FINANCIAL INCLUSION, GOVERNANCE AND ECONOMIC PROGRESS IN NIGERIA: WHAT HAPPENS TO THE WELFARE OF THE POOR?

Joseph A. Omojolaibi, PhD
Department of Economics, University of Lagos, Akoka, Lagos, Nigeria

Abstract
Poverty and income inequality still remain stubborn challenges in Nigeria. Financial inclusion and transparent democratic practice are often considered as critical elements that make growth inclusive and sustained. This study enquires empirically the impact of financial inclusion and governance characteristics on economic progress via three major channels: Investment in infrastructure, per capita GDP and income inequality. The data spans the period 1980-2014, the study leans on the Generalised Method of Moment (GMM) estimation technique for the analysis. Three striking results were reported: (i) financial inclusion and governance indices have statistical relevance in determining infrastructural investment in Nigeria; (ii) Governance indices and commercial bank deposit significantly increase per capita GDP; and (iii) financial inclusion has the tendency to bridge the gap between the rich and the poor and reduce the prevalence of poverty in the economy. The findings suggest that to reduce income inequality and increase per capita GDP, more measures must be taken to address financial exclusion of low-income groups from financial services. Also transparent democratic practice that will increase investment in infrastructure and enhance per capita GDP in order to alleviate poverty should be enthroned in Nigeria.

Keywords: Financial inclusion, poverty, income inequality, Economic progress
JEL Classification: E02, E44, F63

1. INTRODUCTION
Financial inclusion is the process that ensures the ease of accessibility, availability, and affordability of formal financial services for all members of an economy (Sarma 2008). However, it is also important to distinguish between voluntary versus involuntary exclusion. The World Bank (2014) defines voluntary exclusion as a condition where the segment of the population or firms choose not to use financial services either because they have no need for them or due to cultural or religious reasons. In contrast, involuntary exclusion arises from insufficient income and high risk profile or due to discrimination and market failures and imperfections. Policy and research initiatives must then focus on involuntary exclusion as it can be addressed by appropriate economic programs and policies which can be designed to increase income levels, reduce poverty, bridge income inequality gap and correct market failures and imperfections.

In 2012, Nigeria introduced the National Financial Inclusion Strategy (NFIS) and promoted it as a key driver in becoming one of the world’s largest economies. The goal of NFIS is to decrease the number of Nigerians without access to financial services from 46.3% to 20% by the year 2020. These developments present an exciting opportunity for female entrepreneurs, especially, to participate in the banking system. Despite being Africa’s largest economy, only 30% of Nigerian adults have an account at a formal banking institution. Currently, more women are excluded than men, with about 73% of them holding no account (Njideka, 2014).

Although financial inclusion and governance have become topical on the global policy agenda for sustainable development, economic literature on financial inclusion-governance nexus especially in developing economies is still in its infancy. Most studies have looked into the appropriate measures of financial inclusion both at household and country levels, while some papers focused on the role of...
financial access in lowering poverty and income inequality. Other papers have dealt with varying levels of financial inclusion and institutional structure both in advanced and emerging economies. However, few papers have painstakingly examined the interactions of financial inclusion and governance indicators on the welfare of the poor. This present study therefore, fills this lacuna by providing key pro-poor policy insights on the transmission mechanism of financial inclusion and governance on economic progress through the lens of investment in infrastructure, per capita GDP and income inequality in Nigeria.

Following the financial inclusion and governance indicators, this study tests the importance of financial inclusion and governance in reducing poverty in Nigeria. This study asks the following questions: first, does financial access and governance structure affect investment in infrastructure, per capita GDP and income inequality in Nigeria? second, does economic progress leads to poverty reduction in Nigeria?

The rest of the paper is structured into five sections. Section II articulates the background of the study in the light of recent development in financial inclusion and governance in Nigeria, also the branches of financial inclusion in Nigeria are x-rayed in this section. Section III contains the review of the relevant literature. The preoccupation of section IV is the estimation strategy, specification of the models and the data. The empirical findings and interpretation of results are discussed in section V, while Section VI concludes with policy implications.

2. BACKGROUND OF THE STUDY

2.1 Recent Developments in Financial Inclusion and Governance in Nigeria

Recent empirical enquiries adjudged that financial inclusion has prominently manifested in Nigeria with the huge sum of the money in the country residing outside the banking system. The issue of financial inclusion and governance have therefore been a “thorn in the flesh” of the Nigerian Government that has received the attention of private individuals and Government agencies both within and outside the country (CBN, 2014).

Prior to the recent efforts to promote financial inclusion, the Nigerian economy was largely a cash-based economy with significant proportion of the narrow money stock in the form of currency outside the banking system. Although the average ratio of the currency outside the banking sector to narrow money supply plummeted from 61.1 percent in the 1960s to about 44.3 percent in the 1970s and later trended downward to 40.9 percent in the 1980s. The decline in the ratio was attributable to a combination of developments such as increased literacy and Government policies directed towards encouraging financial sector growth. The central Bank of Nigeria (CBN) during this period initiated rural banking programme directing banks to open branches in the rural areas, encouraging Nigerians to utilise financial institutions and products more (CBN, 2013).

