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Relationship between Financial Inclusion and Poverty Reduction: Analysis of Selected Bank and Non-Bank-Based Channels

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Abstract: *Poverty and financial inclusion are current issues in economics. Few studies that attempted to examine this connection in the literature took an empirical approach; the majority were theoretical. This study examined the effect of financial inclusion on the decline in poverty in Nigeria. The financial accessibility parameters used for this study are based on objective technical improvements and bank-based channels. According to the statistics, rural bank credit and ATM inclusion have a positive impact on reducing poverty, whereas microfinance credit and web-based/internet banking have the opposite effect. The negative consequences of internet banking may be exacerbated by low banking public literacy. Fewer adult Nigerians with bank accounts use the internet to access financial services than ATMs. The long-run equilibrium between financial inclusion and poverty reduction is demonstrated by the Johansen cointegration test. The ECM states that 68% of out of equilibrium deviations are corrected every three months. Diagnostics validate the accuracy of our model. To enable the enormous unbanked population to participate in the financial system, we advise expanding alternative banking options and financial literacy programmes.*

Key Words: *Financial inclusion ; Poverty reduction ; Nigeria.*

1. INTRODUCTION :

The use of official financial institutions to support individual and communal needs is known as financial inclusion. An important factor contributing to the rise in poverty and unemployment in impoverished communities is the lack of financial inclusion of poor and disadvantaged people in all jurisdictions. Financial services are hard to come by in underdeveloped nations. The majority of adults in developing economies do not have access to financial services, despite the efforts of governments and monetary authorities. Financial inclusion is challenging due to adult illiteracy and the rapid population growth. The gap must be addressed if the financial and economic sectors are to flourish. Poverty can be decreased and living standards raised through financial inclusion. Access to financial services varies across the world. One in five people in industrialised economies lack a bank account or other formal financial means, according to Demirgüç-Kunt and Klapper (2012). 90% of adults in emerging and developing economies lack banking accounts. If monetary authorities and policymakers take economic development initiatives into account, financial inclusion may increase in the upcoming years (Mehrotra and Yetman, 2015). Expanding financial services Accessibility has enormous social and economic consequences. The policy will encourage inclusive finance and stimulate economic growth. Financial services enable the poor to store money outside of their homes and cushion economic shocks. Policymakers are concerned about expanding financial services access. Globally, central banks and governments have recognised the consequences of financial exclusion and have implemented policies and initiatives to increase global financial inclusion, which is critical for economic growth.

According to a World Bank poll (2012), 50% of adults worldwide have a formal financial institution account (deposit money bank, credit union, cooperative, or microfinance institution), while 41% and 24% of people in developing countries and Sub-Saharan Africa, respectively. 59% of adults in developing countries are financially excluded (have no access to formal financial institutions), while 76% are unbanked in Sub-Saharan Africa. In Nigeria, only 30% of people have access to financial services, leaving 70% of the adult population out. Nigeria has a lower inclusion rate than Australia (99%) and Belgium (96%). Only 13% of adult Nigerians use mobile money, while 2% have access to formal

credit and 44% borrow from family and friends. Credit cards are used by 64 and 80% of adults in Japan and Israel, respectively, compared to 1% in Nigeria.

2. LITERATURE REVIEW :

Financial inclusion is the provision of low-cost financial services to unbanked groups, particularly low-income and poor people (Gwalani and Parkhi, 2014). According to Gupte, Venkataramani, and Gupta (2012), finance is the lifeblood of any economic unit, whereas financial inclusion, a "quasi-public good," would encourage greater participation by vulnerable groups such as the poor, uneducated, and low-income. According to Avais (2015), innovative financial solutions have aided in the expansion of financial inclusion and the fight against poverty.

Nigeria announced a nationwide financial inclusion strategy in 2012, based on an EFINA survey conducted in 2010. Adult financial exclusion is expected to fall from 46.3% in 2010 to 20% by 2020, according to the policy. 40% of adults should be creditworthy (rate of access to credit currently remains at 2.0 percent). The strategy aims to address major barriers to financial inclusion such as income, physical access, financial knowledge, affordability, and eligibility. Know-Your-Customer (KYC) requirements will be transformed as part of the plan. Anyone who opens or operates a bank account must be properly identified. It is expected to improve agent banking, improve customer protection, and boost confidence in financial services; lower the cost and ease of financial services transactions; and improve credit scheme programmes for MSMEs in Nigeria via an enhanced mobile-payment system and other cash-less policy initiatives.

According to the Chronic Poverty Advisory Network, Nigeria's financial inclusion policy is evidence-based. The group expresses regret that the approach did not permit mobile phone providers to provide regulated financial services or to connect informal to formal financial services.

