MICROFINANCE BANKS OPERATIONS AND ECONOMIC DEVELOPMENT IN NIGERIA

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Abstract: *The paper explored the influence of Microfinance Banks (MBs) on Economic Development (ED) in Nigeria. It was embarked upon against the background that as statutory function, loans should be provided by MBs to spur developmental purposes that will improve long run living standard. Microfinance annual data stream sourced from the country's Central Bank of Nigeria (CBN) statistical report and World Bank national accounts data spanning 1992 to 2020 were analysed with Autoregressive Distributed Lag (ARDL) ECM Model. Following detailed time series estimation, findings reveal that MBs, investment, assets, savings and aggregate credit (loans) significantly influence Nigerian ED during the studied period. Thus, this study concludes that MBs operations in Nigeria is a salient financial inclusion catalyst that significantly spur economic development in Nigeria during the sample studied.*

Keyword: ARDL, Economic Development, GDP Per Capita, Investment, Microfinance, Nigeria

JEL Classification: G2, G210, O16

1. Introduction

The poor citizens are deprived access from the corporate financial circle throughout the world. Exclusion goes from partial to full exclusion in developed and emerging economies. A wide variety of informal financial community based model have been developed by the poor to satisfy their financial demand due to their inability to get corporate financial attention (Irobi, 2008). In the wake of rising unemployment rate, growing population and youth restiveness; providing adequate employment for the citizens has become a hard nut for the government at all tiers to crack and this adversely impair the level of economic development. Hence, the role of microfinance as a reliable mechanism to mitigate unemployment and alleviate poverty, run any choice business that promotes economic growth and development cannot be undermines (Osamwonyi and Obayagbona, 2012).

Financing the needed investments for expansion with domestic savings is a serious challenge confronting emerging economy and this emanates from savings gap problem (Walker, 1999). Researchers like Osamwonyi and Obayagbona (2012), Afolabi (2013), Eigbiremolen and Anaduaka (2014), Makorere (2014), Obadeyi (2015), Murad and Idewele (2017), Ifionu and Olieh (2016), ZahidMahmood et al (2017), Usifoh and Ezeanyeji (2017), Chiazor et al (2018), Werigbelegha and Chukwunulu (2018), Nwude and Anyalechi (2018), Ofeimun, Nwakoby and Izekor (2018) have studied the influence of Microfinance Banks

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(MBs) operations on economic expansion, house hold welfare and the increase of micro scale business respectively. The findings of these studies were mixed, with some finding positive association, negative relationship and others found no correlation between MBs operations and economic growth. It was clear in the literature that none of these prior studies examined the impact of microfinance operations of total loan (credit), total savings, total investment, microfinance inflation and interest rate on economic development in the case of Nigeria, hence a gap exist in the literature and more research is needed in this regard. As such this study looked at the effect of MBs operations on ED in Nigeria as the macro objective of this study. The specific objectives are to:

1. investigate the influence of microfinance activities of loans, savings, investment and size on ED of Nigeria
2. examine the effect of microfinance interest rate and inflation on ED of Nigeria

Significance of the Study

A study in this area remains germane, as a pioneer or among the scanty studies that used microfinance bank variables of loans, savings, investment, asset and interest rate to examine ED in Nigeria to the best of my knowledge. Furthermore, this study differs from other studies, because it uses Real GDP per as a surrogate for economic development compared to other studies like Ifionu and Olieh (2016) that used Human Development Index (HDI) as economic development proxy; also microfinance Asset and investment variables have not been used by existing model to determine economic development in Nigeria. This study thereby introduced new variable to the debate of the subject matter as a significant contribution to extend the frontier of knowledge. This study finding is of significant benefit to the government, policies maker, regulatory authorities, development partners and other stakeholders concern about national growth and development. For appropriate formulation of policy and prudential guidelines that will strengthen the sector to meaningfully contribute to ED.

2. Literature Review

2.1. Theoretical Literature

Some theories of EG and development have been developed over the years, and these theories are explained as follows;

The Neo-Classical and Endogenous Growth Theory

These theories is hanged on long term commitment capital investment for EG to occur according to economic basic principle. The theory (neoclassical) further emphasize capital investment such as FDI (Foreign Direct Investment) can bridge the gap between productive sector deficient economy which increases EG via marginal productivity of capital increase.

