Poverty Reduction in Nigeria: Is Financial Deepening Beneficial?

Chinweze, Reginald M.
Banking and Finance Department, Faculty of Business Administration, School of Post-Graduate Studies, Imo State University, Owerri

Abstract
This study investigated the impact of Financial Deepening in reducing Poverty in Nigeria. Human Development Index was used as proxy for reducing Poverty due to its multidimensional nature while the ratios of Credit to the Private Sector, Broad Money Supply and Market Capitalization to GDP were used to proxy financial deepening. Data sourced from Central Bank of Nigeria Statistical Bulletin (2015) and World Development Indicators published by the World Bank from 1981 to 2015 were used to analyze this relationship by adopting the multilinear econometric model and using the Error Correction Model. It was found that there is a unidirectional causality running from financial deepening to Poverty Reduction. The study concluded that financial deepening is beneficial in reducing poverty in Nigeria. The study therefore recommended that Policy Makers should embark on a policy of financial inclusion and financial intervention programmes in Nigeria.

Keywords: Financial Deepening, Poverty Reduction and Human Development Index

1. Introduction
Providing a better standard of living for citizens has been a serious concern for countries all over the world. Nations of the world especially developing economies strive to achieve improvement in the wellbeing of their citizenry by embarking on intervention programmes that will lead to the reduction of poverty through well articulated monetary and fiscal policies, one of which is the financial deepening of the financial sector. It is generally believed that with access to finance in an atmosphere of freedom, people will find what to do, be creative to earn and improve their living. According to Sen, (1999) development is about creating freedom for people and removing obstacles to greater freedom. Greater freedom enables people to choose their own destiny. Obstacles to freedom, and hence to development, include poverty, lack of economic opportunities, corruption, poor governance, lack of education and lack of health.

Financial Deepening according to Shaw (1973) cited in Obonyo (2014) “is the increased provision of financial services with a wider choice of services geared to all levels of society. It generally means an increased ratio of money supply to GDP or some price index. It refers to liquid money. The more liquid money is available in an economy, the more opportunities exist for continued and sustainable growth. It is the accumulation of financial assets at a faster pace than the accumulation of non-financial wealth and total output.”

Evidence from the literature suggest that “by mobilizing savings, facilitating payments and trade of goods and services, and promoting efficient allocation of resources, the financial sector is seen as playing a critical role in facilitating economic growth and, directly through broadening access to finance and indirectly through growth, contributing to poverty reduction.” ADB (2009). In other words, financial deepening has the capacity to reduce poverty in two different ways - through the indirect channel of economic growth and through the direct channel of access to finance by the poor and the vulnerable in the society (Claessens and Feijen, 2006 cited in ADB, 2009).

By effectively providing these services, financial deepening will bring benefits to the poor through the transmission mechanisms of extending credit to the private sector, the poor and the vulnerable in the society measured by CPS/GDP, increasing Broad money supply (M2) measured by M2/GDP and Capital Market Development measured by MC/GDP ratio.

According to Obonyo (2014), one of the key features of financial deepening is that it accelerates economic growth by expanding access to finance for those who do not have adequate finance. But in a poorly developed financial system, it is only incumbents who have access to financial services through relationship banking and they could finance their growth through internal resource generation, whereas the rest of the population is marginalized. Financial institutions are better placed to assess and award credit to new business initiatives and through this process, poverty reduction takes place as more poor people get involved in productive business ventures.

However, economists differ in their views regarding the role of finance in poverty reduction as a function of economic development. Schumpeter (1911), Shaw (1973) argue that it is the financial sector that causes economic growth and development of the real sector leading to the supply hypothesis while Robinson (1952) argue that it is the development of the real sector that causes financial deepening (the Demand-following hypothesis). And Lucas on the other hand asserts that “the role of finance in economic development has been significantly overrated” implying that finance is not the only factor influencing economic development.