However, the crisis in the banking industry during the 1990s eroded the confidence of the populace in the country to utilise banking services. This problem became worsened due to the excessive spending of the political elites that led to the increase in the level of currency outside the banking system. During this period, the ratio of currency outside the banking system increased to 47.7 percent by the end of the 1990s. To ameliorate the damaging impact of the banking industry distress during this period, Nigerian Government implemented several policies that are not only meant to improve the general well being of the populace in terms of employment generation and income earning capacity but also geared towards increasing the deepening of the financial sector. Example of such economic reform is the bank consolidation programme of 2004. This measure stimulated the use of the financial services in order to reduce the ratio of currency outside the banking system to about 38 percent by the end of 2005 (CBN, 2013).

Since 2005, the Nigerian financial services has witnessed accelerated activities by both the Government and the regulatory authorities aimed at deliberately promote policies that are intended to grow financial inclusion. Examples of such policies are:

i. Financial System Strategy 2020 (FSS 2020)

ii. Microfinance Policy

73
iii. Non-Interest Banking  
iv. E-banking Products, Electronic Payment System and Cashless (Cashlite) Policy

Furthermore, a survey conducted by the Enhancing Financial Innovation and Access (EFInA) in 2010 submitted that only 30.7 million out of the 85 million Nigerians above the age of eighteen have access to formal financial services (services from deposit money banks and other formal institutions), leaving out over 54 million either served by the informal institutions or totally unbanked (CBN, 2013). The formally banked (25.4 million) use the products and services of the deposit money banks either as salaried workers or as business men and women, while the remainder (5.3 million) of the formally serviced, use the services of other formal institutions like the financial houses, microfinance banks etc. Nigeria has a higher proportion of financially excluded adults compared with other African Countries. For example, in Nigeria, the proportion of financially excluded adults stood at 46.3 percent, compared with 26.0 percent in South Africa, 33.0 percent in Botswana and 32.7 percent in Kenya (EFInA, 2010). This implies that there is need for further research into what could promote financial inclusion and its multiplier effects on growth outcomes and poverty reduction in Nigeria, hence, the relevance of this research.

2.2 Branches of Financial Inclusion in Nigeria

As defined by FSS 2020, the branches of financial inclusion in Nigeria are: Banks, Other Financial Institutions, Insurance and Pensions.

(i) Banking

- Deposit Money Banks Currently, 21 deposit money banks are serving about 20 million clients, based on a network of about 6,000 branches and about 10,000 ATMs. A large part of the banking market in Nigeria remains untapped and has the potential to provide a large funding base through savings mobilization. They present a large market for credit, payment, insurance and pension services commercial banks and hence profit for the banks.

- Microfinance Banks As of July 2011, Nigeria had 866 microfinance banks (MFBs). The MFB network served 3.8% (or 3.2 million clients) of the adult population. Of the 3.2 million clients, 65% used savings products, 14% used credit products and 4% used ATM cards. The vast majority of MFBs can increase their scale and operating capacity by exploiting the opportunities provided by the Financial Inclusion Strategy.

(ii) Other Financial/Microfinance Institutions

Non-bank microfinance institutions (MFIs), which include financial NGOs, financial cooperatives, self-help groups, trade associations and credit unions are not regulated by the Central Bank of Nigeria. Over 600 MFIs are being monitored by CBN. MFIs may benefit from the Financial Inclusion Strategy through increased technical assistance and funding to enhance their outreach to members in a more effective and efficient manner.

(iii) Insurance

The recapitalisation exercise of 2007 led to an increasingly consolidated industry with 49 insurance companies. However, as of December 2010, the insurance sector as a whole served only 1% of the population. With 99% of the population unserved, an enormous business potential remains to be tapped by the insurance companies.

(iv) Pensions

The 2004 Pension Reform Act established the Compulsory Pensions Scheme (CPS), which has been largely adopted by the Federal Government and private sector. Annual pension contributions grew from NGN 60 billion in 2006 to NGN 290 billion in 2010. However, only 17 of the 36 State Governments and the Federal Capital Territory have passed bills to adopt and implemented the CPS. The current pension system makes allowances for voluntary contributions into which both the formal

---

and informal sectors in Nigeria can tap. Pension fund administrators and custodians can increase their outreach to these untapped segments through appropriate products.

3. REVIEW OF RELEVANT LITERATURE

The review here is divided into two major sub-headings, these are: (i) financial inclusion and economic growth; and (ii) financial inclusion, poverty and income inequality. They are reviewed in turn.