The Solow Development Model

Labour and productivity that is output per worker are the fundamental factors in Solow 1956 growth model. Solow suggested a perpetual function of production that connect sustainable capital and labour input to their output. Equilibrium conditions, variables value is what the theory determines. That is a condition that shows economic balance position and how well the variables under study are stable. That is to know the dynamics of the variables in simple and predictable manner.

2.2. Empirical Literature

Few recent studies considered relevant are reviewed in this study from the plethora studies on microfinance banks and economic development available. Ifionu and Olieh (2016) used the OLS and Ganger Causality method to x-ray the influence of microfinance banks' operations on the Nigeria economic development from 2005-2014. Findings revealed that deposit movement remains a cardinal element in MFBs activities and contributes directly to economic development. Okafor, Ezeaku and Ugwuegbe (2016), Ugochukwu and Onochie (2017) used the Error Correction Model (ECM) and OLS regression analytical technique to investigate the effect of microcredit on poverty reduction in Nigeria from the period 1999 to 2014. Findings showed that microcredit has negative and insignificant influence on poverty alleviation in Nigeria. However, Ugochukwu and Onochie (2017) reported a negative relationship between micro finance lending and poverty alleviation in Nigeria.

Raihan, Osmani and BaquiKhalily (2017) looked at the effect of microfinance on EG in Bangladesh. Their regression estimates pointed out that microfinance contributed around 8.9% -11.9% to the EG in line with labour market assumption. Usifoh and Ezeanyeji (2017) applied ECM techniques to explain the effect of MFBs on poverty alleviation and EG in Nigeria from 1992 to 2016. Findings point out that microfinance asset, loan/advances have a significant effect on poverty alleviation and EG in Nigeria; while deposit liabilities effect on poverty alleviation and economic growth was insignificant; Murad and Idewale (2017) studied the effect of microfinance institution on economic growth in Nigeria from 1992 to 2012. The regression model indicates that microfinance loans and investment have significantly and directly impact EG in Nigeria only in the short run. Only the impact of investment was significant in the long run. OLS approach was applied by Ofeimun et al (2018) to identify the effect of microfinance banks on small businesses' growth in Nigeria covering 1990 – 2015. Findings revealed that micro loan disbursed and micro loan spread significantly and positively influence small business growth in Nigeria. Inflation rate, micro loan spread and micro loan lending rate significantly reduced small business growth in Nigeria.

The nexus between microfinance and rural economic growth in Nigeria was determined by Nwude and Anyalechi (2018) applying the Ordinary Least Square (OLS) regression techniques from 2000 to 2015. Specifically findings show that micro finance banking introduction in Nigeria have not significantly influenced agricultural productivity but had assisted in increasing rural savings habits in Nigeria. Werigbelegha and Chukwunulu (2018) studied microfinance banks' credit and growth of micro scale businesses in Nigeria relationship from 1990-2016. Vector Error Correction Model (VECM) techniques were used and findings show that microfinance bank credit had no short-run equilibrium significant relationship with growth of micro scale businesses in Nigeria. Causality relationship between microfinance credit and the growth of SMEs in Nigeria is not confirmed. Okere, Kingsley, Lawreance and Ozuzu (2018) confirmed the nexus between financial inclusion and economic growth with particular reference of microfinance for the period 1992 to 2013. Using Ordinary Least Square method and employing the Johansen co-integration tests the study showed that the activities of microfinance as one of the financial inclusion strategy significantly contribute to economic growth. While total loans and advances of MFBs significantly contribute to economic growth, total deposits inversely affect economic growth. Amin and Jalal Uddin (2018) ascertained the impact of Grameen Bank loan financing and clients' deposit on EG. Cointegration and Granger's causality test were used to analyze the annual time series data. Findings show that Grameen bank depositing and financing aspect have long run direct impact on EG. Wachukwu et al (2019) explored the impact of microfinance banking on EG in Nigeria. They adopted regression techniques in analyzing the time series data. Findings indicate that microfinance bank credit growth and investment growth had a negative but significant relationship with economic growth. The microfinance bank deposit growth and asset growth were directly and significantly related to real gross

domestic product. Khalaf and Saqfalhait (2019) studied the influence of Micro-Finance firms (MFFs) on Arab countries economic growth 1999 to 2016 using panel data regression for six Arab countries. Significant effect of MFFs on EG of Arab countries was not found in the result. García-Pérez, Fernández-Izquierdo and Muñoz-Torres (2020) studied microfinance institutions (MFIs) as a catalyst for sustainable development by region in Spain. A Kruskal-Wallis H test methodology was used and findings revealed a significant differences as a function of the region, and show that operationalization at the region level of MFIs should be adjusted.