In Nigeria, government has been carrying out policies and developmental programmes that are tailored
towards poverty reduction or eradication. The financial sector on the other hand has also made an appreciable significant improvement over the years. Credit to the Private Sector rose from 8.57 billion Naira in 1981 to 18,674 billion Naira in 2015 and Broad Money Supply rose from 14.47 billion Naira in 1981 to 18,901.30 billion Naira in 2015 while Market Capitalization increased from five billion Naira in 1981 to 17,003.4 billion Naira in 2015 (CBN Statistical Bulletin, 2015). Akinlo (2014) graphically argued that this development in the financial sector was brought about by the creation of an enabling environment which witnessed increased number of financial institutions including the Deposit Money Banks (DMB) and their net work of branches and specialized banks for Agriculture, Industry and Commerce. Other Poverty alleviation programmes such as the SMEs loan, Agricultural Development Programme (ADP), National Directorate of Employment (NDE), the Directorate of Food, Road and Rural Infrastructure (DFFRI), Better Life for Rural Women, and National Microfinance Policy and Regulatory Framework (NMPRF). All these programmes were all put in place to tackle Poverty by providing access to finance. But Dabwor & Abimiku (2016) noted that despite all these efforts, the absolute poverty level in Nigeria has persistently remained above 50% in spite of the nation’s enormous wealth.

1.2 Statement of the Problem

From the above definition of Financial Deepening it implies that the more liquid money that is available in an economy, the more opportunities exist for continued and sustainable growth. And evidence from the scripture suggested that Nigeria has witnessed a significant growth in the financial deepening variables with improved credit to the private sector to GDP ratio, increased money supply to GDP ratio and improved market capitalization to GDP ratio.

With this evidence from the literature, this study wonders if, Nigeria’s level of financial deepening has achieved any significant reduction in poverty.

Again, there are different arguments in the literature regarding the influence of finance on poverty leading to the supply-leading hypothesis, demand-following hypothesis and the feedback hypothesis. And the concern of this study is which of these hypotheses is empirically supported in Nigeria?

1.3 Objectives of the Study

The main objective of this study is to evaluate the impact of financial deepening on Poverty Reduction in Nigeria. The specific objectives include:

1. To investigate the relationship between Credit to Private Sector to Gross Domestic Product and Poverty Reduction in Nigeria.
2. To determine the effect of Broad Money Supply to Gross Domestic Product on Poverty Reduction in Nigeria.
3. To examine the relationship between Market Capitalization to Gross Domestic Product and Poverty Reduction in Nigeria.

1.4 Research Questions

1. To what extent does Credit to the Private Sector to Gross Domestic Product (CPS/GDP) impact on Poverty Reduction?
2. What is the relationship between Broad Money Supply to Gross Domestic Product (M2/GDP) and Poverty Reduction?
3. What is the effect of Market Capitalization to Gross Domestic Product (MC/GDP) on Poverty Reduction in Nigeria?

1.5 Research Hypotheses

H01: Credit to Private Sector to Gross Domestic Product (CPS/GDP) has no significant effect on Poverty Reduction.
H02: There is no significant impact between Broad Money Supply to Gross Domestic Product (M2/GDP) and Poverty Reduction
H03: Market Capitalization to Gross Domestic Product (MC/GDP) has no impact on Poverty Reduction

2. Literature

2.1 Conceptual Framework

The World Bank (1932), as cited in Nzotta & Okereke (2009)” contends that financial deepening encompasses the increase in the stock of financial assets. From this perspective, financial deepening implies the ability of financial institutions in general, to effectively mobilize and allocate financial resources for development. This view accepts the fact that a financial system’s contribution to the economy depends on the quality and quantity of its services and the efficiency with which it performs them.”

A solid and well-functioning financial sector is a powerful engine behind economic growth and
development. It generates local savings, which in turn lead to productive investments in local business. Financial sector development also entails establishing robust financial policies and regulatory framework. The absence of adequate financial sector policies could have disastrous outcome, as illustrated by the global financial crisis. Financial Deepening has the capacity to reduce poverty in two different ways - through the indirect channel of economic growth and through the direct channel of access as illustrated below:

![Figure 1: Financial Deepening and Poverty Reduction](source: Adapted from Claessens & Feijen (2006) with modification.)

