greater financial inclusion, it brings about a significant positive externality by making monetary policy transmission more effective.

He went further to add that in most cases, efforts to include a large section of the population within the circle of formal banking and financial services result in the provision of innovative solutions and outsourcing measures. Such financial innovations reduce costs and increase the overall efficiency of the economy and the financial system. He concluded that through faster information dissemination and more efficient functioning of the financial markets, financial inclusion contributes to the effectiveness of monetary policy transmission.

According to Subbarao (2009), financial inclusion is a necessary condition for a sustainable and equitable growth. He argued that very few economies transit from an agrarian system to a post-industrial modern society without a broad-based financial inclusion strategy. He noted that past experience has shown that economic opportunity is strongly entwined with access to financial services and that such access is especially influential on the poor as it enables them grow savings, make investments and benefit from credit. He added that financial inclusion will make it possible for governments to make payment such as social security transfers, Credit Guarantee Funds, subsidies and wages directly to the bank accounts of beneficiaries through electronic transfer channels. This will minimize transaction costs, pilferages and leakages.

He concluded that financial inclusion provides an avenue for bringing the savings of the poor into the formal financial intermediation system and channel same to investment, adding that the large number of low cost deposits will offer banks an opportunity to reduce their dependence on bulk deposits and help them manage both liquidity risks and asset-liability imbalances more efficiently.

Sarma and Pais (2010) asserted that financial inclusion as a process ensures ease of access, availability and usage of the formal financial system to all the segments of an economy. They further stated that among the qualities of an inclusive financial system is that it enables the efficient allocation of productive resources and in the process reduce the cost of capital. They added that apart from significantly improving the daily management of finances, an inclusive financial system also helps in reducing the prevalence of informal financial institutions that are in most cases exploitative. They concluded that an all-inclusive financial system enhances efficiency and welfare by providing avenues for secure and safe financial practices.

In June 2011, the Financial Action Task Force (FATF), the international standard-setting body for Anti-Money Laundering and Combating Financing of Terrorism (AML/CFT) reiterated the need for a broad-based financial inclusion when it noted that financial exclusion is a risk to financial integrity. The motivation for their support was based on the premise that extending formal financial services to all the segments of the society will improve law enforcement by ensuring that more transactions are subject to AML/CFT controls and monitoring. This approach makes the duo of financial inclusion and financial integrity complementary policy objectives. In 2012, this support received a boost when the FATF adopted new, revised strategies that were expanded to cover tax crimes (De koker and Jentzsch, 2012).

From the forgoing arguments, there is a consensus among available literatures that the expansion of formal financial services to all the segments of the economy 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. Therefore, it can be concluded that if financial inclusion leads to a healthier household and small business sector, it could also contribute to enhanced macroeconomic (and financial system) stability.

METHODOLOGICAL ISSUES

Choice of variables

In the course of literature survey we did not find any study that has empirically investigated the impact of financial inclusion on monetary policy. So there are several initial challenges that need to be overcome to set the stage for the analysis. The first of these challenges relates to the choice of financial inclusion indicators to be used in the model. The IMF Financial Access Survey started in 2004 adopts the following indicators of financial access and usage:

Access Indicators
1. Number of commercial bank branches per 1000 km2
2. Number of commercial bank branches per 100, 000 adults
3. Number of ATMs per 1,000 km2
4. Number of ATMs per 100,000 adults

Usage Indicators
1. Number of borrowers from commercial banks per 1000 adults
2. Outstanding loans from commercial banks (% of GDP)
3. Number of depositors with commercial banks per 1000 adults
4. Outstanding deposits with commercial banks (% of GDP)

There are other indicators used by other organizations interested in financial inclusion. The AFI Core Set of Financial Inclusion Indicators measures access with indicators like

1. Number of access points per 10,000 adults at a national level and segmented by type and by relevant administrative units
2. Percentage of administrative units with at least one access point
3. Percentage of total population living in administrative units with at least one access point.