(i) Financial Inclusion and Economic Growth

Migap et al (2015), submitted that access to basic financial services in Nigeria would lead to increased economic activities and employment opportunities for rural households, as more people get engaged in economic activities, the disposable income of the rural household would rise, leading to more savings and a robust deposit base for the bank, the multiplier effect will result in economic growth, this implies inclusive growth. Hariharan and Marktanner (2012) concluded that financial inclusion has the potential to enhance economic growth and development. They found a strong positive correlation between a country’s financial inclusion and total factor productivity (TFP), implying that financial inclusion possesses the ability to create capital. The study concluded that financial inclusion has the potential to increase the financial sector savings portfolio, enhance efficiency of intermediation, and boost entrepreneurial activities which ultimately results in economic growth.

According to Sarma and Pais (2010), a financially inclusive system helps in reducing the prevalence of informal financial institutions that are in most cases exploitative, it encourages easy access to capital and usage of the formal financial system by all segments of the economy. Financial inclusion enhances efficient allocation of productive resources and in the process reduces the cost of capital. They concluded that financially inclusive systems enhance efficiency and welfare by providing avenues for secure and safe financial practices. Mbutor and Uba (2013) presented a simple model showing the impact of financial inclusion on monetary policy in Nigeria between 1980 and 2012. The result from the study shows that growing financial inclusion improves the effectiveness of monetary policy. Subbarao (2009) asserted that a very few economies transit from an agrarian system to a post-industrial modern society without a broad-based financial inclusion strategy. Financial inclusion will make it possible for governments to make payments such as credit guarantee funds, subsidies and wages, directly to the bank accounts of beneficiaries through electronic transfer channels. This will minimize transaction costs, pilferages, leakages and subsequently eliminate corruption from the society.

Aduda and Kalunda (2012) concluded that household’s access to finance has a strong positive relationship with growth. It further found that the relationship between depth and growth is bell-shaped, suggesting that the returns to growth falls with higher depth beyond a certain point. However, financial institution access (FIA), an index of the density of ATMs and bank branches that narrowly defines inclusion, had a monotonic relationship with growth. Dabla-Norris, et al (2015) use a general equilibrium model to illustrate how lowering monitoring costs, relaxing collateral requirements and thereby increasing firms’ access to credit would increase growth. Using a model of entrepreneurship, Serrao et al (2012) find that microfinance has positive impacts on consumption and output. Some recent studies show that higher financial inclusion impacts stability, and could entail trade-offs. With regard to firms, Dabla-Norris et al (2015) show that higher access to credit could raise non-performing loans in banks, thus entails a trade-off with stability. For households, Han and Melecky (2013) find that greater financial inclusion through a broader access and use of deposits can significantly mitigate deposit withdrawals during times of financial stress. On economic stability, Mehrtra and Yetman (2015), studying 130 countries, find that aggregate consumption volatility is lower in countries where financial inclusion is high, this is especially for measures of account ownership and saving at a formal financial institution.

(ii) Financial inclusion, Poverty and Income Inequality
Several empirical studies have examined the impact of financial inclusion on poverty and income inequality. For example, Burgess and Pande (2005) discovered that state-led expansion of rural bank branches in India has led to reduction in poverty. These authors specifically found robust evidence that increase in the number of bank branches in rural unbanked locations in India was associated with reduction in rural poverty rates in those areas. In like manner, Brune et al. (2011) submitted that increased financial access through expansion in savings account in rural Malawi improves the overall well-being of poor households as it makes provision for accessibility to their savings for agro-based input use. Also, Allen et al. (2013) concluded that when the resources of the underprivileged households are tapped by commercial banks, financial access of the poor in Kenya will be enhanced. Furthermore, Honohan (2008) constructed a financial access indicator for 160 countries. He combined both household survey datasets and published secondary data sources on financial institutions and assessed country characteristics that might possibly influence financial access. Among the variables explored are: aid as percent of gross domestic product, age dependency ratio, and population density, mobile phone subscription, and quality of institutions. He concluded that aid as percent of gross domestic product, age dependency ratio, and population density significantly lower financial access; while mobile phone subscription and quality of institutions significantly increase financial access. Based on the cross-country relationship between poverty and financial access, his results show that financial access significantly reduces poverty, however, the result is valid only when financial access is used as the only determinant, i.e., it loses significance when other variables are added as determinants.

Following from the earlier version of his study, Honohan (2007) examined the relevance of financial access indicators in bridging income inequality. In his result, he showed that higher financial access significantly reduces income inequality (proxied by the Gini coefficient). However, the connection between financial access and income inequality depends on the specification used, i.e., when the access variable is included on its own the results are significant, but the same does not hold when per capita income and dummy variables are included. Onaolapo (2015) also examines the effects of financial inclusion on the economic growth of Nigeria (1982-2012). He made use of the Ordinary Least Square (OLS) method for his analysis. He concluded that inclusive bank financial activities greatly influenced poverty reduction, but marginally determined national economic growth and Financial Intermediation.