2.2 Theoretical Framework

Dushimumukiza (2010), argues that the ‘supply-leading’ hypothesis posits a unidirectional causation that runs from financial deepening (financial sector development) to economic development implying that new functional financial markets and institutions will increase the supply of financial services. This will definitely lead to high but sustainable real economic growth. This hypothesis performs two roles namely to transfer resources from low growth sectors to high growth sectors and to promote entrepreneurial response in the later sector.

Earlier scholars such as Schumpeter (1912), Goldsmith (1969), Shaw (1973) and McKinnon (1973), emphasized the importance of the financial system in economic growth. Hicks (1969) argued that the industrialization process in England was promoted by the development of the financial sector which increased the access of the government and people to funds that were used to finance capital projects which led to the development of the economy. This view was also supported by King and Levine (1993).

On the other hand, the ‘demand-following’ hypothesis posits a unidirectional causation from economic development to financial development. This implies that it is the increasing demand for financial services by the real sector that leads to the aggressive expansion of the financial system as a result of the growth in the real sector of the economy. Robinson (1952) declares that "where enterprise leads finance follows." According to this view, economic development creates demands for particular types of financial arrangements and the financial
system responds automatically to these demands. Previous studies that support this hypothesis include Gurley and Shaw (1955, 1967), Goldsmith (1969) and Jung (1986).

### 2.2.1 Theory of Financial Deepening and Poverty Reduction Link

As noted above, the issue of finance-Poverty Reduction through economic development link has received much attention in the literature with divergent views. But there are two channels through which financial sector deepening can impact on Poverty reduction. First is the indirect channel through economic growth and the second is the direct channel through gaining access to financial services.

A deep and mature financial system will lead to greater availability of financial services to all levels of society, lead to the increase in money being intermediated (the ratio of money supply to GDP) and increased access to finance. By mobilizing savings, facilitating payments and trade of goods and services, and promoting efficient allocation of resources, the financial sector is seen as playing a critical role in facilitating economic growth which in turn will reduce poverty. (ADB, 2009).

More so, as the financial system performs its function of intermediation, businesses are able to access finance including the SMEs and the Micro businesses especially in the rural areas. For example, in the present economic situation of Nigeria, many people have gone into agro allied businesses such as fishing etc. thereby providing employment for them. And the SMEs are known to be labour intensive units employing more people than the bigger factories. It therefore implies that as more businesses access finance, there is room for growth and for more people to be employed thereby reducing poverty.

### 2.3 Empirical Review

Empirical literature on the relationship between financial deepening and Poverty Reduction are few but many researchers have considered this relationship under financial deepening and economic growth nexus.

Dabwor & Abimiku (2016) studied Poverty Incidence in Nigeria: Does Financial Deepening Matter? They used the Classical Ordinary Least Square Regression (OLS) on three equations for Rural, Urban and National levels of poverty and found out that poverty is still endemic in Nigeria but financial deepening guarantees financial inclusion to Nigerians and by extension reduces poverty.

Obonyo (2014) studied financial deepening, Savings Mobilization and Poverty reduction in Kenya. Using M2/GDP as financial deepening indicator and the Johansen Cointegration model and Granger Causality Test, he found that first, financial deepening granger causes both savings and poverty reduction in Kenya. Second, the effect of financial deepening on poverty reduction in Kenya was positive, though not significant, and that there was a long run relationship between financial deepening, savings mobilization and poverty reduction and by implication to unemployment reduction.

Odhiambo (2010a) focused on the Kenyan economy to analyze the relationship between financial deepening, savings and poverty reduction. He used time series data between 1968 and 2006 and the dynamic trivariate granger causality model based on error correction mechanism. His main findings were that there is a distinct causal flow from financial deepening to both poverty reduction and savings, and that there is bi-directional causality between savings and poverty reduction implying unemployment reduction as well.