It measures usage with indicators like

4. Percentage of adults with at least one type of regulated deposit account (in countries where these data are not available, use as proxy the number of deposit accounts per 10,000 adults)
5. Percentage of adults with at least one type of regulated credit accounts (in countries where this data is not available, use as proxy the number of loan accounts per 10,000 adults

The Global Findex Core Indicators and FinScope Indicators adopt other variants of measures to indicate extent of financial inclusion. However, the definition of financial inclusion is the same for all stake holders so that the different indicators by different stakeholders essentially point to achieving the same objective, the extent to which financial services reach the populace at affordable costs. In fact, the major issue about the various compilations of indicators is to enable cross country comparisons. Therefore, since the aim of this paper is not to compare financial inclusion across countries, emphasis should be concentrated on the local measures that indicate growing or waning extent of financial inclusion in Nigeria. To arrive at these, country specific information and data constraints are taken into account.

The variables that we consider include outstanding loans of commercial banks as a percentage of the GDP. The number of bank branches in Nigeria, deposits and loans of rural bank branches in Nigeria. The aggregate size of deposits and loans of rural branches should be indicative of the extent of openness of the rural populace to the activities of the deposit money banks. It would have been a richer analysis to factor loans and deposits of rural microfinance banks but data on this are not sufficient for the time series being evaluated (Figures 1-5).

The second challenge concerns determining the channels through which financial inclusion affects monetary policy. Again,

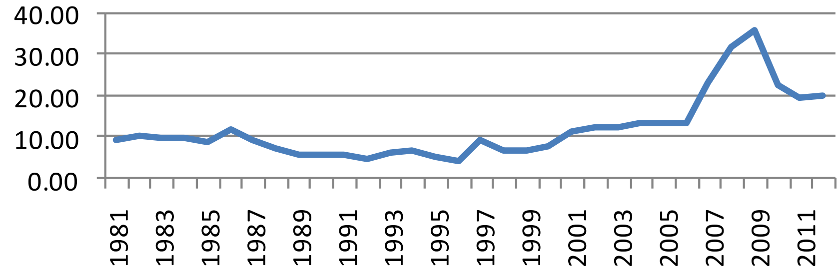

Figure 1. DMB loans (GDP%).

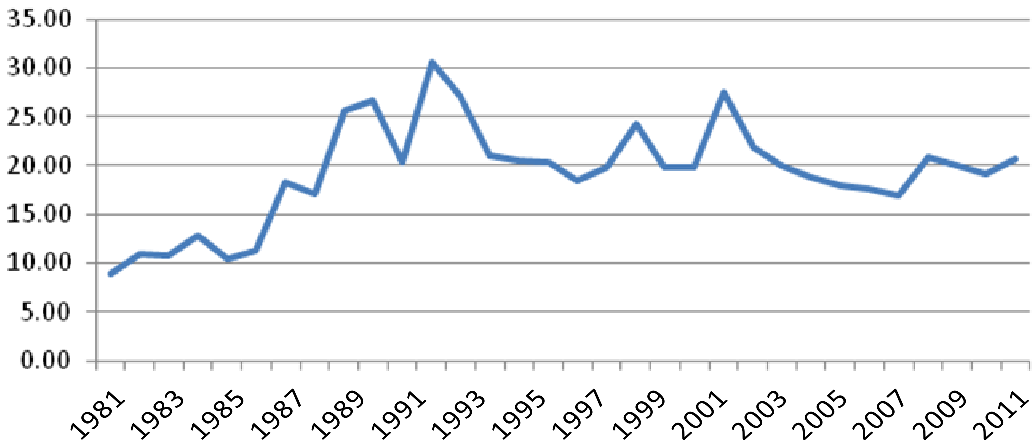

Figure 2. Average lending rate.