3. Methodology

Research Design, Population, Sample, Type and Sources of Data

This study is based on the Solo developmental model and the endogenous growth theory. The longitudinal survey design is adopted in this study, owing to manifested variables of interest which were gathered for twenty-nine years (1992 to 2020). The choice of the time scope is occasion by data availability with respect to MFBs' variables.

Preliminary Test and Data Analyses Techniques

The preamble test entailed examining the characteristics and summary of the data-set by determining the descriptive statistics of the variables and presents the result in a precise form. This was determined whether or otherwise the variables are normally distributed or not. The stationarity tests were conducted using the Augmented Dickey-Fuller (ADF) tests at 1% level of confidence. Any variable found not stationary at levels (i.e., zero integration) was differenced until it became stationary. Thus, all variables were incorporated at their levels of stationarity after differencing in the same order. This was done as stipulated by the rule of thumb as given by Engle and Granger (1987) to enhance the predictive power of ECM.

Consequently, the ADF modelling procedure is given as follows:

$$\Delta K = \infty + \gamma t + \varphi K_{t-1} + K \sum_{i=1}^{L} = 1\Delta K_{t-1} + \omega_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..(1)$$

Where;
K = Variable of choice
∞ = Intercept
Δ = First difference operator
∞i = (for i = 1 and 2) and ΔK I (for i = 1, 2, … P) are constant Parameters
ω_t = Stationary stochastic process (Error Term)
t **=** represents deterministic trend
L = Number of lagged terms chosen by Akaike information criterion (AIC) to ensure that ε_t is white noise.

All variables are expected to be stationary and integrated of order I(1). When that is achieved, the Engle-Granger two stage co-integration techniques were used to determine the existence of long-run association between the dependent variable (GDP per capita) and the explanatory variables. All co-integrated variables embody error correction elements; hence the Autoregressive Distributed Lag (ARDL) of Error Correction Model (ECM) is used to ascertain the short run dynamics and long run equilibrium using E-views 9.0 software. Furthermore, the test for significance of all parameters was done using probability values in the model result, including some post regression diagnostic test of Durbin Watson and Q Statistic were used to authenticate the result.

Model Specification

This study adapted the model of Ifionu and Olieh (2016). They specified that economic development is a function of microfinance credits/loan, deposits and transfer services. The model was modified to suit the objectives of this study. Hence, the functional form of the model is given as:

$$EDVL = f(MFL, MFS, MFI, MFINT, MFA, INFR) \quad (2)$$

To remove the multi co-linearity problem from the data set, log of the variables were taken except for interest and inflation rate. Hence, the estimated pattern of the model is specified as follows:

$$LEDVL_t = \alpha_0 + \beta_1 LMFL_t + \beta_2 LMFS_t + \beta_3 LMFI_t + \beta_4 MFINT_t + \beta_5 LMFS_t + \beta_6 INFR_t + \varepsilon t \quad (3)$$

Hence to ascertain the short run dynamics of microfinance banks variables on economic development, the error correction model (ECM) used as short run equation is specified as:

$$\Delta LEDVL_t = \alpha_0 + \beta_1 \sum_{t=1}^{L} \Delta LEDVL_{t-1} + \beta_2 \sum_{t=1}^{L} \Delta LMFL_{t-1} + \beta_3 \sum_{t=1}^{L} \Delta LMFS_{t-1} + \beta_4 \sum_{t=1}^{L} \Delta LMFI_{t-1} + \beta_5 \sum_{t=1}^{L} \Delta MFINT_{t-1} + \beta_6 \sum_{t=1}^{L} \Delta LMFS_{t-1} + \beta_7 \sum_{t=1}^{L} \Delta INFR_{t-1} + \partial 1 Ecm(-1) + \varepsilon t \quad (4)$$