Odhiambo (2010b) investigated financial deepening and poverty reduction in Zambia. He used the Autoregressive Distributed Lag Bounds Testing procedure on three proxies of financial development, Broad Money Supply ratio to GDP (M2/GDP), Domestic Credit to Private Sector to GDP (DCP/GDP) and Deposit Money Bank Assets and found out that when Broad Money Supply ratio (M2/GDP) is used as a proxy for financial Sector development, poverty reduction seem to cause development of the financial sector. But when Direct Credit to the Private Sector and Deposit Money Bank Assets (DMBA) are used financial development seems to cause poverty reduction and by extension unemployment reduction.

### 3.0 RESEARCH METHODOLOGY

#### 3.1 Research Design

The research design adopted for this study is the quasi experimental design because it seeks to explore the causal effect of financial sector deepening on unemployment. According to Nwankwo (2013) a quasi-experimental design allows for the evaluation of the effect of independent variable(s) on a dependent variable without random assignment.

#### 3.2 Source of Data

The data used for this study is obtained from the Central Bank of Nigeria Statistical Bulletin 2015 and from the World Development Indicators published by the World Bank.

#### 3.3 Model Specification

This study adopted the multi-linear econometric model of Odhiambo (2010b) with modification to analyze the effect of financial deepening on Poverty Reduction in Nigeria. Instead of the Deposit Money Bank Assets he
used, this study employed Market Capitalization to GDP ratio (MCGDP) with two other variables Credit to Private Sector to GDP (CPSGDP) and Broad Money Supply to GDP based on the Ordinary Least Square (OLS) method due to its Best Linear Estimator (BLUE) possession. This is expressed in its functional form as follows:

\[ \text{HDI} = \text{f}(\text{CPSGDP, M2GDP, MCGDP}) \]  

Where;

- HDI = Human Development Index
- CPSGDP = Credit to Private Sector to GDP ratio
- M2GDP = Broad Money Supply to GDP ratio
- MCGDP = Market Capitalization to GDP ratio

The above functional equation is further stated in econometric form as presented below:

\[ \text{HDIt} = \beta_0 + \beta_1 \text{CPSGDPtr} + \beta_2 \text{M2GDPtr} + \beta_3 \text{MCGDPtr} + \text{Ui} \]  

Where:

- \( \text{Ui} \) = Error Term
- \( \beta_0, \beta_1, \beta_2, \beta_3 \) = the Parameters
- A prior Expectation = \( \beta_1, \beta_2, \beta_3 < 0 \) (implying that \( \beta_1, \beta_2, \beta_3 \), will reduce Poverty)

3.4 Analytical Procedure

The focus of this study is to establish the relationship between Financial Deepening and Poverty Reduction in Nigeria and to determine the direction of causality based on the above discussed theoretical postulates. To achieve this, this study adopted the Error Correction Model with the following procedure:

- Augmented Dickey Fuller (ADF) Test
- Johansen Cointegration Test
- Error Correction Model (ECM)

Time series data from 1981 – 2015 was used in the estimation. Their properties were examined to avoid spurious results occasioned by the non-stationary of the time series data.

4.0 Presentation of Data

Table 4.1: Thirty five years statistical data of human development index and financial depending variables