4. ESTIMATION STRATEGY, THE MODELS AND THE DATA.

4.1 Estimation Strategy: Single Equation Linear GMM

The study explores the single equation linear Generalised Method of Moment (GMM) in analysing the models specified. GMM estimation was formalized by Hansen (1982), and since has become one of the most widely used methods of estimation for models in economics and finance. Unlike maximum likelihood estimation (MLE), GMM does not require complete knowledge of the distribution of the data. Only specified moments derived from an underlying model are needed for GMM estimation. In models for which there are more moment conditions than model parameters, GMM estimation provides a straightforward way to test the specification of the proposed model. This is an important feature that is unique to GMM estimation.

This study therefore, employs the superior and more policy-applicable GMM methodology developed by Clarida et al. (2000) in estimating the equation, because the GMM in differences approach proposed by Hansen (1982) is plagued with the problem of weak instruments. Clarida-Gali-Gertler System estimator combines a levels equation, using lagged first differences as instruments. This permit exploiting several additional moment conditions that dramatically improve both consistency and efficiency for values of the coefficient of the lagged dependent variable. Consider the linear regression model

$$y_t = Z_t'\delta_0 + \epsilon_t, \quad t = 1, \ldots, n$$

Where $Z_t$ is a $L*1$ vector of explanatory variables, $\delta_0$ is a vector of unknown coefficients and $\epsilon_t$ is a random error term. The model (1) allows for the possibility that some or all of the elements of $Z_t$
may be correlated with the error term $\varepsilon_t$, i.e. $E \left[ Z_t \varepsilon_t \right] \neq 0$ for some $k$. If $E \left[ Z_t \varepsilon_t \right] \neq 0$, then $Z_t$ is called an endogenous variable. It is well known that if $Z_t$ contains endogenous variables, then the least squares estimator of $\delta_0$ in (i) is biased and inconsistent.

Associated with the model (1), it is assumed that there exists a $K \times 1$ vector of instrumental variables $X_t$ which may contain some or all of the elements of $Z_t$. Let $w_t$ represent the vector of unique and non-constant elements of \{\{y_t, z_t, x_t\}\}. It is assumed that \{\{w_t\}\} is a stationary and ergodic stochastic process.

The instrumental variables $x_t$ satisfy the set of $K$ orthogonality conditions:

$$E \left[ g_t (w_t, \delta_0) \right] = E \left[ x_t \varepsilon_t \right] = E \left[ x_t \left( y_t - Z_t \delta_0 \right) \right] = 0$$  

(2)

Where $g_t (w_t, \delta_0) = x_t \varepsilon_t = x_t \left( y_t - Z_t \delta_0 \right)$

Expanding (2) gives the relation

$$\sum x_{ty} = \sum x_{tz} \delta_0$$

Where $\sum x_{ty} = E \left[ x_t y_t \right]$ and $\sum x_{tz} = E \left[ x_t z_t \right]$.

For identification of $\delta_0$, it is required that the $K \times L$ matrix $\sum x_{tz} = E \left[ x_t z_t \right]$ be of full rank $L$. This rank condition ensures that $\delta_0$ is the unique solution to (2).

A necessary condition for the identification of $\delta_0$ is the order condition

$$K \geq L$$

Equation (3) simply states that the number of instrumental variables must be greater than or equal to the number of explanatory variables in (1). If $K = L$, then $\delta_0$ is said to be (apparently) just identified, if $K > L$, then $\delta_0$ is said to be (apparently) over-identified, if $K < L$, then $\delta_0$ is not identified. The word “apparently” in parenthesis is used to remind the reader that the rank condition must be equal to $L$.

i.e $\text{rank}(\sum x_{tz}) = L$  

(4)

which must also be satisfied for identification.

4.2 The Models

In order to analyse the impact of financial inclusion and governance on economic progress in Nigeria, three models are specified to capture the transmission channels of the variables and to account for the welfare impact of these channels on the macroeconomy. The variables are represented in log-log form, so the analyses of the estimates are interpreted as elasticities. The models are therefore specified thus:

**Model A: Sensitivity of Infrastructural Investment to Financial Inclusion and Governance**

$$\ln \ INF_t = \eta_0 + \eta_1 \ln CBD_t + \eta_2 \ln NBB_t + \eta_3 \ln LRA_t + \eta_4 \ln COC_t + \eta_5 \ln PSAV_t + \eta_6 \ln BF_t + \eta_7 \ln INF_{t-1} + \tau_t$$  

(5)

**Model B: Sensitivity of Per Capita GDP to Financial Inclusion and Governance**

$$\ln \ GDPP_t = \alpha_0 + \alpha_1 \ln CBD_t + \alpha_2 \ln NBB_t + \alpha_3 \ln LRA_t + \alpha_4 \ln COC_t + \alpha_5 \ln PSAV_t + \alpha_6 \ln BF_t + \alpha_7 \ln GDPP_{t-1} + \varepsilon_t$$  

(6)