Equation 4 captures the short run dynamics while 3 captures the long run equilibrium.
Where:
LEDVL = Economic development; LMFL = Log of Microfinance Loan; LMFS = Log of Microfinance savings; $LMFI$ = Log of Microfinance Investment; MFINT = Microfinance interest rate ; LMFA = Log of Microfinance size ; INFR = Inflation rate; α_0 = Constant (Intercept); β1, β2, β3, β4, β5, β6, β7 = Coefficient of each exogenous variable to be estimated. t = respective variables at time t; εt = error term; $Ecm(-1)$ = error correction term
A priori expectations as derived from empirical literature are expressed as:
$\alpha_0 > 0$; β1, β2, β3, β5 and β7 > 0 β4 and β6 < 0

Measurement of Variables

Table 1: Variables Explanation

Variables	Type	Measurement	Sign	Source
EDVL	Dependent Variable	This variable was proxy by log of GDP per capita. Measured as: $GDP\ Per\ Capita = \frac{GDP}{Total\ Population}$		CBN Statistical Bulletin
MFL	Explanatory	Proxy by annual total loans and advances extended by microfinance	+	CBN Statistical Bulletin
MFS	"	Proxy by annual total deposits with microfinance banks	+	"
MFI	"	Proxy by annual total investments of microfinance banks.	+	"
MFINT	"	Proxy by lending rate of microfinance	-	"
MFS	"	Proxy by log of Total Asset	+	World Bank national accounts data
INFR	"	Proxy by annual inflation rate	-	"

Source: Researchers Compilation (2020)

4. Data Presentation and Analyses

Descriptive Statistics

Table 2 shows that the entire variables considered in the model skewed to the right from their corresponding mean values indicating a long tail to the right as evidenced in positive values. MFL, MFINT and INFR have a peak distribution that is relative to normal as shown by their corresponding Kurtosis value the is > 3 approximately. EDVL and MFS has a flat property distribution that is relative to normal as shown by their corresponding Kurtosis value that is < 3 approximately. Only MFI and MFA has a Kurtosis value that is equal to 3.0 approximately indicating a relative normal distribution.
The summary properties of of the variables considered in the model are presented below:

Table 2: Summary Statistics

	EDVL	MFL	MFS	MFI	MFINT	MFA	INFR
Mean	1190.862	45637.16	50046.65	2964.843	18.60500	101059.3	19.18308
Median	728.3550	13902.00	27712.80	2662.450	17.96500	44654.07	12.29000
Maximum	3221.680	196195.0	159453.5	8959.800	29.80000	343883.1	72.84000
Minimum	153.6500	135.8000	639.6000	118.4000	13.54000	967.2000	5.380000
Std. Dev.	1045.876	62688.55	53798.95	2822.934	3.208571	115079.0	17.96421
Skewness	0.689331	1.460405	0.809795	0.800383	1.803588	0.915823	1.862874
Kurtosis	1.875994	3.892235	2.293234	2.557682	7.171632	2.527788	5.203610
J-B	3.427775	10.10448	3.382808	2.987937	32.94876	3.876067	20.29852
Prob.	0.180164	0.006395	0.184261	0.224480	0.000000	0.143987	0.000039

Source: Researcher's Computation using E-view (2020)

Furthermore, the table reveals a meaningful difference between lowest and higher integer of the variables considered. The standard deviation for all variables is quite high (except for MFINTR). This means that the only MFINTR variable did not exhibite high deviation from it mean over the years. the proportion of mean to median is approximely one (except for MFL and MFA). The Jarque-Berra probability values for EDVL, MFS, MFI and MFA are not significant at 5% level of confidence, this shows that these variables are normally distributed. Since MFL, MFINT and INFR are not normally distributed, hence stationarity test of all the variables becomes imperative.