Aguera (2015) is concerned with the availability and utilisation of formal financial services both within and across countries. According to him, poor people, young people, and small businesses face the most barriers to financial inclusion, which impedes sustainable development, poverty reduction, and shared prosperity. According to Chibba (2009), financial inclusion provides incremental and complementary strategies for alleviating poverty, promoting inclusive development, and achieving the MDGs (MDGs). Financial inclusion is characterised as a critical development enabler by Arun and Kamath (2015), who explain why it is a national policy goal. Using microdata from India, South Africa, and Australia, the authors discovered innovative tools and initiatives to achieve financial inclusion, as well as the need for a forward-thinking approach to an inclusive financial system.

According to Cull, Ehrbeck, and Holle (2014), global and national politicians are prioritising financial inclusion. Researchers, development practitioners, and economists are attempting to establish a link between financial inclusion and poverty in developing and emerging economies. Park and Mercado (2015) investigate Financial Inclusion, Poverty, and Income Inequality in Developing Asia for this purpose. They developed a financial inclusion indicator to investigate macroeconomic and country-specific factors that influence 37 Asian developing economies. Financial inclusion in emerging Asia is influenced by per capita income, the rule of law, and demographics. According to the data, financial inclusion reduces poverty and income inequality.

Ene and Udom (2015) investigated the impact of microfinance on financial inclusion in Nigeria between 1990 and 2014. Savings are influenced positively by the minimum deposit amount. The research also discovered that microfinance minimum deposits have an impact on rural people's savings accounts. Abraham (2015) investigated how innovative financial solutions helped to alleviate poverty in northern Nigeria. Traditional crop insurance benefits rich farmers the most, while poor farmers underutilize microfinance organisations to improve formal credit access.

Fadun (2014) investigated financial inclusion in emerging economies, with a focus on Nigeria. The report looked at global financial inclusion efforts as well as Nigeria's goal of reducing financial exclusion. Financial inclusion is critical for poverty reduction and resource redistribution in developing countries, particularly Nigeria.

Financial deepening and poverty alleviation have a negative relationship, according to Ayyagari, Beck, and Hoseini (2013). The study found that financial deepening reduced rural poverty, particularly among the self-employed, using state-level data from 1983 to 2005.

Dauda and Makinde (2014) examined the relationship between banking sector development and poverty alleviation using Nigerian data. The results of VAR and impulse response showed that the indirect effect of economic growth has a significant influence on poverty reduction in the short term, but may harm the poor in the long run due to income inequality.

3. METHOD AND DATA :

Having reviewed literatures exploring links between financial inclusion and poverty reduction, various empirical works adopted different models while assessing the relation between the two.
The debate is that financial inclusion will lead to poverty reduction. And in our peculiar environment and purpose, we modify the model in equation (1) to take into account our variable proxies. Hence our baseline model is represented as follows:

$$PI_t = \beta_0 + \beta_1 InATMV_t + \beta_2 InINTBV_t + \beta_3 InRLA_t + \beta_4 InMLA_t + \varepsilon_t \text{ ----- } (2)$$

Where
In is logarithm operator for the respective variables, and

PI_t = poverty index at time t,
ATMV = the value of financial transactions via automated teller machines (ATMs), INTBV = value of transactions through internet banking channels,
RLA = rural loans and advances granted by deposit money banks,
MLA = loans and advances extended by microfinance institutions,
β_0 = constant term,
$\beta_1 - \beta_4$ = coefficients.
ε = error term.

There are three stages to our estimation. First we test our variables for stationarity using the Augmented Dickey Fuller unit root test. Time-series data is stationary if its mean and variance are constant over time (Gujarati, 2003). The ADF statistic is based on the following model:

$$\Delta y_t = \mu + \alpha_{t-1} t + \sum_{i=1}^{n} \gamma_i \Delta \gamma_{t-1} + \varepsilon_t \text{ ----------} (3)$$

where t = linear time trend, μ = constant, Δ = differencing operator, and ε is the error term. If all our variables are integrated of order1(1), we will have the justification to run the Johansen co-integration test to determine if the variables are cointegrated.

This second stage enables us find out if long run relationship exist among the variables. If at this point our variables are cointegrated, we then move on to the third stage and run the Error Correction model (ECM) by modifying our baseline equation thus:

$$In\Delta PI_t = \beta_0 + \sum_{i=0}^{n} \beta_1 In\Delta PI_{t-1} + \sum_{i=0}^{n} \beta_2 \Delta InATMV_{t-1} + \sum_{i=0}^{n} \beta_3 \Delta InINBV_{t-1} + \sum_{i=0}^{n} \beta_4 \Delta InRLA_{t-1} + \sum_{i=0}^{n} \beta_5 \Delta InMLA_{t-1} + \beta_5 ECT_{t-1} + \varepsilon_t \text{ -------} (4)$$

Where ECT_{t-1} = one period lag of error correction term and Δ = differencing operator.