**Model C: Sensitivity of Income Inequality to Financial Inclusion and Governance**

$$\ln \ GINI_t = \beta_0 + \beta_1 \ln CBD_t + \beta_2 \ln NBB_t + \beta_3 \ln LRA_t + \beta_4 \ln COC_t + \beta_5 \ln PSAV_t + \beta_6 \ln BF_t + \beta_7 \ln GINI_{t-1} + \gamma_t$$  

(7)

The estimation weighting matrix is used to compute Standard errors and covariance matrix. Bartlett kernel, Newey-West fixed bandwidth is equal to 4.0000. The Instrument specification for the models is of the order:
The inclusion of past values of all the dependent and explanatory variables in the instrument set is due to their endogeneity (Clarida, et al, 2000). The inclusion of one lag period hinges on the fact that the variables of interest did not turn out to have any significant effects beyond one lag.

4.1.2 Data Description and Sources

Table 1: Variables, Descriptions and Sources

<table>
<thead>
<tr>
<th>S/ N</th>
<th>Variable (Abbreviation)</th>
<th>Description of Variables</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CBD</td>
<td>Commercial bank deposit (CBD) used as a proxy for financial inclusion. Depositors with commercial banks are the required number of deposit account holders at commercial banks and other resident banks functioning as commercial banks that are resident non-financial corporations (public and private) and households. The major types of deposits are checking accounts, savings accounts, and time deposits.</td>
<td>WDI, 2015</td>
</tr>
<tr>
<td>2</td>
<td>GDPP</td>
<td>GDP per capita (GDPP). Calculated as the ratio of GDP (constant 2000 US$), Y, and population. It is used as a proxy for the standards of living.</td>
<td>WDI, 2015</td>
</tr>
<tr>
<td>3</td>
<td>NBB</td>
<td>Number of commercial bank branches per 1000km$^2$(NBB) is used as financial access indicator. It is also calculated as number of commercial bank branches per 100,000 adults, this indicate how accessible the banks are to the bank user.</td>
<td>CBN Statistical Bulletin, 2015</td>
</tr>
<tr>
<td>4</td>
<td>GINI</td>
<td>Gini Index (GINI) used to proxy income inequality. Gini index measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.</td>
<td>World Income Inequality data base, 2015</td>
</tr>
<tr>
<td>5</td>
<td>COC</td>
<td>Control of Corruption (COC). This a dimension of governances in Worldwide Governance Indicators (WGI) project by World Bank Group, which reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as &quot;capture&quot; of the state by elites and private interests.</td>
<td>Worldwide Governance Indicators (WGI), by World Bank Group, 2015</td>
</tr>
<tr>
<td>6</td>
<td>BF</td>
<td>Business Freedom (BF) is an overall indicator of the efficiency of government regulation of business. The quantitative score is derived from an array of measurements of the difficulty of starting, operating.</td>
<td>Heritage Foundation Index of Economic Freedom, 2015</td>
</tr>
</tbody>
</table>

The missing observations in BF, COC and PSAV were generated based on normal imputation techniques, since the missing values are assumed to be linear functions of other observed values. For details see, (i) Honaker and King (2011) “Applications of modern methods for analyzing data with missing values, based primarily on multiple imputations and Weighting Approaches”; (ii) Maravall and Pena (2014). “Missing Observations and Additive Outliers in Time Series Models: Interpolation using ARIMA Processes”
and closing a business. The business freedom score for each country is a number between 0 and 100, with 100 equalling the freest business environment.

7 PSAV Political Stability and Absence of Violence/Terrorism (PSAV) measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.

8 INF Infrastructural Investment (INF)-This is proxied by Total Public Expenditure on Education, Power and Transport as % of GDP.

9 LRA Loan to Rural Areas (LRA). It is measured through the commercial and microfinance banks credits to rural areas

Source: Authors Computations/compilations from various sources

5. THE EMPIRICAL FINDINGS AND RESULTS

5.1: Unit Root test: KPSS

The time series properties of the data are examined to determine the order of integration of the variables used in the model. A series is said to be integrated of order d, denoted I(d), if the series becomes stationary or I(0) after being differenced d times. The Kwiatkowski-Phillips-Schmidt-Shin (KPSS) is performed. The test statistics allow one to test formally the null hypothesis that a series is I(1) against the alternative that it is I(0). The result is consistent and show that all the variables are stationary at first difference (that is, they are integrated of order one). The result of the stationarity test is shown in Table 2. The implication of the unit root test result is that the null hypothesis is rejected and we conclude with a very low probability of making an error that the time series has no unit root.

Table 2: KPSS Test Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>LM-Statistics</th>
<th>1%</th>
<th>5%</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnINF</td>
<td>3.635217*</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnGDPP</td>
<td>0.725786**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnGINI</td>
<td>0.621151**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnCBD</td>
<td>0.433406**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnNBB</td>
<td>0.629974**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnLRA</td>
<td>0.661162**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnCOC</td>
<td>1.124359**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnPSAV</td>
<td>0.567255**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
<tr>
<td>lnBF</td>
<td>0.463440**</td>
<td>0.739000</td>
<td>0.463000</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Notes: All the variables are stationary at first difference. The asymptotic critical values of KPSS unit root tests are in their respective levels of significance. * (**) denotes the rejection of the null hypothesis at 1% (5%) significance level.