Stationarity Test Results

Table 3: Unit root test result

Augumented Dicky-Fuller Test			
Variable	**Adf Stat**	**Order**	**Remark**
∆***EDVL***	-4.702835*	1(1)	S
∆***MFL***	-3.647502**	1(1)	S
∆***MFS***	-6.325979*	1(1)	S
∆***MFI***	-4.080254**	1(1)	S
∆***MFINT***	-5.763066*	1(1)	S
∆***MFA***	-5.348612*	1(1)	S
∆***INFR***	-4.963567*	1(1)	S
Critical Values			
1%	-4.394309	1(1)	1st Diff
5%	-3.612199	1(1)	1st Diff
10%	-3.243079	1(1)	1st Diff

S = Stationary

** = 1% and ** = 5% Significance Level Respectively.*

Source: Researcher's Estimation using E-view (2020)

The ADF statistic in table 3 indicates that at levels the entire variables were not stationary. This resulted to taking the first difference of the variables. At first difference, all variables were stationary at order one I(1). Therefore, they are fit to be used in further analysis.

Co-integration Estimation

Table 4. Engle and Granger Co-integration test

Variable	Level	Mackinnon Critical Values	Remark
RESID (ECM)	-5.338496*	-3.737853	Stationary
* = 1% level of significance			

Source: Researcher's Estimation using E-view (2020)

It can be deduced from table 4 that there exists a long run convergence between the model variables. Hence, the non-hypothesis of there is no co-integrating association between the variables is rejected at 1% confidence level. Since the calculated value (5.34) is more than 3.74 critical values approximately. Based on this, the parsimonious ECM short run and OLS long run are estimated.

Parsimonious Error Correction Model (ECM) Estimation

Table 5: Short Run Effect

Dependent Variable: ∆EDVL			
Variables	**Short Run Coefficient**	**T-Statistic**	**Prob**
C	-490.5323	-4.859194	0.0398
∆EDVL(-1)	1.217486*	23.21704	0.0019
MFL	0.013851**	3.346546	0.0489
∆MFL(-2)	0.025509**	5.094474	0.0364
MFS	-0.029048**	-5.875038	0.0278
∆MFS(-1)	0.026046	2.484137	0.1310
∆MFS(-2)	-0.041662**	-5.760993	0.0288
∆MFS(-3)	-0.014419***	-3.991047	0.0574
MFI	0.094502**	4.793108	0.0409
∆MFI(-1)	-0.147199**	-6.633149	0.0220
∆MFI(-2)	0.354929*	10.81936	0.0084
MFINT	10.55798	2.511868	0.1286
∆MFINT(-1)	14.63063**	5.698175	0.0294
MFA	0.014572**	6.942190	0.0201
∆MFA(-1)	-0.016457	-2.745826	0.1110
INFR	1.137040	1.321705	0.3172
∆INFR(-1)	-3.726190***	-3.165252	0.0870
∆INFR(-2)	3.065293***	2.974836	0.0969
ECM(-1)	-0.658323**	-6.837373	0.0207
R-Square	0.977741		
Adj R-Square	0.945580		
F-Stat	1783.384		
Prob	0.000561		
D.W Stat	2.133874		

Table 6: Long Run Effect

Dependent variable: EDVL			
Variables	**Long Run Coefficient**	**T-Statistic**	**Prob**
C	133.9923	0.309739	0.7605
MFL	-0.044593*	-7.879400	0.0000
MFS	0.016256	1.494328	0.1534
MFI	-0.204833*	-5.491605	0.0000
MFINT	5.555949	0.246254	0.8084
MFA	0.027783*	3.773307	0.0015
INFR	-1.227622	-0.485160	0.6338
R-Square	0.944994		
Adj R-Square	0.922344		
F-Stat	41.72221		
Prob	0.000000		
D.W Stat	2.248729		

* = 1%, ** = 5% and *** = 10% Significance Level Respectively.
Source: Researcher's Estimation using E-view (2020)

The ECM coefficient of -0.66 approximately is high, correctly signed and significant at 5% level of confidence. This shows that any variable that deviate in the short run adjust to equilibrium at 66% speed in the long run after short run shock. The model demonstrated a good fit and well fiited the regression line as 95% of systematic changes in economic development is explained by all the explanatory variables jointly considered after adjusted for degree of freedom, as shown by the Adj R^2 value of 0.94558. Only 5% systematic

variation in economic development was not explained by the model, but accunted for by the perturb term. Also, all the explanatory variables have significant relationship with economic development taken together as shown by the F-statistic value of 1783.38 and significant at 1% confidence level. Almost all the lag periods considered in the model have significant effect on the current period variables (except for MFA_{-1}). Only MFL, MFS, MFI and MFA pass their significant test as shown by their probability coefficient that is < 0.10. This shows that these variables contributed significantly to Nigeria ED in the short run. the Durbin Watson Statistic of 2.1 and 2.25 in table 5 and 6 can be approximated to 2.0 respectively. This shows there may be absent of serial correlation in the model.