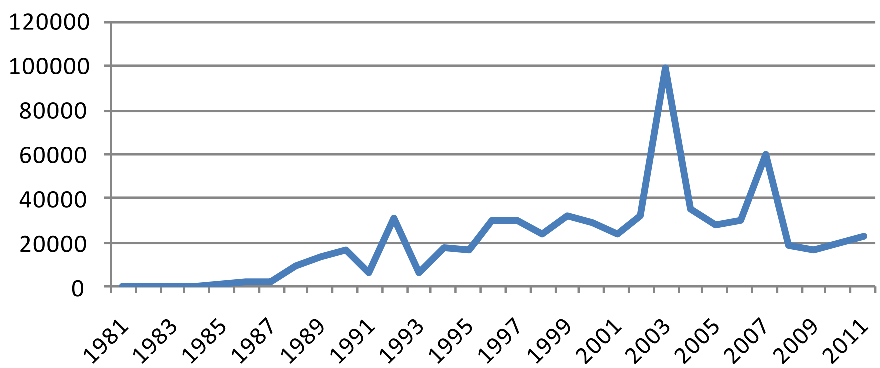

Figure 3. Rural branch deposits and loans

because it is a pioneer effort, we use oral tradition to explore the possible channels. One argument that is catholic is that with growing financial inclusion, the sheer higher number of people who are brought under the formal umbrella will make aggregate demand and investment more sensitive to the monetary policy rate through the increased elasticity due to the lending rate. The argument can also be made that increased financial inclusion will provide a cheaper and stable pool of deposits, especially, savings which not only will ensure greater resilience of banks with respect to financial shocks but also reduce dependence on foreign lines of credit for making loans and other investments. This should have the effect of contributing to reducing pressure on the foreign exchange market and thereby stabilizing the naira. Thus, it should be expected that financial inclusion should work through the deposit money banks' lending rates and the exchange rate of the naira to affect the achievement of the ultimate objective of monetary policy. The lending rate enters the model as the average of maximum and prime lending rates.

The third challenge is to determine what target of monetary policy that financial inclusion should impact. This is the easiest challenge as the 2007 CBN Act explicitly desires to ensure monetary and price stability. As monetary stability relates to ensuring the growth in

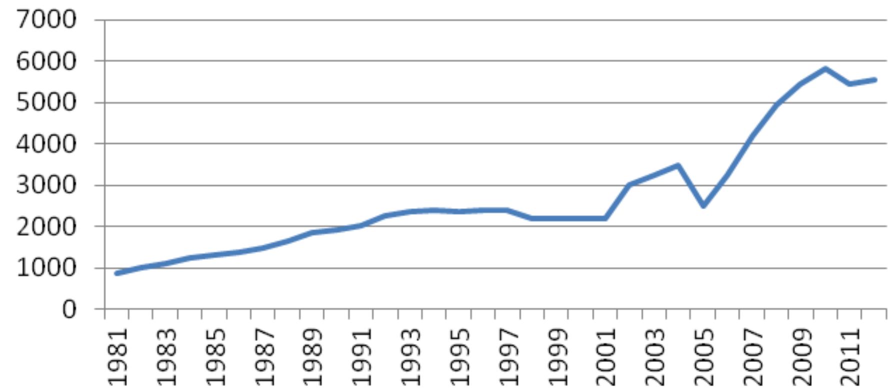

Figure 4. Number of commercial bank branches.

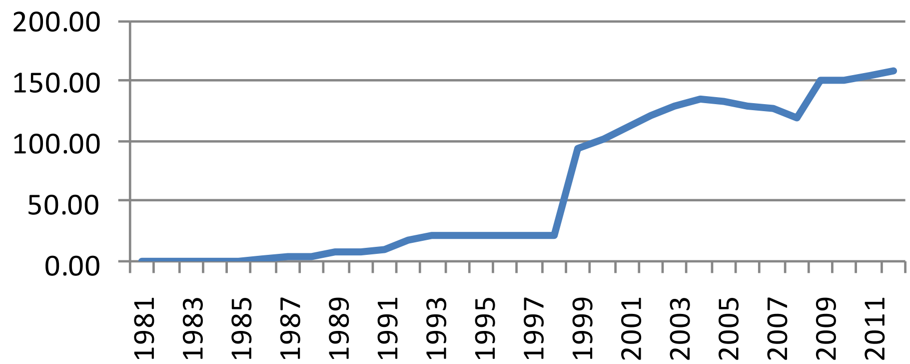

Figure 5. Average exchange rate (N/$).