<table>
<thead>
<tr>
<th>obs</th>
<th>HDI</th>
<th>CPSGDP</th>
<th>M2GDP</th>
<th>MCGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>0.396</td>
<td>9.1</td>
<td>15.3</td>
<td>5.30</td>
</tr>
<tr>
<td>1982</td>
<td>0.396</td>
<td>10.6</td>
<td>15.6</td>
<td>4.95</td>
</tr>
<tr>
<td>1983</td>
<td>0.325</td>
<td>10.6</td>
<td>16.1</td>
<td>5.17</td>
</tr>
<tr>
<td>1984</td>
<td>0.363</td>
<td>10.7</td>
<td>17.3</td>
<td>4.73</td>
</tr>
<tr>
<td>1985</td>
<td>0.391</td>
<td>9.7</td>
<td>16.6</td>
<td>4.90</td>
</tr>
<tr>
<td>1986</td>
<td>0.313</td>
<td>11.3</td>
<td>17.7</td>
<td>5.05</td>
</tr>
<tr>
<td>1987</td>
<td>0.382</td>
<td>10.9</td>
<td>14.3</td>
<td>4.25</td>
</tr>
<tr>
<td>1988</td>
<td>0.370</td>
<td>10.4</td>
<td>14.6</td>
<td>3.80</td>
</tr>
<tr>
<td>1989</td>
<td>0.379</td>
<td>8.0</td>
<td>12.0</td>
<td>3.35</td>
</tr>
<tr>
<td>1990</td>
<td>0.438</td>
<td>7.1</td>
<td>11.2</td>
<td>3.45</td>
</tr>
<tr>
<td>1991</td>
<td>0.328</td>
<td>7.6</td>
<td>13.8</td>
<td>4.23</td>
</tr>
<tr>
<td>1992</td>
<td>0.348</td>
<td>6.6</td>
<td>12.7</td>
<td>3.56</td>
</tr>
<tr>
<td>1993</td>
<td>0.389</td>
<td>11.7</td>
<td>15.2</td>
<td>4.36</td>
</tr>
<tr>
<td>1994</td>
<td>0.384</td>
<td>10.2</td>
<td>16.5</td>
<td>4.74</td>
</tr>
<tr>
<td>1995</td>
<td>0.452</td>
<td>6.2</td>
<td>9.9</td>
<td>6.20</td>
</tr>
<tr>
<td>1996</td>
<td>0.393</td>
<td>5.9</td>
<td>8.6</td>
<td>7.09</td>
</tr>
<tr>
<td>1997</td>
<td>0.495</td>
<td>7.5</td>
<td>9.9</td>
<td>6.73</td>
</tr>
<tr>
<td>1998</td>
<td>0.439</td>
<td>8.8</td>
<td>12.2</td>
<td>6.58</td>
</tr>
<tr>
<td>1999</td>
<td>0.455</td>
<td>9.2</td>
<td>13.4</td>
<td>6.41</td>
</tr>
<tr>
<td>2000</td>
<td>0.460</td>
<td>7.9</td>
<td>13.1</td>
<td>7.04</td>
</tr>
<tr>
<td>2001</td>
<td>0.463</td>
<td>11.1</td>
<td>19.7</td>
<td>13.71</td>
</tr>
<tr>
<td>2002</td>
<td>0.445</td>
<td>11.9</td>
<td>19.3</td>
<td>9.81</td>
</tr>
<tr>
<td>2003</td>
<td>0.458</td>
<td>11.1</td>
<td>19.7</td>
<td>13.71</td>
</tr>
<tr>
<td>2004</td>
<td>0.463</td>
<td>12.5</td>
<td>18.7</td>
<td>18.51</td>
</tr>
<tr>
<td>2005</td>
<td>0.469</td>
<td>12.6</td>
<td>18.1</td>
<td>19.85</td>
</tr>
<tr>
<td>2006</td>
<td>0.470</td>
<td>12.3</td>
<td>20.5</td>
<td>27.58</td>
</tr>
<tr>
<td>2007</td>
<td>0.481</td>
<td>17.8</td>
<td>24.8</td>
<td>6.38</td>
</tr>
<tr>
<td>2008</td>
<td>0.487</td>
<td>28.6</td>
<td>33.0</td>
<td>3.94</td>
</tr>
<tr>
<td>2009</td>
<td>0.492</td>
<td>36.9</td>
<td>38.0</td>
<td>2.84</td>
</tr>
<tr>
<td>2010</td>
<td>0.500</td>
<td>18.6</td>
<td>20.2</td>
<td>1.82</td>
</tr>
<tr>
<td>2011</td>
<td>0.507</td>
<td>16.9</td>
<td>19.3</td>
<td>1.63</td>
</tr>
<tr>
<td>2012</td>
<td>0.514</td>
<td>20.4</td>
<td>19.4</td>
<td>2.06</td>
</tr>
<tr>
<td>2013</td>
<td>0.521</td>
<td>19.7</td>
<td>18.9</td>
<td>2.38</td>
</tr>
<tr>
<td>2014</td>
<td>0.520</td>
<td>19.1</td>
<td>19.9</td>
<td>1.90</td>
</tr>
<tr>
<td>2015</td>
<td>0.527</td>
<td>19.8</td>
<td>20.1</td>
<td>1.81</td>
</tr>
</tbody>
</table>