Source: Author’s computation
5.2: Cointegration Test

Time series variables which are not stationary may have some linear combination of them that is stationary. In such a case, the variables are said to be cointegrated. This implies that there is a long-run relationship among the variables. If the tests for stationarity reveal that most of the variables are not stationary, there is need to conduct cointegration test. In this study, we explore the Engle-Granger Cointegration approach. The null hypothesis stated that series are not cointegrated. Examining the probability values of both tau-statistics and z-statistics, we can infer that there is cointegrating relationship among the variables. This means that there exists a long-run equilibrium condition among the variables. The result of the cointegration tests statistics are presented in Table 3.

### Table 3: Engle-Granger Cointegration Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>tau-statistic</th>
<th>Prob.*</th>
<th>z-statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnBF</td>
<td>-4.774768</td>
<td>0.0375</td>
<td>-26.98980</td>
<td>0.4138</td>
</tr>
<tr>
<td>lnCBD</td>
<td>-2.323021</td>
<td>0.9959</td>
<td>-18.89607</td>
<td>0.8436</td>
</tr>
<tr>
<td>lnCOC</td>
<td>-6.893882</td>
<td>0.0167</td>
<td>-37.72340</td>
<td>0.0359</td>
</tr>
<tr>
<td>lnGDPP</td>
<td>-6.277417</td>
<td>0.0504</td>
<td>-104.5354</td>
<td>0.0000</td>
</tr>
<tr>
<td>lnGINI</td>
<td>-5.600764</td>
<td>0.0136</td>
<td>-33.10118</td>
<td>0.1314</td>
</tr>
<tr>
<td>lnINF</td>
<td>-7.063442</td>
<td>0.0140</td>
<td>133.4589</td>
<td>1.0000</td>
</tr>
<tr>
<td>lnLRA</td>
<td>-3.387548</td>
<td>0.8945</td>
<td>133.4589</td>
<td>0.9493</td>
</tr>
<tr>
<td>lnNBB</td>
<td>-3.804734</td>
<td>0.7719</td>
<td>-33.82821</td>
<td>0.0995</td>
</tr>
<tr>
<td>lnPSAV</td>
<td>-3.882310</td>
<td>0.7425</td>
<td>-20.68086</td>
<td>0.7772</td>
</tr>
</tbody>
</table>

**Note:** Automatic lags specification based on Schwarz criterion (maxlag=8)  
**Source:** Author’s computation

5.2: GMM Estimation Result

The result of the GMM is reported in Tables 4-6, to capture the transmission mechanism of financial inclusion and governance to infrastructural investment, per capita GDP and income inequality respectively. The estimation weighting matrix is used to compute Standard errors and covariance matrix. Bartlett Kernel, Newey-West fixed bandwidth is equal to 4.

### Table 4: Sensitivity of Infrastructural Investment to Financial Inclusion and Governance

Instrument specification: lnBF(-1) lnCBD(-1) lnCOC(-1) lnLRA(-1) lnNBB(-1) lnPSAV(-1) lnINF(-1)

<table>
<thead>
<tr>
<th>PSAV(-1) C</th>
<th>(\text{Variable} )</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnBF</td>
<td>15.69228</td>
<td>62.83571</td>
<td>0.249735</td>
<td>0.8047</td>
<td></td>
</tr>
<tr>
<td>lnCBD</td>
<td>1.759769</td>
<td>1.096964</td>
<td>1.604218</td>
<td>0.1203</td>
<td></td>
</tr>
<tr>
<td>lnCOC</td>
<td>33.0961</td>
<td>645.9767</td>
<td>0.531128</td>
<td>0.0197</td>
<td></td>
</tr>
<tr>
<td>lnLRA</td>
<td>13.06494</td>
<td>19.13375</td>
<td>0.682822</td>
<td>0.0500</td>
<td></td>
</tr>
<tr>
<td>lnNBB</td>
<td>0.008845</td>
<td>0.036447</td>
<td>0.242683</td>
<td>0.8101</td>
<td></td>
</tr>
<tr>
<td>lnPSAV</td>
<td>22.81502</td>
<td>85.65427</td>
<td>0.266362</td>
<td>0.0290</td>
<td></td>
</tr>
<tr>
<td>lnINF(-1)</td>
<td>0.286485</td>
<td>13.83237</td>
<td>0.410985</td>
<td>0.2017</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-1547.969</td>
<td>2801.706</td>
<td>-0.552510</td>
<td>0.5851</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Dependent Variable is INF  
**Source:** Author’s computation

Table 4 shows the impact of financial inclusion and governance on infrastructural investment. It is evident from the result that both the financial inclusion and governance variables are positively related to investment in infrastructure. A percent increase in business freedom, commercial bank deposit, control of corruption, loan to rural area, number of bank branches, political stability and
absence of violence and one-period lag of infrastructure investment would other things being equal, lead to increase of 15.69, 1.75, 33.10, 13.06, 0.009, 22.81 and 0.29 percent increase in infrastructure investment respectively. The implication of this result is that an increase in each of these regressors enhances infrastructural investment in Nigeria. Moreover, with the values of the probabilities, commercial bank deposit, control of corruption, loan to rural areas and political stability & absence of violence are the variables that are statistically significant in determining infrastructural investment in Nigeria. However, business freedom, number of bank branches and the first lag of infrastructural investment are not determinants of infrastructural investment.