Discusion of Findings

All microfinance banks variables considered in the model have different degree of effect on economic development in Nigeria, although in different magnitude in table 5 and 6. First, microfinance loans have significant effect on economic development in Nigeria both in the short and long run period, although the effect in the long run (table 6) is negative. The performance of this variable is in line with *A priori* expectation. This means that microfinance effort of channelling loans and advances to the active poor is in the right direction since it influence on economic development in Nigeria is meaningful. The long run negative relationship could be attributed to high interest rate, economic hardship, political instability and insecurity. This finding is in line with that of Maksudova (2010), Ajagbe and Bolaji (2013), Murad and Idewale (2017) in the literature. However, contrary to the findings of Usifoh and Ezeanyeji (2017), Werigbelegha and Chukwunulu (2018), Wachukwu, Onyema and Amadi (2019) in the literature. Second, Microfinance savings have significant effect on economic development in Nigeria in the long run as indicated in table 6. This shows that microfinance deposits over the years were effectively translated in loans and advances extended to active poor for viable economic activities that enhance growth and spur economic development in the long run. This finding corroborate with the findings of Ayodele and Arogundade (2014), Ifionu and Olieh (2016), Wachukwu et al (2019), and contrary to the findings Okere, Kingsley, Lawreance and Ozuzu (2018) in the literature.

Third, Microfinance Investments (MFI) has significant effect on economic development in Nigeria both in the short and long run period as indicated in table 5 and 6. This means that microfinance have been investing in positive Net Present Value (NPV) project over the years since their investment had significant effect of economic development of Nigeria, although the effect became negative in the long run. This could be caused by the high risk level and uncertainty in the Nigeria macroeconomic environment. The finding is in line with that of Murad and Idewale (2017) and contrary to the findings of Wachukwu, Onyema and Amadi (2019) in the literature. Also, microfinance asset was found to have significant effect on economic development in Nigeria both in the short and long run period in both table 5 and 6. The variable also conform to *A Priori* expectation as it goes a long way to show that the expansion policy of MFBs across the length and breadth of Nigeria heads towards the right direction and has enhance the standard of living to a reasonable extent. This outcome is in line with the findings of Jegede et al (2011), Usifoh and Ezeanyeji (2017), Wachukwu et al (2019), and contrary to the findings of Okafor et al (2016) in the literature. Finally, significant relationship was not found between microfinance inflation and interest rate during the period under review. This shows microfinance interest and inflation rate has been kept under a reasonable threshold to encourage microfinance savings, lending and investment over the years. From the foregoing analysis, it can be deduced from the findings that the introduction of micro finance banking and it activities in Nigeria as one of the financial inclusion strategy significantly contribute to economic development in Nigeria during the studied period.

5. Conclusion and Recommendations

This paper looked at the effect of microfinance banks on ED in Nigeria. From the findings of this study, we conclude that MFBs variables of Loan/Advances, savings, investments and size have a significant influence on ED in Nigeria. From the findings, the following recommendations are made:

1. A serious policy concern must be implemented by regulatory bodies and top level management of microfinance banks to ensure that loan size and tenor match customer's need to encourage effective utilization of such loans.
2. Continuous monitoring of MFBs investment is needed from the regulatory agency and management of MFBs to sustain this desired objective.
3. The policies that will encourage increase in size and branches of MFBs should be embark upon by the CBN to further enhance its contribution to economic development
4. Human capital development should be considered as an essential aspect of developmental strategies in Nigeria.
5. More infrastructural developments (such as good roads, security, communication, power supply, etc.) should be carried out by the government in areas where microfinance banks are establish to surge economic activities in MFBs location.

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