money supply remains within a programme path through periodic (now daily) open market operations, and this is more of an internal goal for the bank, ensuring price stability stands out as overriding objective of monetary policy. So, inflation is chosen as the measure of monetary policy success. The percentage change in the headline Consumer Price Index (CPI) is used to represent the inflation rate. Thus, the operating model is,

$$Dlog(r) = b_0 + b_1(Y) + b_2(X) + e \quad (1)$$

Dlog(r) is the inflation rate. Y is a vector of financial inclusion indicators including number of bank branches (nbr), total number of loans and advances of commercial banks as a percentage of GDP (lac), and aggregate of rural bank branches of deposits and loans (rdl). X is the vector of control variables including commercial banks' average lending rate (calr) and the foreign exchange rate of the naira (xr). The study covers between 1980 and 2012. The operational model is thus

$$Dlog(r) = b_0 + b_1(lac) + b_2(nbr) + b_3(rdl) + b_4(xr) + b_5(calr) + e \quad (2)$$

Data properties

We perform unit root tests, using the Augmented Dickey-Fuller approach to ascertain presence of random walk. The Johansen-Juselius test for co-integration confirms co-integration among the variables. The unit root test shows that at levels, calr, lac, nbr, xr and rdl are all i(0) but cpi is i(1). So to bring all variables to the same level they enter the model at first difference. The test for co-integration test is in Tables 3 and 4.

ESTIMATION RESULTS AND INTERPRETATION OF FINDINGS

Before the presentation of the detailed result, we foreshadow the main finding of the study by stating that financial inclusion is a veritable strategy for improving the effectiveness of monetary policy in Nigeria. From the Table 5 all included measures of financial inclusion except the number of commercial bank branches have the expected sign. Specifically, a 1% increase in the ratio of total loans and advances by the commercial banks will reduce inflation by 0.01%. This result should be expected especially, if the new loans and advances are put to purposes of investment.

Analyzing the actual data of loans and advances by commercial banks to the different sectors of the economy it can be seen that the share of retail loans to individuals as a ratio of the total number of loans is infinitesimal,

Table 3. Unrestricted cointegration Rank Test (Trace).

Hypothesized No. of CE(s)	Eigen value	Trace statistic	0.05 critical value	Prob.**
None *	0.950572	159.4372	95.75366	0.0000
At most 1 *	0.737358	81.24885	69.81889	0.0046
At most 2	0.617387	46.48776	47.85613	0.0668
At most 3	0.422685	21.50874	29.79707	0.3267
At most 4	0.239373	7.225210	15.49471	0.5516
At most 5	0.004271	0.111297	3.841466	0.7387

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 4. Unrestricted Cointegration Rank Test (Maximum Eigenvalue),

Hypothesized No. of CE(s)	Eigen value	Max-eigen **statistic**	0.05 critical value	Prob.**
None *	0.950572	78.18836	40.07757	0.0000
At most 1 *	0.737358	34.76109	33.87687	0.0391
At most 2	0.617387	24.97902	27.58434	0.1040
At most 3	0.422685	14.28353	21.13162	0.3422
At most 4	0.239373	7.113913	14.26460	0.4758
At most 5	0.004271	0.111297	3.841466	0.7387

The Trace and maximum Eigenvalue criteria both show long term relationship among the variables with 2 cointegrating equations. Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) p-values.

Table 5. Estimation results.

Variable	Coefficient	Std. Error	t-statistics	Prob.
Comm. Banks Average lending rate	-0.0162	0.321390	-5.056179	0.0000
Loans and advances of Comm. Banks	-0.009	0.334723	-2.816931	0.0095
rural branch deposits & loans	-0.0000	7.66E-05	-1.490497	0.1491
Exchange Rate	0.003	0.043615	5.971754	0.0000
Number of bank branches	0.0003	0.002290	10.91381	0.0000
C	-1.525338	6.437017	-0.236963	0.8147
R-squared	0.978821			
Adjusted R-squared	0.974409			
Durbin-Watson stat	1.545846			

whereas those of the productive sectors are large. The cumulative share of the agriculture, manufacturing, mining and quarrying, and telecommunications in total commercial banks credit is 52.93% and bearing in mind that those sectors are four out of fourteen sectors. The coefficient of total loans and advances as a ratio of the GDP is statistically significant at 99% confidence level.