4. RESULTS AND DISCUSSIONS :

Table I. Descriptive Statistics

	PI	ATMV	INBV	RLA	MLA
Mean	55.55458	458.4802	13.40572	221098.2	25449.44
Median	54.40000	465.4346	10.32948	23781.01	10654.30

Maximum	88.00000	1027.924	52.27000	988587.9	91243.54
Minimum	21.97000	62.59000	3.370000	8942.200	1267.000
Jarque-Bera	1.138086	1.504996	50.58313	6.081186	4.671506
Probability	0.566067	0.471188	0.000000	0.077807	0.096738

From table 4.1 poverty index averaged 55.55 percent and was highest at 88 percent and least at 21.97 percent. Value of transaction through the automated teller machines is obviously greater that transaction through the web but transactions on each point increased relatively over the period. Generally, it can also be observed that the variables are normally distributed.

Table 2. Augmented Dickey-Fuller Unit root Test

Variable	**ADF-stat**	**5% critical value**	**p-value**	**Durbin-Watson stat.**	**Order of Integration**	
D(PI)	-3.2796	-3.004861	0.0286	1.527501	1(1)	
D(In(ATMV))	-7.3699	-3.02997	0.0000	1.701921	1(1)	
D(In(INBV))	-5.0591	-3.040391	0.0009	1.545567	1(1)	
D(In(RLA))	-5.2084	-3.004861	0.0004	2.01027	1(1)	
D(In(MLA))	-4.4142	-3.004861	0.0024	1.697513	1(1)	

The representation in table 4.2 shows that all the variables have no unit root and therefore are stationary at 5% level of significance. They all attained stationarity at first difference i.e. at order one. The Durbin-Watson stat indicates that the data has no traits of autocorrelation problem. Since the variables are all integrated at order one, we may proceed with Johansen cointegration test.

- **Test of Hypotheses**

The t-value and P-value are the basis for acceptance or rejection of the hypotheses. The decision rule shall be to accept alternate hypotheses if the t-value ≥ 2.000 and P-value ≤ 0.05. Reject alternate hypotheses if t-value < 2.000 and P-value > 0.05. Accept null hypotheses if the t-value < 2.000 and P-value > 0.05. Reject null hypotheses if the t-value ≥ 2.000 and P-value ≤ 0.05.

Regression Result

Table 4. Error Correction Model

Dependent Variable: D(PI)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.454569	0.332703	7.377661	0.0000
D(In(ATMV))	0.659573	0.121122	5.445526	0.0001
D(In(INBV))	-0.243352	0.111694	-2.178740	0.0457
D(In(RLA))	0.049755	0.042048	1.183301	0.0051
D(In(MLA))	-0.245690	0.074552	-3.295546	0.0049
ECT(-1)	-0.680257	0.096496	-0.736048	0.0168
R^2	0.733178			
Prob(F-statistic)	0.000647			
DW-stat	1.890285			

Table 4 presents the ECM results and reveals that among the financial inclusion channels, Transaction on automated teller machines and deposit money bank credit to the rural populace exert positive and significant impact on poverty reduction, whereas internet (web) banking channel and microcredits have significant negative effect on poverty reduction. The error correction term is found to be negative and significant. The coefficient of ECT indicates that 68 percent of deviation from equilibrium path is corrected quarterly. This means that the speed of adjustment to long-run equilibrium relationship is fast. The overall regression is significant and the Durbin-Watson stat is substantial and shows there is no sign of autocorrelation in the model.

5. CONCLUSIONS :

Poverty and financial inclusion are current issues in economics. Few studies that attempted to examine this connection in the literature took an empirical approach; the majority were theoretical. The purpose of this study is to ascertain how financial inclusion affects Nigeria's efforts to combat poverty. The objective selection of financial accessibility factors based on technical advancement and bank-based channels distinguishes this study from others. The findings indicate that while web-based/internet banking and microfinance credit have a negative effect on poverty reduction in Nigeria, ATM inclusion and deposit money bank credit to the rural populace have a positive effect. Adult banked Nigerians are less likely to use the internet than ATMs to get financial services. The issue is related to a lack of banking knowledge. The Johansen cointegration test shows that financial inclusion and poverty eradication can coexist in the long run. However, the ECM demonstrates that every quarter, 71% of the divergence from equilibrium is corrected. Diagnostics validate the accuracy of our model. We advocate robust financial literacy to accompany an increase in alternative banking options so that the enormous unbanked population can become financially engaged. Additionally, policy frameworks should be enhanced to persuade banks to offer more subsidised credit to low-income and rural entrepreneurs.

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