World Development Indicators Published by World Bank
4.1 Unit Root Test
Prior to cointegration and any other econometric analysis, it is important to establish the stationarity of the data to be used. None of the variables was stationary at level. All variables became stationary at first differencing, that is I(1) as presented below:

Table 4.2 – Order of integration of the variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>P-value @ Level</th>
<th>P-value @ First Differencing</th>
<th>Order Of Integration, I(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDI</td>
<td>0.8333</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>CPSGDP</td>
<td>0.3266</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
<tr>
<td>M2GDP</td>
<td>0.2542</td>
<td>0.0001</td>
<td>I(1)</td>
</tr>
<tr>
<td>MCGDP</td>
<td>0.2188</td>
<td>0.0000</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Author’s Computation with E-view 7 at 5% critical value.

4.2 Johansen Cointegration Test
After establishing the stationarity properties of the time series and obtaining the optimal lag length, Johansen Cointegration test was conducted. Both the Trace Test and the Max-eigenvalue result indicated 2 cointegrating equations at 5% level of significance implying that all the variables in the model all converge to a long run equilibrium meaning that all the variables move together in the long-run.

4.3 Error Correction Model (ECM)
The ECM result presents both the short run and the long run dynamics. It has the advantage of combining both the short run coefficient and the long run coefficient without losing long run equilibrium. The one period lagged Error Correction Term (ECT) is both negative in sign (-0.488332) and is significant with P-value of 0.0108 at 5% level of significance chosen for this study. This regression result validates the cointegration and the long-run equilibrium existing among the variables in the model. It also confirms a causality running from financial deepening to Poverty reduction and this is consistent with the supply-leading hypothesis. The coefficient of the ECT which is -0.488332 suggest that the disequilibrium experienced in the system in the previous period is being corrected at the speed of approximately 49 percent indicating that if there is any disturbance in the short run they will quickly converge back to the long-run equilibrium at the speed of 49 percent.

4.4 Test of Hypotheses
The relationship existing between variables is tested at 5% level of significance using the Ordinary Least Square (OLS) regression analysis.

H0: CPSGDP has no effect on Poverty Reduction
The ECM regression result revealed that in the short run, CPSGDP with p-value of 0.0439 and t-statistic of (-2.127096) is statistically significant in influencing Poverty. It has a negative relationship with Poverty reduction meaning that a unit increase in the ratio of CPSGDP will lead to a 0.007736 decrease in Poverty which is consistent with the a-priori expectation.

H0: M2GDP has no significant impact on Poverty Reduction
M2GDP with a t-statistic of 2.068896 and a p-value of 0.0.495 is less than the 5% critical value therefore it is significant. But it has a positive relationship with Poverty reduction which disagreed with the a-priori expectation.

H0: MCGDP is not significantly related to Poverty Reduction
The regression result revealed a t-statistics of -1.306489 and a p-value of 0.2038 for MCGDP meaning that it has no significant relationship with Poverty reduction despite its negative relationship that agreed with the a-priori expectation.

4.5 Discussion of Results/Findings
ADF Test: Revealed that all the variables were not stationary at level but they all became stationary at first differencing I(1) to meet the precondition of co-integrating model.

Johansen Co-integration Test: Revealed 2 cointegrating equations at 0.05 levels both in the Trace test and Max-eigenvalue test implying that all the variables in the model are in a long-run equilibrium relationship or association. In other words, they all move together in the long run. This long run relationship allowed the running of the Parsimonious Error Correction Model.