Table 5: Sensitivity of Per Capita GDP to Financial Inclusion and Governance

<p>| Instrument specification: lnBF(-1) lnCBD(-1) lnCOC(-1) lnLRA(-1) lnNBB(-1) lnPSAV(-1) lnGDPP(-1) |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnBF</td>
<td>-2.30855</td>
<td>22762.28</td>
<td>-0.980067</td>
<td>0.335</td>
</tr>
<tr>
<td>lnCBD</td>
<td>9.75823</td>
<td>367.5205</td>
<td>2.578311</td>
<td>0.0157</td>
</tr>
<tr>
<td>lnCOC</td>
<td>1.60125</td>
<td>195388.3</td>
<td>-0.819525</td>
<td>0.419</td>
</tr>
<tr>
<td>lnLRA</td>
<td>1.80747</td>
<td>7562.070</td>
<td>2.390135</td>
<td>0.0241</td>
</tr>
<tr>
<td>lnNBB</td>
<td>7.67558</td>
<td>18.84991</td>
<td>0.407172</td>
<td>0.6871</td>
</tr>
<tr>
<td>lnPSAV</td>
<td>3.34828</td>
<td>49378.01</td>
<td>0.678091</td>
<td>0.0503</td>
</tr>
<tr>
<td>lnGDPP(-1)</td>
<td>-5.80285</td>
<td>19.71201</td>
<td>0.219021</td>
<td>0.192</td>
</tr>
<tr>
<td>C</td>
<td>-11.1458</td>
<td>1015028.</td>
<td>-0.010981</td>
<td>0.9913</td>
</tr>
</tbody>
</table>

R-squared: 0.912782
Adjusted R-squared: 0.893400
S.E. of regression: 48692.12
Sum squared resid: 6.40E+10
Durbin-Watson stat: 2.120636
J-statistic: 0.047430
Instrument rank: 8
Prob(J-statistic): 0.827597

Note: Dependent Variable is GDPP

Source: Author's computation

An investigation of the impact of financial inclusion and governance on Per capita GDP is represented in Table 5. It clearly shown that commercial bank deposit, control of corruption, loan to rural areas, number of bank branches, and political stability & absence of violence are positively related to per capita GDP. This means that a percent increase in the aforementioned variables will enhance GDP per capita by 9.76, 1.60, 1.81, 7.68 and 3.35 percent respectively. The remaining variables (business freedom and the lag of infrastructural investment) are negatively related to GDP per capita. This implies that a percent increase in business freedom and the lag of infrastructural investment will lead to a decline of 2.31 and 5.80 percent respectively. Looking at the probability values of the estimates, business freedom, commercial bank deposit, control of corruption, political stability & absence of violence, and the lag of per capita GDP are statistically significant in determining GDP per capita. Conversely, loan to rural areas and number of bank branches are not significantly related to per capita GDP.

Table 6: Sensitivity of Income Inequality to Financial Inclusion and Governance

<p>| Instrument specification: lnBF(-1) lnCBD(-1) lnCOC(-1) lnLRA(-1) lnNBB(-1) lnPSAV(-1) lnGINI(-1) |</p>
<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnBF</td>
<td>0.153974</td>
<td>1.625399</td>
<td>-0.094730</td>
<td>0.9252</td>
</tr>
<tr>
<td>lnCBD</td>
<td>0.009618</td>
<td>0.020777</td>
<td>-0.462903</td>
<td>0.0341</td>
</tr>
<tr>
<td>lnCOC</td>
<td>-7.995305</td>
<td>14.20019</td>
<td>-0.563042</td>
<td>0.0511</td>
</tr>
<tr>
<td>lnLRA</td>
<td>-0.087623</td>
<td>0.449638</td>
<td>0.194875</td>
<td>0.0469</td>
</tr>
<tr>
<td>lnNBB</td>
<td>1.000222</td>
<td>0.000517</td>
<td>-0.429055</td>
<td>0.0213</td>
</tr>
</tbody>
</table>
Table 6 depicts the relationship among financial inclusion variables, governance perception indices and infrastructural investment in Nigeria. A deeper examination of the result shows that control of corruption, loan to rural areas, political stability and absence of violence and the lag of gini coefficient are negatively related to income inequality. A percent increase in these variables will result in 8.00, 0.09, 6.62 and 2.10 percents decrease in income inequality respectively. By intuition, when these variables are triggered in Nigeria, they tend to bridge the gap between the rich and the poor and reduce the prevalence of poverty in the economy. However, business freedom, commercial bank deposit and number of bank branches are positively related to income inequality in Nigeria. A percent increase in the variables will increase income inequality by 0.15, 0.01 and 1.00 percents respectively. This implies that these variables have the tendency to worsen income inequality and promote poverty if not properly managed. For instance, since the banking variables (commercial bank deposit and number of bank branches) are in this category, if the variables are not properly conceived they can lead to financial exclusion of the poor because of stringent financial conditionality attached to financial service accessibility in Nigeria.