The coefficient of the aggregate of deposits and loans by rural commercial bank branches indicates that an increase in exposure to commercial banking activities in the rural area will also cause inflation to decline. However, the size of the coefficient is insignificant. This is not entirely surprising because comparing the size and volume of transactions in the rural areas with those of the total geography of the country will reveal a ratio of nearly no effect. For instance in 2011, the ratio of rural exposure to commercial banks to total exposure (please note that exposure is used in the broader sense of aggregating deposits and loans) was negligible. However, the negative sign of the coefficient of rural branch loans and advances indicates that further increases in exposure to commercial banks in the rural areas will be good omen

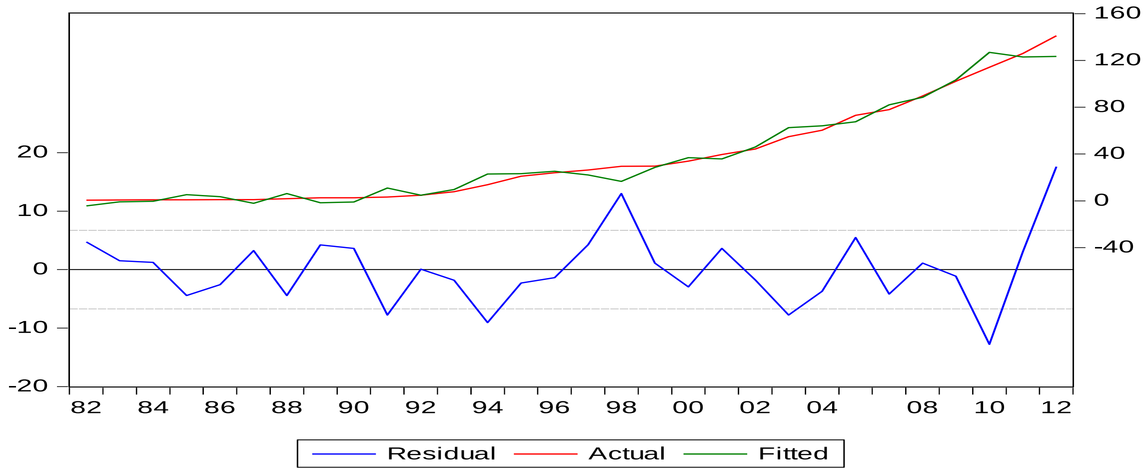

Figure 6. Coefficient of exchange rate.

for monetary policy in Nigeria going forward.

The number of bank branches as a measure of financial inclusion indicates that the higher the number of bank branches the more inflation increases. However, the size of increase in inflation is almost unnoticeable. But the fact remains that the positive relations might be pointing to the fact that the absolute number of branches does not necessarily imply increasing financial inclusion. Of course it is common place to find many commercial bank branches in hardly 1 kilometer apart serving a very few number of people. From the financial inclusion strategy document of Nigeria, there is evidence that the country is lagging behind peers in terms of the number of customers served per branch.

The control variables, commercial banks' average lending rate and exchange rate have the right signs. The coefficient for interest rate shows that an increase of 1% in the interest rate causes inflation to decline by 0.02%. This is in line with classical arguments that an increase in interest rate will increase the cost of money and thereby exert a downward pull on investment and the GDP. It will also reduce aggregate demand from the consumption angle. The coefficient of the exchange is clearly telling of the nature of the Nigerian economy. Being import based, the positive coefficient of the exchange rate, implying depreciation of the naira tends to increase the rate of inflation. From the result, a depreciation of 1% will increase inflation by 0.003%. The coefficient of exchange rate is strongly statistically significant (Figure 6).

Conclusion

The paper aimed to ascertain whether deepening financial inclusion can play a role in monetary policy implementation in Nigeria. The study evaluated several measures of financial inclusion and computed the effects some select few would have on the ultimate objective of monetary policy. The findings are instructive. As a general note, financial inclusion is a veritable strategy for improving the effectiveness of monetary policy. Specifically, there is a strong but inverse relationship between the rate of inflation and the size of commercial banks' loans and advances as a ratio of the GDP. This indicates that the sheer making credit available in the system would boost investment and dampen inflation. The aggregate exposure to rural branches by customers also holds a good promise for monetary policy as its coefficient also is negatively related to inflation. The number of bank branches as a measure of financial inclusion did not come out with the right sign. This is however read to be symptomatic of unnecessary cluster of branches in particular locations where they serve very few customers.

We say the final words with the recommendation that the CBN should increase its vigour for pursuing financial inclusion as it not only helps with economic growth as espoused in literature, but also effectuates monetary policy in Nigeria.

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