The Error Correction Model (ECM): The error correction term was negative (-0.488332) and significant (P-value 0.0108) validating the long run relationship. The speed of adjustment back to long-run equilibrium relationship is 49% meaning that in the event of any disequilibrium in the system, the variables will quickly converge back to the long-run equilibrium at the speed of 49%. This also suggests that there is a unidirectional causality running from financial deepening to Poverty reduction implying that the financial deepening variables
jointly reduce Poverty.

5. Conclusion and Recommendations

The financial deepening variables, Credit to Private Sector, Broad Money Supply and Capital Market Development were found to jointly reduce Poverty in the Long-run. And this is consistence with the supply-leading hypothesis and with the findings of Dabwor & Abimiku (2016), Obonyo (2014) and Odhiambo (2010a). The study therefore concludes that financial deepening is beneficial in reducing Poverty in Nigeria.

Recommendations

From the above conclusion this study recommends that Policy Makers (the Government and the Central Bank of Nigeria) should pursue the following:

Provide ways of making credit available to the citizenry. They should pursue a policy of financial inclusion to accommodate the poor and the vulnerable either through the Deposit Money Banks or Special Development Banks.

In the case of Broad money supply, they should increase supply with a close watch at inflation. The Bail-out fund routed through the banks in 1999 and in 2011 is supported by this study.

Provide intervention programmes such as Loans to the SMEs, Rural Development Loans, Agricultural Development Loans etc in order to meet the financial needs of the vulnerable in the society.

References


**Appendix**

**Regression Results for the Linear Model**

![Regression Results for the Linear Model](image_url)
Augmented Dickey-Fuller Unit Root Test on $D(M2GDP)$

Null Hypothesis: $D(M2GDP)$ has a unit root  
Exogenous: Constant  
Lag Length: 9 (Automatic - based on SIC, maxlag=8)

<table>
<thead>
<tr>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Dickey-Fuller test statistic</td>
<td>-5.471094</td>
</tr>
</tbody>
</table>

Test critical values:  
1% level: -3.846342  
5% level: -2.954021  
10% level: -2.615817


Augmented Dickey-Fuller Test Equation  
Dependent Variable: $D(M2GDP)$  
Method: Least Squares  
Date: 11/17/17 Time: 23:25  
Sample (adjusted): 1983 2015  
Included observations: 33 after adjustments

<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>$D(M2GDP(-1))$</td>
<td>-0.982467</td>
<td>0.170574</td>
<td>-5.471094</td>
<td>0.0000</td>
</tr>
<tr>
<td>C</td>
<td>0.139920</td>
<td>0.738434</td>
<td>0.181356</td>
<td>0.8573</td>
</tr>
</tbody>
</table>

R-squared: 0.491243  
Adjusted R-squared: 0.474832  
S.E. of regression: 4.298541  
Sum squared resid: 557.1850  
Log likelihood: -93.46040  
F-statistic: 29.93287  
Prob(F-statistic): 0.000006

Augmented Dickey-Fuller Unit Root Test on $MCGDP$

Null Hypothesis: $MCGDP$ has a unit root  
Exogenous: Constant  
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

<table>
<thead>
<tr>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Dickey-Fuller test statistic</td>
<td>-2.174318</td>
</tr>
</tbody>
</table>

Test critical values:  
1% level: -3.639407  
5% level: -2.931125  
10% level: -2.614300


Augmented Dickey-Fuller Test Equation  
Dependent Variable: $D(MCGDP)$  
Method: Least Squares  
Date: 11/17/17 Time: 23:25  
Sample (adjusted): 1982 2015  
Included observations: 34 after adjustments

<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>$MCGDP(-1)$</td>
<td>-0.267172</td>
<td>0.422876</td>
<td>-5.743180</td>
<td>0.0372</td>
</tr>
<tr>
<td>C</td>
<td>1.656840</td>
<td>1.054955</td>
<td>1.571067</td>
<td>0.1260</td>
</tr>
</tbody>
</table>

R-squared: 0.128722  
Adjusted R-squared: 0.101495  
S.E. of regression: 3.943316  
Sum squared resid: 497.9516  
Log likelihood: -93.86203  
F-statistic: 4.727657  
Prob(F-statistic): 0.037186