A deeper look at the probability values show that almost all the variables are statistically significant in determining income inequality in Nigeria except business freedom. The reason may be due to the fact that Nigerian Government has no strict policy that hinders the fundamental right of every human to control his or her own business, labour and property.

6. CONCLUDING REMARKS.
First, the study examined the time series properties of the data in order to determine the order of integration of the variables used in the model via KPSS technique. It was discovered that all the variables were integrated of order one. Second, the long-run relationship among the variables was investigated with the use of Engle-Granger Cointegration approach, and it was found that a cointegration relationship exist among the variables. Meaning that null hypothesis of no cointegration was rejected. Third, the transmission mechanism of Financial Inclusion and Governance to Infrastructural Investment, Per Capita GDP and Income Inequality Coefficient were analysed with the aid of single equation linear GMM estimation technique.

Interesting results were obtained from this empirical enquiry. It is apparent from the study that Number of Bank Branches, Loan to rural Areas, Control of Corruption, and Political Stability & absence of violence, were positively related to Investment in Infrastructure. This implies that these variables are the major routes through investment in infrastructure enhance economic progress in Nigeria. Also, Commercial Bank Deposit, Control of Corruption, Loan to Rural Areas, Number of Bank Branches, and Political Stability & Absence of Violence were positively related to Per Capita GDP. This means that, increase in these variables will lead to a corresponding increase in per capita GDP of Nigeria, which eventually contributes to improvement in the living standard of the populace. In like manner, Control of Corruption, Loan to Rural Areas, Political Stability and Absence of Violence and the lag of Gini coefficient are negatively related to Income Inequality. The implication of this is that, improvement in these variables will reduce income inequality, alleviate poverty and increase the welfare of the poor in the country.
The submission that emerges from the transmission mechanism of the result hinges on the fact that financial inclusion and governance variables pass through the macroeconomy via the three channels: investment in infrastructure, per capita GDP, and Income equality channels. Based on the analysis it is adjudged that the welfare of the poor can be enhanced through these channels.

The policy implication of these results and its impact on the welfare of the poor hinges on the following: (i) there is need for adequate financial and political security to be put in place. Since the financial institution variables and governance perception indices are important in the transmission mechanism of financial inclusion and governance to investment in infrastructure and per capita GDP of Nigeria. This will enhance financially and politically secured system of governance that will boost the confidence of the populace to transact business and increase the employment rate in the country, hence, an improvement in the standard of living of the poor. This result is in consonance with the findings of Honohan (2008), that good governance, high institutional quality and increased financial inclusion will significantly improve the welfare of the poor in developing countries.

(ii) Since income inequality index is one of the major routes through which Governance and financial inclusion impacts on the welfare of poor in Nigeria. Efforts should be made towards closing the huge gap between the rich and the poor through transparent and inclusive governance in order to achieve the required stability in the economy's financial system as well as its role in fighting poverty in a sustainable manner. Sustainable economic growth and development with permeative income redistribution will help majority of the financially excluded populace to subdue poverty, experience increased income and savings and improved standard of living. When all of these aforementioned are in place, then the country will be adjudged to be making progress economically. This result is in agreement with the conclusion from Onaolapo (2015) that inclusive bank financial activities greatly influenced poverty reduction in Nigeria.

Finally, to reduce income inequality and increase per capita GDP, more measures must be taken to address financial exclusion of low-income groups from financial services, in this context, programs that will address growing income inequality will also help in alleviating poverty in the country. Also transparent democratic practice that will increase investment in infrastructure and enhance per capita GDP in order to alleviate poverty should be enthroned in Nigeria. The role of microfinance should not be underestimated. Availability of credit to lower income groups (the rural dwellers) improves their access to financial services, which in turn enables them to undertake productive activities and experience increased welfare.

References


Energy Information Administration (EIA, 2015), data bank


Heritage Foundation Index of Economic Freedom, 2015.


Natural Earth, African Development Bank (AfDB), 2015 data bank.


World Bank Governance Indicator, 2015 data bank. Available at worldbank.org/.../reports.aspx?...Worldwide-Governance-Indicator

World Development Indicator (WDI, 2015) data base. Available at data.worldbank.org/products/wdi